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Welcome to DataLad’s **technical documentation**. Information here is targeting software developers and is focused on the Python API and **CLI**, as well as software design, employed technologies, and key features. Comprehensive **user documentation** with information on installation, basic operation, support, and (advanced) use case descriptions is available in the DataLad handbook.
1.1 Change log

1.1.1 0.16.0 (Wed Feb 09 2022)

Enhancement

- BF: When download-url gets Pathobject as path convert it to a string #6364 (@adswa)

Bug Fix

- Fix AnnexRepo.whereis key=True mode operation, and add batch mode support #6379 (@yarikoptic)
- DOC: run - adjust description for -i/-o to mention that it could be a directory #6416 (@yarikoptic)
- BF: ORA over HTTP tried to check archive #6355 (@bpoldrack @yarikoptic)
- BF: condition access to isatty to have stream eval to True #6360 (@yarikoptic)
- BF: python 3.10 compatibility fixes #6363 (@yarikoptic)
- Remove two(!) copies of a test #6374 (@mih)
- Warn just once about incomplete git config #6343 (@yarikoptic)
- Make version detection robust to GIT_DIR specification #6341 (@effigies @mih)
- BF(Q&D): do not crash - issue warning - if template fails to format #6319 (@yarikoptic)

Authors: 5

- Adina Wagner (@adswa)
- Benjamin Poldrack (@bpoldrack)
1.1.2 0.15.4 (Thu Dec 16 2021)

Bug Fix

- BF: autorc - replace incorrect releaseTypes with “none” #6320 (@yarikoptic)
- Minor enhancement to CONTRIBUTING.md #6309 (@bpoldrack)
- UX: If a clean repo is dirty after a failed run, give clean-up hints #6112 (@adswa)
- Stop using distutils #6113 (@jwodder)
- BF: RIARemote - set UI backend to annex to make it interactive #6287 (@yarikoptic @bpoldrack)
- Fix invalid escape sequences #6293 (@jwodder)
- CI: Update environment for windows CI builds #6292 (@bpoldrack)
- bump the python version used for mac os tests #6288 (@christian-monch @bpoldrack)
- ENH(UX): log a hint to use ulimit command in case of “Too long” exception #6173 (@yarikoptic)
- Report correct HTTP URL for RIA store content #6091 (@mih)
- BF: Don’t overwrite subdataset source candidates #6168 (@bpoldrack)
- Bump sphinx requirement to bypass readthedocs defaults #6189 (@mih)
- infra: Provide custom prefix to auto-related labels #6151 (@adswa)
- Remove all usage of exc_str() #6142 (@mih)
- BF: obtain information about annex special remotes also from annex journal #6135 (@yarikoptic @mih)
- BF: clone tried to save new subdataset despite failing to clone #6140 (@bpoldrack)

Tests

- RF+BF: use skip_if_no_module helper instead of try/except for libxmp and boto #6148 (@yarikoptic)
- git://github.com -> https://github.com #6134 (@mih)

Authors: 6

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- Christian Mnch (@christian-monch)
- John T. Wodder II (@jwodder)
- Michael Hanke (@mih)
- Yaroslav Halchenko (@yarikoptic)
1.1.3 0.15.3 (Sat Oct 30 2021)

Bug Fix

- BF: Don’t make create-sibling recursive by default #6116 (@adswa)
- BF: Add dashes to ‘force’ option in non-empty directory error message #6078 (@DisasterMo)
- DOC: Add supported URL types to download-url’s docstring #6098 (@adswa)
- BF: Retain git-annex error messages & don’t show them if operation successful #6070 (@DisasterMo)
- Remove uses of __full_version__ and datalad.version #6073 (@jwodder)
- BF: ORA shouldn’t crash while handling a failure #6063 (@bpoldrack)
- DOC: Refine –reckless docstring on usage and wording #6043 (@adswa)
- BF: archives upon strip - use rmtree which retries etc instead of rmdir #6064 (@yarikoptic)
- BF: do not leave test in a tmp dir destined for removal #6059 (@yarikoptic)
- Next wave of exc_str() removals #6022 (@mih)

Pushed to maint

- CI: Enable new codecov uploader in Appveyor CI (@adswa)

Internal

- UX: Log clone-candidate number and URLs #6092 (@adswa)
- UX/ENH: Disable reporting, and don’t do superfluous internal subdatasets calls #6094 (@adswa)
- Update codecov action to v2 #6072 (@jwodder)

Documentation

- Design document on URL substitution feature #6065 (@mih)

Tests

- BF(TST): remove reuse of the same tape across unrelated tests #6127 (@yarikoptic)
- Fail Travis tests on deprecation warnings #6074 (@jwodder)
- Ux get result handling broken #6052 (@christian-monch)
- enable metalad tests again #6060 (@christian-monch)
1.1.4 0.15.2 (Wed Oct 06 2021)

**Bug Fix**

- BF: Don’t suppress datalad subdatasets output #6035 (@DisasterMo @mih)
- Honor datalad.runtime.use-patool if set regardless of OS (was Windows only) #6033 (@mih)
- Discontinue usage of deprecated (public) helper #6032 (@mih)
- BF: ProgressHandler - close the other handler if was specified #6020 (@yarikoptic)
- UX: Report GitLab weburl of freshly created projects in the result #6017 (@adswa)
- Ensure there’s a blank line between the class `__doc__` and “Parameters” in `build_doc` docstrings #6004 (@jwodder)
- Large code-reorganization of everything runner-related #6008 (@mih)
- Discontinue `exc_str()` in all modern parts of the code base #6007 (@mih)

**Tests**

- TST: Add test to ensure functionality with subdatasets starting with a hyphen (-) #6042 (@DisasterMo)
- BF(TST): filter away warning from coverage from analysis of stderr of `--help` #6028 (@yarikoptic)
- BF: disable outdated SSL root certificate breaking chain on older/buggy clients #6027 (@yarikoptic)
- BF: start global test_http_server only if not running already #6023 (@yarikoptic)

**Authors: 5**

- Adina Wagner (@adswa)
- John T. Wodder II (@jwodder)
- Michael Burgardt (@DisasterMo)
- Michael Hanke (@mih)
- Yaroslav Halchenko (@yarikoptic)
1.1.5 0.15.1 (Fri Sep 24 2021)

Bug Fix

- BF: downloader - fail to download even on non-crippled FS if symlink exists #5991 (@yarikoptic)
- ENH: import datalad.api to bind extensions methods for discovery of dataset methods #5999 (@yarikoptic)
- Restructure cmdline API presentation #5988 (@mih)
- Close file descriptors after process exit #5983 (@mih)

Pushed to maint

- Discontinue testing of hirni extension (@mih)

Internal

- Add debugging information to release step #5980 (@jwodder)

Documentation

- Coarse description of the credential subsystem’s functionality #5998 (@mih)

Tests

- BF(TST): use sys.executable, mark test_ria_basics.test_url_keys as requiring network #5986 (@yarikoptic)

Authors: 3

- John T. Wodder II (@jwodder)
- Michael Hanke (@mih)
- Yaroslav Halchenko (@yarikoptic)

1.1.6 0.15.0 (Tue Sep 14 2021) – We miss you Kyle!

Enhancements and new features

- Command execution is now performed by a new Runner implementation that is no longer based on the asyncio framework, which was found to exhibit fragile performance in interaction with other asyncio-using code, such as Jupyter notebooks. The new implementation is based on threads. It also supports the specification of “protocols” that were introduced with the switch to the asyncio implementation in 0.14.0. (#5667)
- clone now supports arbitrary URL transformations based on regular expressions. One or more transformation steps can be defined via datalad.clone.url-substitute.<label> configuration settings. The feature can be (and is now) used to support convenience mappings, such as https://osf.io/q8xnk/ (displayed in a browser window) to osf://q8xnk (clonable via the datalad-osf extension. (#5749)
• Homogenize SSH use and configurability between DataLad and git-annex, by instructing git-annex to use DataLad’s sshrun for SSH calls (instead of SSH directly). (#5389)

• The ORA special remote has received several new features:
  – It now supports a push-url setting as an alternative to url for write access. An analog parameter was also added to create-sibling-ria. (#5420, #5428)
  – Access of RIA stores now performs homogeneous availability checks, regardless of access protocol. Before, broken HTTP-based access due to misspecified URLs could have gone unnoticed. (#5459, #5672)
  – Error reporting was introduced to inform about undesirable conditions in remote RIA stores. (#5683)

• create-sibling-ria now supports --alias for the specification of a convenience dataset alias name in a RIA store. (#5592)

• Analog to git commit, save now features an --amend mode to support incremental updates of a dataset state. (#5430)

• run now supports a dry-run mode that can be used to inspect the result of parameter expansion on the effective command to ease the composition of more complicated command lines. (#5539)

• run now supports a --assume-ready switch to avoid the (possibly expensive) preparation of inputs and outputs with large datasets that have already been readied through other means. (#5431)

• update now features --how and --how-subds parameters to configure how an update shall be performed. Supported modes are fetch (unchanged default), and merge (previously also possible via --merge), but also new strategies like reset or checkout. (#5534)

• update has a new --follow=parentds-lazy mode that only performs a fetch operation in subdatasets when the desired commit is not yet present. During recursive updates involving many subdatasets this can substantially speed up performance. (#5474)

• DataLad’s command line API can now report the version for individual commands via datalad <cmd> --version. The output has been homogenized to <providing-package> <version>. (#5543)

• create-sibling now logs information on an auto-generated sibling name, in the case that no --name/-s was provided. (#5550)

• create-sibling-github has been updated to emit result records like any standard DataLad command. Previously it was implemented as a “plugin”, which did not support all standard API parameters. (#5551)

• copy-file now also works with content-less files in datasets on crippled filesystems (adjusted mode), when a recent enough git-annex (8.20210428 or later) is available. (#5630)

• addurls can now be instructed how to behave in the event of file name collision via a new parameter --on-collision. (#5675)

• addurls reporting now informs which particular subdatasets were created. (#5689)

• Credentials can now be provided or overwritten via all means supported by ConfigManager. Importantly, datalad.credential.<name>.<field> configuration settings and analog specification via environment variables are now supported (rather than custom environment variables only). Previous specification methods are still supported too. (#5680)

• A new datalad.credential.force-ask configuration flag can now be used to force re-entry of already known credentials. This simplifies credential updates without having to use an approach native to individual credential stores. (#5777)

• Suppression of rendering repeated similar results is now configurable via the configuration switches datalad.ui.suppress-similar-results (bool), and datalad.ui.suppress-similar-results-threshold (int). (#5681)
• The performance of status and similar functionality when determining local file availability has been improved. (#5692)

• push now renders a result summary on completion. (#5696)

• A dedicated info log message indicates when dataset repositories are subjected to an annex version upgrade. (#5698)

• Error reporting improvements:
  – The NoDatasetFound exception now provides information for which purpose a dataset is required. (#5708)
  – Wording of the MissingExternalDependency error was rephrased to account for cases of non-functional installations. (#5803)
  – push reports when a --to parameter specification was (likely) forgotten. (#5726)
  – Detailed information is now given when DataLad fails to obtain a lock for credential entry in a timely fashion. Previously only a generic debug log message was emitted. (#5884)
  – Clarified error message when create-sibling-gitlab was called without --project. (#5907)

• add-readme now provides a README template with more information on the nature and use of DataLad datasets. A README file is no longer annex’ed by default, but can be using the new --annex switch. ([#5723][1], [#5725][2])

• clean now supports a --dry-run mode to inform about cleanable content. (#5738)

• A new configuration setting datalad.locations.locks can be used to control the placement of lock files. (#5740)

• wtf now also reports branch names and states. (#5804)

• AnnexRepo.whereis() now supports batch mode. (#5533)

Deprecations and removals

• The minimum supported git-annex version is now 8.20200309. (#5512)

• ORA special remote configuration items ssh-host, and base-path are deprecated. They are completely replaced by ria+<protocol>:// URL specifications. (#5425)

• The deprecated no_annex parameter of create() was removed from the Python API. (#5441)

• The unused GitRepo.pull() method has been removed. (#5558)

• Residual support for “plugins” (a mechanism used before DataLad supported extensions) was removed. This includes the configuration switches datalad.locations.{system,user}-plugins. (#5554, #5564)

• Several features and comments have been moved to the datalad-deprecated package. This package must now be installed to be able to use keep using this functionality.
  – The publish command. Use push instead. (#5837)
  – The ls command. (#5569)
  – The web UI that is deployable via datalad create-sibling --ui. (#5555)
  – The “automagic IO” feature. (#5577)

• AnnexRepo.copy_to() has been deprecated. The push command should be used instead. (#5560)

• AnnexRepo.sync() has been deprecated. AnnexRepo.call_annex(['sync', ...]) should be used instead. (#5461)
• All GitRepo.*_submodule() methods have been deprecated and will be removed in a future release. (#5559)
• create-sibling-github's --dryrun switch was deprecated, use --dry-run instead. (#5551)
• The datalad --pbs-runner option has been deprecated, use condor_run (or similar) instead. (#5956)

Fixes

• Prevent invalid declaration of a publication dependencies for ‘origin’ on any auto-detected ORA special remotes, when cloning from a RIA store. An ORA remote is now checked whether it actually points to the RIA store the clone was made from. (#5415)
• The ORA special remote implementation has received several fixes:
  – It can now handle HTTP redirects. (#5792)
  – Prevents failure when URL-type annex keys contain the ‘/’ character. (#5823)
  – Properly support the specification of usernames, passwords and ports in ria+<protocol>:// URLs. (#5902)
• It is now possible to specifically select the default (or generic) result renderer via datalad -f default and with that override a tailored result renderer that may be preconfigured for a particular command. (#5476)
• Starting with 0.14.0, original URLs given to clone were recorded in a subdataset record. This was initially done in a second commit, leading to inflation of commits and slowdown in superdatasets with many subdatasets. Such subdataset record annotation is now collapsed into a single commits. (#5480)
• run now removes leading empty directories as part of the output preparation. This was surprising behavior for commands that do not ensure on their own that output directories exist. (#5492)
• A potentially existing message property is no longer removed when using the json or json_pp result renderer to avoid undesired withholding of relevant information. (#5536)
• subdatasets now reports state=present, rather than state=clean, for installed subdatasets to complement state=absent reports for uninstalled dataset. (#5655)
• create-sibling-ria now executes commands with a consistent environment setup that matches all other command execution in other DataLad commands. (#5682)
• save no longer saves unspecified subdatasets when called with an explicit path (list). The fix required a behavior change of GitRepo.get_content_info() in its interpretation of None vs. [] path argument values that now aligns the behavior of GitRepo.diff|status() with their respective documentation. (#5693)
• get now prefers the location of a subdatasets that is recorded in a superdataset’s .gitmodules record. Previously, DataLad tried to obtain a subdataset from an assumed checkout of the superdataset’s origin. This new default order is (re-)configurable via the datalad.get.subdataset-source-candidate-<priority-label> configuration mechanism. (#5760)
• create-sibling-gitlab no longer skips the root dataset when . is given as a path. (#5789)
• siblings now rejects a value given to --as-common-datasrc that clashes with the respective Git remote. (#5805)
• The usage synopsis reported by siblings now lists all supported actions. (#5913)
• siblings now renders non-ok results to avoid silent failure. (#5915)
• .gitattribute file manipulations no longer leave the file without a trailing newline. (#5847)
• Prevent crash when trying to delete a non-existing keyring credential field. (#5892)
• git-annex is no longer called with an unconditional `annex.retry=3` configuration. Instead, this parameterization is now limited to `annex get` and `annex copy` calls. (#5904)

Tests

• `file://` URLs are no longer the predominant test case for AnnexRepo functionality. A built-in HTTP server now used in most cases. (#5332)

1.1.7 0.14.8 (Sun Sep 12 2021)

Bug Fix

• BF: add-archive-content on .xz and other non-.gz stream compressed files #5930 (@yrikoptic)
• BF(UX): do not keep logging ERROR possibly present in progress records #5936 (@yrikoptic)
• Annotate datalad_core as not needing actual data – just uses annex whereis #5971 (@yrikoptic)
• BF: limit CMD_MAX_ARG if obnoxious value is encountered. #5945 (@yrikoptic)
• Download session/credentials locking – inform user if locking is “failing” to be obtained, fail upon ~5min timeout #5884 (@yrikoptic)
• Render siblings()’s non-ok results with the default renderer #5915 (@mih)
• BF: do not crash, just skip whenever trying to delete non existing field in the underlying keyring #5892 (@yrikoptic)
• Fix argument-spec for siblings and improve usage synopsis #5913 (@mih)
• Clarify error message re unspecific gitlab project #5907 (@mih)
• Support username, password and port specification in RIA URLs #5902 (@mih)
• BF: take path from SSHRI, test URLs not only on Windows #5881 (@yrikoptic)
• ENH(UX): warn user if keyring returned a “null” keyring #5875 (@yrikoptic)
• ENH(UX): state original purpose in NoDatasetFound exception + detail it for get #5708 (@yrikoptic)

Pushed to maint

• Merge branch ‘bf-http-headers-agent’ into maint (@yrikoptic)
• RF(BF?):+DOC: provide User-Agent to entire session headers + use those if provided (@yrikoptic)

Internal

• Pass `--no-changelog` to auto shipit if changelog already has entry #5952 (@jwodder)
• Add isort config to match current convention + run isort via pre-commit (if configured) #5923 (@jwodder)
• .travis.yml: use python -m {nose,coverage} invocations, and always show combined report #5888 (@yrikoptic)
• Add project URLs into the package metadata for convenience links on Pypi #5866 (@adswa @yrikoptic)

1.1. Change log
Tests

- BF: do use OBSCURE_FILENAME instead of hardcoded unicode #5944 (@yarikoptic)
- BF(TST): Skip testing for having PID listed if no psutil #5920 (@yarikoptic)
- BF(TST): Boost version of git-annex to 8.20201129 to test an error message #5894 (@yarikoptic)

Authors: 4

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1.1.8 0.14.7 (Tue Aug 03 2021)

Bug Fix

- UX: When two or more clone URL templates are found, error out more gracefully #5839 (@adswa)
- BF: http_auth - follow redirect (just 1) to re-authenticate after initial attempt #5852 (@yarikoptic)
- addurls Formatter - provide value repr in exception #5850 (@yarikoptic)
- ENH: allow for “patch” level semver for “master” branch #5839 (@yarikoptic)
- BF: Report info from annex JSON error message in CommandError #5809 (@mih)
- RF(TST): do not test for no EASY and pkg_resources in shims #5817 (@yarikoptic)
- http downloaders: Provide custom informative User-Agent, do not claim to be “Authenticated access” #5802 (@yarikoptic)
- ENH(UX,DX): inform user with a warning if version is 0+unknown #5787 (@yarikoptic)
- shell-completion: add argcomplete to ‘misc’ extra_depends, log an ERROR if argcomplete fails to import #5781 (@yarikoptic)
- ENH (UX): add python-gitlab dependency #5776 (s.heunis@fz-juelich.de)

Internal

- BF: Fix reported paths in ORA remote #5821 (@adswa)
- BF: import importlib.metadata not importlib_metadata whenever available #5818 (@yarikoptic)

Tests

- TST: set –allow-unrelated-histories in the mk_push_target setup for Windows #5855 (@adswa)
- Tests: Allow for version to contain + as a separator and provide more information for version related comparisons #5786 (@yarikoptic)
Authors: 4

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1.1.9 0.14.6 (Sun Jun 27 2021)

Internal

- BF: update changelog conversion from .md to .rst (for sphinx) #5757 (@yarikoptic @jwodder)

Authors: 2

- John T. Wodder II (@jwodder)
- Yaroslav Halchenko (@yarikoptic)

1.1.10 0.14.5 (Mon Jun 21 2021)

Bug Fix

- BF(TST): parallel - take longer for producer to produce #5747 (@yarikoptic)
- add –on-failure default value and document it #5690 (@christian-monch @yarikoptic)
- ENH: harmonize “purpose” statements to imperative form #5733 (@yarikoptic)
- ENH(TST): populate heavy tree with 100 unique keys (not just 1) among 10,000 #5734 (@yarikoptic)
- BF: do not use .acquired - just get state from acquire() #5718 (@yarikoptic)
- BF: account for annex now “scanning for annexed” instead of “unlocked” files #5705 (@yarikoptic)
- interface: Don’t repeat custom summary for non-generator results #5688 (@kyleam)
- RF: just pip install datalad-installer #5676 (@yarikoptic)
- DOC: addurls.extract: Drop mention of removed ‘stream’ parameter #5690 (@kyleam)
- Merge pull request #5674 from kyleam/test-addurls-copy-fix #5674 (@kyleam)
- Merge pull request #5663 from kyleam/status-ds-equal-path #5663 (@kyleam)
- Merge pull request #5671 from kyleam/update-fetch-fail #5671 (@kyleam)
- BF: update: Honor –on-failure if fetch fails #5671 (@kyleam)
- RF: update: Avoid fetch’s deprecated kwargs #5671 (@kyleam)
- CLN: update: Drop an unused import #5671 (@kyleam)
- Merge pull request #5664 from kyleam/addurls-better-url-parts-error #5664 (@kyleam)
• Merge pull request #5661 from kyleam/sphinx-fix-plugin-refs #5661 (@kyleam)
• BF: status: Provide special treatment of “this dataset” path #5663 (@kyleam)
• BF: addurls: Provide better placeholder error for special keys #5664 (@kyleam)
• RF: addurls: Simply construction of placeholder exception message #5664 (@kyleam)
• RF: addurls._get_placeholder_exception: Rename a parameter #5664 (@kyleam)
• RF: status: Avoid repeated Dataset.path access #5663 (@kyleam)
• DOC: Reference plugins via datalad.api #5661 (@kyleam)
• download-url: Set up datalad special remote if needed #5648 (@kyleam @yarikoptic)

Pushed to maint

• MNT: Post-release dance (@kyleam)

Internal

• Switch to versioneer and auto #5669 (@jwodder @yarikoptic)
• MNT: setup.py: Temporarily avoid Sphinx 4 #5649 (@kyleam)

Tests

• BF(TST): skip testing for showing “Scanning for …” since not shown if too quick #5727 (@yarikoptic)
• Revert “TST: test_partial_unlocked: Document and avoid recent git-annex failure” #5651 (@kyleam)

Authors: 4

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1.1.11 0.14.4 (May 10, 2021) – .

Fixes

• Following an internal call to git-clone, clone assumed that the remote name was “origin”, but this may not be the case if clone.defaultRemoteName is configured (available as of Git 2.30). (#5572)
• Several test fixes, including updates for changes in git-annex. (#5612) (#5632) (#5639)
1.1.12 0.14.3 (April 28, 2021) –.

Fixes

- For outputs that include a glob, run didn’t re-glob after executing the command, which is necessary to catch changes if --explicit or --expand=(outputs,both) is specified. (#5594)
- run now gives an error result rather than a warning when an input glob doesn’t match. (#5594)
- The procedure for creating a RIA store checks for an existing ria-layout-version file and makes sure its version matches the desired version. This check wasn’t done correctly for SSH hosts. (#5607)
- A helper for transforming git-annex JSON records into DataLad results didn’t account for the unusual case where the git-annex record doesn’t have a “file” key. (#5580)
- The test suite required updates for recent changes in PyGithub and git-annex. (#5603) (#5609)

Enhancements and new features

- The DataLad source repository has long had a tools/cmdline-completion helper. This functionality is now exposed as a command, datalad shell-completion. (#5544)

1.1.13 0.14.2 (April 14, 2021) –.

Fixes

- push now works bottom-up, pushing submodules first so that hooks on the remote can aggregate updated sub-dataset information. (#5416)
- run-procedure didn’t ensure that the configuration of subdatasets was reloaded. (#5552)

1.1.14 0.14.1 (April 01, 2021) –.

Fixes

- The recent default branch changes on GitHub’s side can lead to “git-annex” being selected over “master” as the default branch on GitHub when setting up a sibling with create-sibling-github. To work around this, the current branch is now pushed first. (#5010)
- The logic for reading in a JSON line from git-annex failed if the response exceeded the buffer size (256 KB on *nix systems).
- Calling unlock with a path of ‘.’ from within an untracked subdataset incorrectly aborted, complaining that the “dataset containing given paths is not underneath the reference dataset”. (#5458)
- clone didn’t account for the possibility of multiple accessible ORA remotes or the fact that none of them may be associated with the RIA store being cloned. (#5488)
- create-sibling-ria didn’t call git update-server-info after setting up the remote repository and, as a result, the repository couldn’t be fetched until something else (e.g., a push) triggered a call to git update-server-info. (#5531)
- The parser for git-config output didn’t properly handle multi-line values and got thrown off by unexpected and unrelated lines. (#5509)
• The 0.14 release introduced regressions in the handling of progress bars for git-annex actions, including collapsing progress bars for concurrent operations. (#5421) (#5438)

• save failed if the user configured Git’s diff.ignoreSubmodules to a non-default value. (#5453)

• A interprocess lock is now used to prevent a race between checking for an SSH socket’s existence and creating it. (#5466)

• If a Python procedure script is executable, run-procedure invokes it directly rather than passing it to sys.executable. The non-executable Python procedures that ship with DataLad now include shebangs so that invoking them has a chance of working on file systems that present all files as executable. (#5436)

• DataLad’s wrapper around argparse failed if an underscore was used in a positional argument. (#5525)

Enhancements and new features

• DataLad’s method for mapping environment variables to configuration options (e.g., DATALAD_FOO_X__Y to datalad.foo.x-y) doesn’t work if the subsection name (“FOO”) has an underscore. This limitation can be sidestepped with the new DATALAD_CONFIG_OVERRIDES_JSON environment variable, which can be set to a JSON record of configuration values. (#5505)

1.1.15 0.14.0 (February 02, 2021) – ．

Major refactoring and deprecations

• Git versions below v2.19.1 are no longer supported. (#4650)

• The minimum git-annex version is still 7.20190503, but, if you’re on Windows (or use adjusted branches in general), please upgrade to at least 8.20200330 but ideally 8.20210127 to get subdataset-related fixes. (#4292) (#5290)

• The minimum supported version of Python is now 3.6. (#4879)

• publish is now deprecated in favor of push. It will be removed in the 0.15.0 release at the earliest.

• A new command runner was added in v0.13. Functionality related to the old runner has now been removed: Runner, GitRunner, and run_gitcommand_on_file_list_chunks from the datalad.cmd module along with the datalad.tests.protocolremote, datalad.cmd.protocol, and datalad.cmd.protocol.prefix configuration options. (#5229)

• The --no-storage-sibling switch of create-sibling-ria is deprecated in favor of --storage-sibling=off and will be removed in a later release. (#5090)

• The get_git_dir static method of GitRepo is deprecated and will be removed in a later release. Use the dot_git attribute of an instance instead. (#4957)

• The ProcessAnnexProgressIndicators helper from datalad.support.annexrepo has been removed. (#5259)

• The save argument of install, a noop since v0.6.0, has been dropped. (#5278)

• The get_URLS method of AnnexCustomRemote is deprecated and will be removed in a later release. (#4955)

• ConfigManager.get now returns a single value rather than a tuple when there are multiple values for the same key, as very few callers correctly accounted for the possibility of a tuple return value. Callers can restore the old behavior by passing get_all=True. (#4924)
• In 0.12.0, all of the `assure_*` functions in `datalad.utils` were renamed as `ensure_*`, keeping the old names around as compatibility aliases. The `assure_*` variants are now marked as deprecated and will be removed in a later release. (#4908)

• The `datalad.inteface.run` module, which was deprecated in 0.12.0 and kept as a compatibility shim for `datalad.core.local.run`, has been removed. (#4583)

• The `saver` argument of `datalad.core.local.run.run_command`, marked as obsolete in 0.12.0, has been removed. (#4583)

• The `dataset_only` argument of the `ConfigManager` class was deprecated in 0.12 and has now been removed. (#4828)

• The `linux_distribution_name`, `linux_distribution_release`, and `on_debian_wheezy` attributes in `datalad.utils` are no longer set at import time and will be removed in a later release. Use `datalad.utils.get_linux_distribution` instead. (#4696)

• `datalad.distribution.clone`, which was marked as obsolete in v0.12 in favor of `datalad.core.distributed.clone`, has been removed. (#4904)

• `datalad.support.annexrepo.N_AUTO_JOBS`, announced as deprecated in v0.12.6, has been removed. (#4904)

• The `compat` parameter of `GitRepo.get_submodules`, added in v0.12 as a temporary compatibility layer, has been removed. (#4904)

• The long-deprecated (and non-functional) `url` parameter of `GitRepo.__init__` has been removed. (#5342)

Fixes

• Cloning onto a system that enters adjusted branches by default (as Windows does) did not properly record the clone URL. (#5128)

• The RIA-specific handling after calling `clone` was correctly triggered by `ria+http` URLs but not `ria+https` URLs. (#4977)

• If the registered commit wasn’t found when cloning a subdataset, the failed attempt was left around. (#5391)

• The remote calls to `cp` and `chmod` in `create-sibling` were not portable and failed on macOS. (#5108)

• A more reliable check is now done to decide if configuration files need to be reloaded. (#5276)

• The internal command runner’s handling of the event loop has been improved to play nicer with outside applications and scripts that use asyncio. (#5350) (#5367)

Enhancements and new features

• The subdataset handling for adjusted branches, which is particularly important on Windows where git-annex enters an adjusted branch by default, has been improved. A core piece of the new approach is registering the commit of the primary branch, not its checked out adjusted branch, in the superdataset. Note: This means that `git status` will always consider a subdataset on an adjusted branch as dirty while `datalad status` will look more closely and see if the tip of the primary branch matches the registered commit. (#5241)

• The performance of the `subdatasets` command has been improved, with substantial speedups for recursive processing of many subdatasets. (#4868) (#5076)

• Adding new subdatasets via `save` has been sped up. (#4793)

• `get`, `save`, and `addurls` gained support for parallel operations that can be enabled via the `--jobs` command-line option or the new `datalad.runtime.max-jobs` configuration option. (#5022)
• addurls
  – learned how to read data from standard input. (#4669)
  – now supports tab-separated input. (#4845)
  – now lets Python callers pass in a list of records rather than a file name. (#5285)
  – gained a --drop-after switch that signals to drop a file’s content after downloading and adding it to the annex. (#5081)
  – is now able to construct a tree of files from known checksums without downloading content via its new --key option. (#5184)
  – records the URL file in the commit message as provided by the caller rather than using the resolved absolute path. (#5091)
  – is now speedier. (#4867) (#5022)
• create-sibling-github learned how to create private repositories (thanks to Nolan Nichols). (#4769)
• create-sibling-ria gained a --storage-sibling option. When --storage-sibling=only is specified, the storage sibling is created without an accompanying Git sibling. This enables using hosts without Git installed for storage. (#5090)
• The download machinery (and thus the datalad special remote) gained support for a new scheme, shub://, which follows the same format used by singularity run and friends. In contrast to the short-lived URLs obtained by querying Singularity Hub directly, shub:// URLs are suitable for registering with git-annex. (#4816)
• A provider is now included for https://registry-1.docker.io URLs. This is useful for storing an image’s blobs in a dataset and registering the URLs with git-annex. (#5129)
• The add-readme command now links to the DataLad handbook rather than http://docs.datalad.org. (#4991)
• New option datalad.locations.extra-procedures specifies an additional location that should be searched for procedures. (#5156)
• The class for handling configuration values, ConfigManager, now takes a lock before writes to allow for multiple processes to modify the configuration of a dataset. (#4829)
• clone now records the original, unresolved URL for a subdataset under submodule.<name>.datalad-url in the parent’s .gitmodules, enabling later get calls to use the original URL. This is particularly useful for ria+ URLs. (#5346)
• Installing a subdataset now uses custom handling rather than calling git submodule update --init. This avoids some locking issues when running get in parallel and enables more accurate source URLs to be recorded. (#4853)
• GitRepo.get_content_info, a helper that gets triggered by many commands, got faster by tweaking its git ls-files call. (#5067)
• wtf now includes credentials-related information (e.g. active backends) in its output. (#4982)
• The call_git* methods of GitRepo now have a read_only parameter. Callers can set this to True to promise that the provided command does not write to the repository, bypassing the cost of some checks and locking. (#5070)
• New call_annex* methods in the AnnexRepo class provide an interface for running git-annex commands similar to that of the GitRepo.call_git* methods. (#5163)
• It’s now possible to register a custom metadata indexer that is discovered by search and used to generate an index. (#4963)
• The ConfigManager methods get, getbool, getfloat, and getint now return a single value (with same precedence as git config --get) when there are multiple values for the same key (in the non-committed git configuration, if the key is present there, or in the dataset configuration). For get, the old behavior can be restored by specifying get_all=True. (#4924)

• Command-line scripts are now defined via the entry_points argument of setuptools.setup instead of the scripts argument. (#4695)

• Interactive use of --help on the command-line now invokes a pager on more systems and installation setups. (#5344)

• The datalad special remote now tries to eliminate some unnecessary interactions with git-annex by being smarter about how it queries for URLs associated with a key. (#4955)

• The GitRepo class now does a better job of handling bare repositories, a step towards bare repositories support in DataLad. (#4911)

• More internal work to move the code base over to the new command runner. (#4699) (#4855) (#4900) (#4996) (#5002) (#5141) (#5142) (#5229)

1.1.16 0.13.7 (January 04, 2021) – .

Fixes

• Cloning from a RIA store on the local file system initialized annex in the Git sibling of the RIA source, which is problematic because all annex-related functionality should go through the storage sibling. clone now sets remote.origin.annex-ignore to true after cloning from RIA stores to prevent this. (#5255)

• create-sibling invoked cp in a way that was not compatible with macOS. (#5269)

• Due to a bug in older Git versions (before 2.25), calling status with a file under .git/ (e.g., datalad status .git/config) incorrectly reported the file as untracked. A workaround has been added. (#5258)

• Update tests for compatibility with latest git-annex. (#5254)

Enhancements and new features

• copy-file now aborts if .git/ is in the target directory, adding to its existing .git/ safety checks. (#5258)

1.1.17 0.13.6 (December 14, 2020) – .

Fixes

• An assortment of fixes for Windows compatibility. (#5113) (#5119) (#5125) (#5127) (#5136) (#5201) (#5200) (#5214)

• Adding a subdataset on a system that defaults to using an adjusted branch (i.e. doesn’t support symlinks) didn’t properly set up the submodule URL if the source dataset was not in an adjusted state. (#5127)

• push failed to push to a remote that did not have an annex-uuid value in the local .git/config. (#5148)

• The default renderer has been improved to avoid a spurious leading space, which led to the displayed path being incorrect in some cases. (#5121)

• siblings showed an uninformative error message when asked to configure an unknown remote. (#5146)

• drop confusingly relayed a suggestion from git annex drop to use --force, an option that does not exist in datalad drop. (#5194)
• **create-sibling-github** no longer offers user/password authentication because it is no longer supported by GitHub. (#5218)

• The internal command runner’s handling of the event loop has been tweaked to hopefully fix issues with running DataLad from IPython. (#5106)

• SSH cleanup wasn’t reliably triggered by the ORA special remote on failure, leading to a stall with a particular version of git-annex, 8.20201103. (This is also resolved on git-annex’s end as of 8.20201127.) (#5151)

**Enhancements and new features**

• The credential helper no longer asks the user to repeat tokens or AWS keys. (#5219)

• The new option `datalad.locations.sockets` controls where Datalad stores SSH sockets, allowing users to more easily work around file system and path length restrictions. (#5238)

**1.1.18 0.13.5 (October 30, 2020)**

**Fixes**

• SSH connection handling has been reworked to fix cloning on Windows. A new configuration option, `datalad.ssh.multiplex-connections`, defaults to false on Windows. (#5042)

• The ORA special remote and post-clone RIA configuration now provide authentication via DataLad’s credential mechanism and better handling of HTTP status codes. (#5025) (#5026)

• By default, if a git executable is present in the same location as git-annex, DataLad modifies `PATH` when running `git` and `git-annex` so that the bundled git is used. This logic has been tightened to avoid unnecessarily adjusting the path, reducing the cases where the adjustment interferes with the local environment, such as special remotes in a virtual environment being masked by the system-wide variants. (#5035)

• `git-annex` is now consistently invoked as “git annex” rather than “git-annex” to work around failures on Windows. (#5001)

• `push` called `git annex sync ...` on plain git repositories. (#5051)

• `save` in general doesn’t support registering multiple levels of untracked subdatasets, but it can now properly register nested subdatasets when all of the subdataset paths are passed explicitly (e.g., `datalad save -d. sub-a sub-a/sub-b`). (#5049)

• When called with `--sidecar` and `--explicit`, `run` didn’t save the sidecar. (#5017)

• A couple of spots didn’t properly quote format fields when combining substrings into a format string. (#4957)

• The default credentials configured for `indi-s3` prevented anonymous access. (#5045)

**Enhancements and new features**

• Messages about suppressed similar results are now rate limited to improve performance when there are many similar results coming through quickly. (#5060)

• `create-sibling-github` can now be told to replace an existing sibling by passing `--existing=replace`. (#5008)

• Progress bars now react to changes in the terminal’s width (requires `tqdm` 2.1 or later). (#5057)
1.1.19 0.13.4 (October 6, 2020) –

Fixes

- Ephemeral clones mishandled bare repositories. (#4899)
- The post-clone logic for configuring RIA stores didn’t consider https:// URLs. (#4977)
- DataLad custom remotes didn’t escape newlines in messages sent to git-annex. (#4926)
- The datalad-archives special remote incorrectly treated file names as percent-encoded. (#4953)
- The result handler didn’t properly escape “%” when constructing its message template. (#4953)
- In v0.13.0, the tailored rendering for specific subtypes of external command failures (e.g., “out of space” or “remote not available”) was unintentionally switched to the default rendering. (#4966)
- Various fixes and updates for the NDA authenticator. (#4824)
- The helper for getting a versioned S3 URL did not support anonymous access or buckets with “.” in their name. (#4985)
- Several issues with the handling of S3 credentials and token expiration have been addressed. (#4927) (#4931) (#4952)

Enhancements and new features

- A warning is now given if the detected Git is below v2.13.0 to let users that run into problems know that their Git version is likely the culprit. (#4866)
- A fix to push in v0.13.2 introduced a regression that surfaces when push.default is configured to “matching” and prevents the git-annex branch from being pushed. Note that, as part of the fix, the current branch is now always pushed even when it wouldn’t be based on the configured refspec or push.default value. (#4896)
- publish
  - now allows spelling the empty string value of --since= as ^ for consistency with push. (#4683)
  - compares a revision given to --since= with HEAD rather than the working tree to speed up the operation. (#4448)
- rerun
  - emits more INFO-level log messages. (#4764)
  - provides better handling of adjusted branches and aborts with a clear error for cases that are not supported. (#5328)
- The archives are handled with p7zip, if available, since DataLad v0.12.0. This implementation now supports .tgz and .tbz2 archives. (#4877)

1.1.20 0.13.3 (August 28, 2020) –

Fixes

- Work around a Python bug that led to our asyncio-based command runner intermittently failing to capture the output of commands that exit very quickly. (#4835)
- push displayed an overestimate of the transfer size when multiple files pointed to the same key. (#4821)
• When download-url calls git annex addurl, it catches and reports any failures rather than crashing. A change in v0.12.0 broke this handling in a particular case. (#4817)

Enhancements and new features

• The wrapper functions returned by decorators are now given more meaningful names to hopefully make tracebacks easier to digest. (#4834)

1.1.21 0.13.2 (August 10, 2020) – .

Deprecations

• The allow_quick parameter of AnnexRepo.file_has_content and AnnexRepo.is_under_annex is now ignored and will be removed in a later release. This parameter was only relevant for git-annex versions before 7.20190912. (#4736)

Fixes

• Updates for compatibility with recent git and git-annex releases. (#4746) (#4760) (#4684)
• push didn’t sync the git-annex branch when --data=nothing was specified. (#4786)
• The datalad.clone.reckless configuration wasn’t stored in non-annex datasets, preventing the values from being inherited by annex subdatasets. (#4749)
• Running the post-update hook installed by create-sibling --ui could overwrite web log files from previous runs in the unlikely event that the hook was executed multiple times in the same second. (#4745)
• clone inspected git’s standard error in a way that could cause an attribute error. (#4775)
• When cloning a repository whose HEAD points to a branch without commits, clone tries to find a more useful branch to check out. It unwisely considered adjusted branches. (#4792)
• Since v0.12.0, SSHManager.close hasn’t closed connections when the ctrl_path argument was explicitly given. (#4757)
• When working in a dataset in which git annex init had not yet been called, the file_has_content and is_under_annex methods of AnnexRepo incorrectly took the “allow quick” code path on file systems that did not support it (#4736)

Enhancements

• create now assigns version 4 (random) UUIDs instead of version 1 UUIDs that encode the time and hardware address. (#4790)
• The documentation for create now does a better job of describing the interaction between --dataset and PATH. (#4763)
• The format_commit and get_hexsha methods of GitRepo have been sped up. (#4807) (#4806)
• A better error message is now shown when the ^ or ^.. shortcuts for --dataset do not resolve to a dataset. (#4759)
• A more helpful error message is now shown if a caller tries to download an ftp:// link but does not have request_ftp installed. (#4788)
• clone now tries harder to get up-to-date availability information after auto-enabling type=git special remotes. (#2897)

1.1.22 0.13.1 (July 17, 2020) – .

Fixes

• Cloning a subdataset should inherit the parent’s datalad.clone.reckless value, but that did not happen when cloning via datalad get rather than datalad install or datalad clone. (#4657)
• The default result renderer crashed when the result did not have a path key. (#4666) (#4673)
• datalad push didn’t show information about git push errors when the output was not in the format that it expected. (#4674)
• datalad push silently accepted an empty string for --since even though it is an invalid value. (#4682)
• Our JavaScript testing setup on Travis grew stale and has now been updated. (Thanks to Xiao Gui.) (#4687)
• The new class for running Git commands (added in v0.13.0) ignored any changes to the process environment that occurred after instantiation. (#4703)

Enhancements and new features

• datalad push now avoids unnecessary git push dry runs and pushes all refspects with a single git push call rather than invoking git push for each one. (#4692) (#4675)
• The readability of SSH error messages has been improved. (#4729)
• datalad.support.annexrepo avoids calling datalad.utils.get_linux_distribution at import time and caches the result once it is called because, as of Python 3.8, the function uses distro underneath, adding noticeable overhead. (#4696)

Third-party code should be updated to use get_linux_distribution directly in the unlikely event that the code relied on the import-time call to get_linux_distribution setting the linux_distribution_name, linux_distribution_release, or on_debian_wheezy attributes in `datalad.utils`.

1.1.23 0.13.0 (June 23, 2020) – .

A handful of new commands, including copy-file, push, and create-sibling-ria, along with various fixes and enhancements

Major refactoring and deprecations

• The no_annex parameter of create, which is exposed in the Python API but not the command line, is deprecated and will be removed in a later release. Use the new annex argument instead, flipping the value. Command-line callers that use --no-annex are unaffected. (#4321)
• datalad add, which was deprecated in 0.12.0, has been removed. (#4158) (#4319)
• The following GitRepo and AnnexRepo methods have been removed: get_changed_files, get_missing_files, and get_deleted_files. (#4169) (#4158)
• The get_branch_commits method of GitRepo and AnnexRepo has been renamed to get_branch_commits_.(#3834)
• The custom commit method of AnnexRepo has been removed, and AnnexRepo.commit now resolves to the parent method, GitRepo.commit. (#4168)

• GitPython’s git.repo.base.Repo class is no longer available via the .repo attribute of GitRepo and AnnexRepo. (#4172)

• AnnexRepo.get_corresponding_branch now returns None rather than the current branch name when a managed branch is not checked out. (#4274)

• The special UUID for git-annex web remotes is now available as datalad.consts.WEB_SPECIAL_REMOTE_UUID. It remains accessible as AnnexRepo.WEB_UUID for compatibility, but new code should use consts.WEB_SPECIAL_REMOTE_UUID (#4460).

Fixes

• Widespread improvements in functionality and test coverage on Windows and crippled file systems in general. (#4057) (#4245) (#4268) (#4276) (#4291) (#4301) (#4303) (#4304) (#4305) (#4306)

• AnnexRepo.get_size_from_key incorrectly handled file chunks. (#4081)

• create-sibling would too readily clobber existing paths when called with --existing=replace. It now gets confirmation from the user before doing so if running interactively and unconditionally aborts when running non-interactively. (#4147)

• update (#4159)
  – queried the incorrect branch configuration when updating non-annex repositories.
  – didn’t account for the fact that the local repository can be configured as the upstream “remote” for a branch.

• When the caller included --bare as a git init option, create crashed creating the bare repository, which is currently unsupported, rather than aborting with an informative error message. (#4065)

• The logic for automatically propagating the ‘origin’ remote when cloning a local source could unintentionally trigger a fetch of a non-local remote. (#4196)

• All remaining get_submodules() call sites that relied on the temporary compatibility layer added in v0.12.0 have been updated. (#4348)

• The custom result summary renderer for get, which was visible with --output-format=tailored, displayed incorrect and confusing information in some cases. The custom renderer has been removed entirely. (#4471)

• The documentation for the Python interface of a command listed an incorrect default when the command overrode the value of command parameters such as result_renderer. (#4480)

Enhancements and new features

• The default result renderer learned to elide a chain of results after seeing ten consecutive results that it considers similar, which improves the display of actions that have many results (e.g., saving hundreds of files). (#4337)

• The default result renderer, in addition to “tailored” result renderer, now triggers the custom summary renderer, if any. (#4338)

• The new command create-sibling-ria provides support for creating a sibling in a RIA store. (#4124)

• DataLad ships with a new special remote, git-annex-remote-ora, for interacting with RIA stores and a new command export-archive-ora for exporting an archive from a local annex object store. (#4260) (#4203)

• The new command push provides an alternative interface to publish for pushing a dataset hierarchy to a sibling. (#4206) (#4581) (#4617) (#4620)
• The new command `copy-file` copies files and associated availability information from one dataset to another. (#4430)

• The command examples have been expanded and improved. (#4091) (#4314) (#4464)

• The tooling for linking to the DataLad Handbook from DataLad’s documentation has been improved. (#4046)

• The `--reckless` parameter of `clone` and `install` learned two new modes:
  – “ephemeral”, where the `.git/annex/` of the cloned repository is symlinked to the local source repository’s. (#4099)
  – “shared-{group|all|... }” that can be used to set up datasets for collaborative write access. (#4324)

• `clone`:
  – learned to handle dataset aliases in RIA stores when given a URL of the form `ria+<protocol>://<storelocation>/~<aliasname>`. (#4459)
  – now checks `datalad.get.subdataset-source-candidate-NAME` to see if `NAME` starts with three digits, which is taken as a “cost”. Sources with lower costs will be tried first. (#4619)

• `update` (#4167)
  – learned to disallow non-fast-forward updates when `ff-only` is given to the `--merge` option.
  – gained a `--follow` option that controls how `--merge` behaves, adding support for merging in the revision that is registered in the parent dataset rather than merging in the configured branch from the sibling.
  – now provides a result record for merge events.

• `create-sibling` now supports local paths as targets in addition to SSH URLs. (#4187)

• `siblings`:
  – now shows a warning if the caller requests to delete a sibling that does not exist. (#4257)
  – phrases its warning about non-annex repositories in a less alarming way. (#4323)

• The rendering of command errors has been improved. (#4157)

• `save`:
  – displays a message to signal that the working tree is clean, making it more obvious that no results being rendered corresponds to a clean state. (#4106)
  – now provides a weaker warning against using `--to-git`. (#4290)

• `diff` and `save` learned about scenarios where they could avoid unnecessary and expensive work. (#4526) (#4544) (#4549)

• Calling `diff` without `--recursive` but with a path constraint within a subdataset ("/") now traverses into the subdataset, as "/" would, restricting its report to "/". (#4235)

• New option `datalad.annex.retry` controls how many times git-annex will retry on a failed transfer. It defaults to 3 and can be set to 0 to restore the previous behavior. (#4382)

• `wtf` now warns when the specified dataset does not exist. (#4331)

• The `repr` and `str` output of the dataset and repo classes got a facelift. (#4420) (#4435) (#4439)

• The DataLad Singularity container now comes with p7zip-full.

• DataLad emits a log message when the current working directory is resolved to a different location due to a symlink. This is now logged at the DEBUG rather than WARNING level, as it typically does not indicate a problem. (#4426)
- DataLad now lets the caller know that `git annex init` is scanning for unlocked files, as this operation can be slow in some repositories. (#4316)

- The `log_progress` helper learned how to set the starting point to a non-zero value and how to update the total of an existing progress bar, two features needed for planned improvements to how some commands display their progress. (#4438)

- The `ExternalVersions` object, which is used to check versions of Python modules and external tools (e.g., git-annex), gained an `add` method that enables DataLad extensions and other third-party code to include other programs of interest. (#4441)

- All of the remaining spots that use GitPython have been rewritten without it. Most notably, this includes rewrites of the `clone`, `fetch`, and `push` methods of `GitRepo`. (#4080) (#4087) (#4170) (#4171) (#4175) (#4172)

- When `GitRepo.commit` splits its operation across multiple calls to avoid exceeding the maximum command line length, it now amends to initial commit rather than creating multiple commits. (#4156)

- `GitRepo` gained a `get_corresponding_branch` method (which always returns None), allowing a caller to invoke the method without needing to check if the underlying repo class is `GitRepo` or `AnnexRepo`. (#4274)

- A new helper function `datalad.core.local.repo.repo_from_path` returns a repo class for a specified path. (#4273)

- New `AnnexRepo` method `localsync` performs a `git annex sync` that disables external interaction and is particularly useful for propagating changes on an adjusted branch back to the main branch. (#4243)

### 1.1.24 0.12.7 (May 22, 2020) — .

**Fixes**

- Requesting tailored output (`--output=tailored`) from a command with a custom result summary renderer produced repeated output. (#4463)

- A longstanding regression in argcomplete-based command-line completion for Bash has been fixed. You can enable completion by configuring a Bash startup file to run `eval "$(register-python-argcomplete datalad)"` or source DataLad’s `tools/cmdline-completion`. The latter should work for Zsh as well. (#4477)

- `publish` didn’t prevent `git-fetch` from recursing into submodules, leading to a failure when the registered submodule was not present locally and the submodule did not have a remote named ‘origin’. (#4560)

- `addurls` botched path handling when the file name format started with “./” and the call was made from a subdirectory of the dataset. (#4504)

- Double dash options in manpages were unintentionally escaped. (#4332)

- The check for HTTP authentication failures crashed in situations where content came in as bytes rather than unicode. (#4543)

- A check in `AnnexRepo.whereis` could lead to a type error. (#4552)

- When installing a dataset to obtain a subdataset, `get` confusingly displayed a message that described the containing dataset as “underneath” the subdataset. (#4456)

- A couple of Makefile rules didn’t properly quote paths. (#4481)

- With DueCredit support enabled (DUECREDIT_ENABLE=1), the query for metadata information could flood the output with warnings if datasets didn’t have aggregated metadata. The warnings are now silenced, with the overall failure of a `metadata` call logged at the debug level. (#4568)
Enhancements and new features

• The resource identifier helper learned to recognize URLs with embedded Git transport information, such as gcrypt::https://example.com. (#4529)

• When running non-interactively, a more informative error is now signaled when the UI backend, which cannot display a question, is asked to do so. (#4553)

1.1.25 0.12.6 (April 23, 2020) – .

Major refactoring and deprecations

• The value of datalad.support.annexrep.N_AUTO_JOBS is no longer considered. The variable will be removed in a later release. (#4409)

Fixes

• Staring with v0.12.0, datalad save recorded the current branch of a parent dataset as the branch value in the .gitmodules entry for a subdataset. This behavior is problematic for a few reasons and has been reverted. (#4375)

• The default for the --jobs option, “auto”, instructed DataLad to pass a value to git-annex’s --jobs equal to \[\min(8, \max(3, <number of CPUs>))\], which could lead to issues due to the large number of child processes spawned and file descriptors opened. To avoid this behavior, --jobs=auto now results in git-annex being called with --jobs=1 by default. Configure the new option datalad.runtime.max-annex-jobs to control the maximum value that will be considered when --jobs='auto'. (#4409)

• Various commands have been adjusted to better handle the case where a remote’s HEAD ref points to an unborn branch. (#4370)

• search

  – learned to use the query as a regular expression that restricts the keys that are shown for --show-keys short. (#4354)

  – gives a more helpful message when query is an invalid regular expression. (#4398)

• The code for parsing Git configuration did not follow Git’s behavior of accepting a key with no value as shorthand for key=true. (#4421)

• AnnexRepo.info needed a compatibility update for a change in how git-annex reports file names. (#4431)

• create-sibling-github did not gracefully handle a token that did not have the necessary permissions. (#4400)

Enhancements and new features

• search learned to use the query as a regular expression that restricts the keys that are shown for --show-keys short. (#4354)

• datalad <subcommand> learned to point to the datalad-container extension when a subcommand from that extension is given but the extension is not installed. (#4400) (#4174)

1.1.26 0.12.5 (Apr 02, 2020) – a small step for datalad . . .

Fix some bugs and make the world an even better place.
Fixes

- Our `log_progress` helper mishandled the initial display and step of the progress bar. (#4326)
- `AnnexRepo.get_content_annexinfo` is designed to accept `init=None`, but passing that led to an error. (#4330)
- Update a regular expression to handle an output change in Git v2.26.0. (#4328)
- We now set `LC_MESSAGES` to ‘C’ while running git to avoid failures when parsing output that is marked for translation. (#4342)
- The helper for decoding JSON streams loaded the last line of input without decoding it if the line didn’t end with a new line, a regression introduced in the 0.12.0 release. (#4361)
- The clone command failed to git-annex-init a fresh clone whenever it considered to add the origin of the origin as a remote. (#4367)

1.1.27 0.12.4 (Mar 19, 2020) – Windows?!

The main purpose of this release is to have one on PyPi that has no associated wheel to enable a working installation on Windows (#4315).

Fixes

- The description of the `log.outputs` config switch did not keep up with code changes and incorrectly stated that the output would be logged at the DEBUG level; logging actually happens at a lower level. (#4317)

1.1.28 0.12.3 (March 16, 2020) – .

Updates for compatibility with the latest git-annex, along with a few miscellaneous fixes

Major refactoring and deprecations

- All spots that raised a `NoDatasetArgumentFound` exception now raise a `NoDatasetFound` exception to better reflect the situation: it is the dataset rather than the argument that is not found. For compatibility, the latter inherits from the former, but new code should prefer the latter. (#4285)

Fixes

- Updates for compatibility with git-annex version 8.20200226. (#4214)
- `datalad export-to-figshare` failed to export if the generated title was fewer than three characters. It now queries the caller for the title and guards against titles that are too short. (#4140)
- Authentication was requested multiple times when git-annex launched parallel downloads from the `datalad` special remote. (#4308)
- At verbose logging levels, DataLad requests that git-annex display debugging information too. Work around a bug in git-annex that prevented that from happening. (#4212)
- The internal command runner looked in the wrong place for some configuration variables, including `datalad. log.outputs`, resulting in the default value always being used. (#4194)
- `publish` failed when trying to publish to a git-lfs special remote for the first time. (#4200)
• AnnexRepo.set_remote_url is supposed to establish shared SSH connections but failed to do so. (#4262)

Enhancements and new features

• The message provided when a command cannot determine what dataset to operate on has been improved. (#4285)
• The “aws-s3” authentication type now allows specifying the host through “aws-s3_host”, which was needed to work around an authorization error due to a longstanding upstream bug. (#4239)
• The xmp metadata extractor now recognizes “.wav” files.

1.1.29 0.12.2 (Jan 28, 2020) – Smothen the ride

Mostly a bugfix release with various robustifications, but also makes the first step towards versioned dataset installation requests.

Major refactoring and deprecations

• The minimum required version for GitPython is now 2.1.12. (#4070)

Fixes

• The class for handling configuration values, ConfigManager, inappropriately considered the current working directory’s dataset, if any, for both reading and writing when instantiated with dataset=None. This misbehavior is fairly inaccessible through typical use of DataLad. It affects datalad.cfg, the top-level configuration instance that should not consider repository-specific values. It also affects Python users that call Dataset with a path that does not yet exist and persists until that dataset is created. (#4078)
• update saved the dataset when called with --merge, which is unnecessary and risks committing unrelated changes. (#3996)
• Confusing and irrelevant information about Python defaults have been dropped from the command-line help. (#4002)
• The logic for automatically propagating the ‘origin’ remote when cloning a local source didn’t properly account for relative paths. (#4045)
• Various fixes to file name handling and quoting on Windows. (#4049) (#4050)
• When cloning failed, error lines were not bubbled up to the user in some scenarios. (#4060)

Enhancements and new features

• clone (and thus install)
  – now propagates the reckless mode from the superdataset when cloning a dataset into it. (#4037)
  – gained support for ria+<protocol>:// URLs that point to RIA stores. (#4022)
  – learned to read “@version” from ria+ URLs and install that version of a dataset (#4036) and to apply URL rewrites configured through Git’s url.*.insteadOf mechanism (#4064).
  – now copies datalad.get.subdataset-source-candidate--<name> options configured within the superdataset into the subdataset. This is particularly useful for RIA data stores. (#4073)
datalad Documentation, Release 0.15.5

- Archives are now (optionally) handled with 7-Zip instead of patool. 7-Zip will be used by default, but patool will be used on non-Windows systems if the datalad.runtime.use-patool option is set or the 7z executable is not found. (#4041)

1.1.30 0.12.1 (Jan 15, 2020) – Small bump after big bang

Fix some fallout after major release.

Fixes

- Revert incorrect relative path adjustment to URLs in clone. (#3538)
- Various small fixes to internal helpers and test to run on Windows (#2566) (#2534)

1.1.31 0.12.0 (Jan 11, 2020) – Krakatoa

This release is the result of more than a year of development that includes fixes for a large number of issues, yielding more robust behavior across a wider range of use cases, and introduces major changes in API and behavior. It is the first release for which extensive user documentation is available in a dedicated DataLad Handbook. Python 3 (3.5 and later) is now the only supported Python flavor.

Major changes 0.12 vs 0.11

- save fully replaces add (which is obsolete now, and will be removed in a future release).
- A new Git-annex aware status command enables detailed inspection of dataset hierarchies. The previously available diff command has been adjusted to match status in argument semantics and behavior.
- The ability to configure dataset procedures prior and after the execution of particular commands has been replaced by a flexible “hook” mechanism that is able to run arbitrary DataLad commands whenever command results are detected that match a specification.
- Support of the Windows platform has been improved substantially. While performance and feature coverage on Windows still falls behind Unix-like systems, typical data consumer use cases, and standard dataset operations, such as create and save, are now working. Basic support for data provenance capture via run is also functional.
- Support for Git-annex direct mode repositories has been removed, following the end of support in Git-annex itself.
- The semantics of relative paths in command line arguments have changed. Previously, a call datalad save --dataset /tmp/myds some/relpath would have been interpreted as saving a file at /tmp/myds/some/relpath into dataset /tmp/myds. This has changed to saving $PWD/some/relpath into dataset /tmp/myds. More generally, relative paths are now always treated as relative to the current working directory, except for path arguments of Dataset class instance methods of the Python API. The resulting partial duplication of path specifications between path and dataset arguments is mitigated by the introduction of two special symbols that can be given as dataset argument: ^ and ^., which identify the topmost superdataset and the closest dataset that contains the working directory, respectively.
- The concept of a “core API” has been introduced. Commands situated in the module datalad.core (such as create, save, run, status, diff) receive additional scrutiny regarding API and implementation, and are meant to provide longer-term stability. Application developers are encouraged to preferentially build on these commands.
Major refactoring and deprecations since 0.12.0rc6

- **clone** has been incorporated into the growing core API. The public **--alternative-source** parameter has been removed, and a **clone_dataset** function with multi-source capabilities is provided instead. The **--reckless** parameter can now take literal mode labels instead of just being a binary flag, but backwards compatibility is maintained.

- The **get_file_content** method of **GitRepo** was no longer used internally or in any known DataLad extensions and has been removed. (#3812)

- The function **get_dataset_root** has been replaced by **rev_get_dataset_root**. **rev_get_dataset_root** remains as a compatibility alias and will be removed in a later release. (#3815)

- The **add_sibling** module, marked obsolete in v0.6.0, has been removed. (#3871)

- **mock** is no longer declared as an external dependency because we can rely on it being in the standard library now that our minimum required Python version is 3.5. (#3860)

- **download-url** now requires that directories be indicated with a trailing slash rather than interpreting a path as directory when it doesn’t exist. This avoids confusion that can result from typos and makes it possible to support directory targets that do not exist. (#3854)

- The **dataset_only** argument of the **ConfigManager** class is deprecated. Use **source="dataset"** instead. (#3907)

- The **--proc-pre** and **--proc-post** options have been removed, and configuration values for **datalad.COMMAND.proc-pre** and **datalad.COMMAND.proc-post** are no longer honored. The new result hook mechanism provides an alternative for **proc-post** procedures. (#3963)

Fixes since 0.12.0rc6

- **publish** crashed when called with a detached HEAD. It now aborts with an informative message. (#3804)

- Since 0.12.0rc6 the call to update in **siblings** resulted in a spurious warning. (#3877)

- **siblings** crashed if it encountered an annex repository that was marked as dead. (#3892)

- The update of **rerun** in v0.12.0rc3 for the rewritten **diff** command didn’t account for a change in the output of **diff**, leading to **rerun --report** unintentionally including unchanged files in its diff values. (#3873)

- In 0.12.0rc5 **download-url** was updated to follow the new path handling logic, but its calls to AnnexRepo weren’t properly adjusted, resulting in incorrect path handling when the called from a dataset subdirectory. (#3850)

- **download-url** called **git annex addurl** in a way that failed to register a URL when its header didn’t report the content size. (#3911)

- With Git v2.24.0, saving new subdatasets failed due to a bug in that Git release. (#3904)

- With DataLad configured to stop on failure (e.g., specifying **--on-failure=stop** from the command line), a failing result record was not rendered. (#3863)

- Installing a subdataset yielded an “ok” status in cases where the repository was not yet in its final state, making it ineffective for a caller to operate on the repository in response to the result. (#3906)

- The internal helper for converting git-annex’s JSON output did not relay information from the “error-messages” field. (#3931)

- **run-procedure** reported relative paths that were confusingly not relative to the current directory in some cases. It now always reports absolute paths. (#3959)

- **diff** inappropriately reported files as deleted in some cases when **to** was a value other than **None**. (#3999)
• An assortment of fixes for Windows compatibility. (#3971) (#3974) (#3975) (#3976) (#3979)

• Subdatasets installed from a source given by relative path will now have this relative path used as ‘url’ in their .gitmodules record, instead of an absolute path generated by Git. (#3538)

• clone will now correctly interpret ‘~/...’ paths as absolute path specifications. (#3958)

• run-procedure mistakenly reported a directory as a procedure. (#3973)

• The cleanup for batched git-annex processes has been improved. (#3794) (#3851)

• The function for adding a version ID to an AWS S3 URL doesn’t support URLs with an “s3://” scheme and raises a NotImplementedError exception when it encounters one. The function learned to return a URL untouched if an “s3://” URL comes in with a version ID. (#3842)

• A few spots needed to be adjusted for compatibility with git-annex’s new --sameas feature, which allows special remotes to share a data store. (#3856)

• The swallow_logs utility failed to capture some log messages due to an incompatibility with Python 3.7. (#3835)

• siblings
  – crashed if --inherit was passed but the parent dataset did not have a remote with a matching name. (#3954)
  – configured the wrong pushurl and annexurl values in some cases. (#3955)

Enhancements and new features since 0.12.0rc6

• By default, datasets cloned from local source paths will now get a configured remote for any recursively discoverable ‘origin’ sibling that is also available from a local path in order to maximize automatic file availability across local annexes. (#3926)

• The new result hooks mechanism allows callers to specify, via local Git configuration values, DataLad command calls that will be triggered in response to matching result records (i.e., what you see when you call a command with -f json_pp). (#3903)

• The command interface classes learned to use a new _examples_ attribute to render documentation examples for both the Python and command-line API. (#3821)

• Candidate URLs for cloning a submodule can now be generated based on configured templates that have access to various properties of the submodule, including its dataset ID. (#3828)

• DataLad’s check that the user’s Git identity is configured has been sped up and now considers the appropriate environment variables as well. (#3807)

• The tag method of GitRepo can now tag revisions other than HEAD and accepts a list of arbitrary git tag options. (#3787)

• When get clones a subdataset and the subdataset’s HEAD differs from the commit that is registered in the parent, the active branch of the subdataset is moved to the registered commit if the registered commit is an ancestor of the subdataset’s HEAD commit. This handling has been moved to a more central location within GitRepo, and now applies to any update_submodule(..., init=True) call. (#3831)

• The output of datalad -h has been reformatted to improve readability. (#3862)

• unlock has been sped up. (#3880)

• run-procedure learned to provide and render more information about discovered procedures, including whether the procedure is overridden by another procedure with the same base name. (#3960)

• save now (#3817)
-- records the active branch in the superdataset when registering a new subdataset.
-- calls git annex sync when saving a dataset on an adjusted branch so that the changes are brought into the mainline branch.

* subdatasets now aborts when its dataset argument points to a non-existent dataset. (#3940)
* wtf now
  -- reports the dataset ID if the current working directory is visiting a dataset. (#3888)
  -- outputs entries deterministically. (#3927)

* The ConfigManager class
  -- learned to exclude .datalad/config as a source of configuration values, restricting the sources to standard Git configuration files, when called with source="local". (#3907)
  -- accepts a value of “override” for its where argument to allow Python callers to more convenient override configuration. (#3970)

* Commands now accept a dataset value of “^.” as shorthand for “the dataset to which the current directory belongs”. (#3242)

1.1.32 0.12.0rc6 (Oct 19, 2019) – some releases are better than the others

Bet we will fix some bugs and make a world even a better place.

### Major refactoring and deprecations

* DataLad no longer supports Python 2. The minimum supported version of Python is now 3.5. (#3629)
* Much of the user-focused content at http://docs.datalad.org has been removed in favor of more up to date and complete material available in the DataLad Handbook. Going forward, the plan is to restrict http://docs.datalad.org to technical documentation geared at developers. (#3678)
* update used to allow the caller to specify which dataset(s) to update as a PATH argument or via the the --dataset option; now only the latter is supported. Path arguments only serve to restrict which subdataset are updated when operating recursively. (#3700)
* Result records from a get call no longer have a “state” key. (#3746)
* update and get no longer support operating on independent hierarchies of datasets. (#3700) (#3746)
* The run update in 0.12.0rc4 for the new path resolution logic broke the handling of inputs and outputs for calls from a subdirectory. (#3747)
* The is_submodule_modified method of GitRepo as well as two helper functions in gitrepo.py, kwargs_to_options and split_remote_branch, were no longer used internally or in any known DataLad extensions and have been removed. (#3702) (#3704)
* The only_remote option of GitRepo.is_with_annex was not used internally or in any known extensions and has been dropped. (#3768)
* The get_tags method of GitRepo used to sort tags by committer date. It now sorts them by the tagger date for annotated tags and the committer date for lightweight tags. (#3715)
* The rev_resolve_path substituted resolve_path helper. (#3797)
Fixes

- Correctly handle relative paths in publish. (#3799) (#3102)
- Do not erroneously discover directory as a procedure. (#3793)
- Correctly extract version from manpage to trigger use of manpages for --help. (#3798)
- The cfg_yoda procedure saved all modifications in the repository rather than saving only the files it modified. (#3680)
- Some spots in the documentation that were supposed to appear as two hyphens were incorrectly rendered in the HTML output as en-dashes. (#3692)
- create, install, and clone treated paths as relative to the dataset even when the string form was given, violating the new path handling rules. (#3749) (#3777) (#3780)
- Providing the "^" shortcut to --dataset didn’t work properly when called from a subdirectory of a subdataset. (#3772)
- We failed to propagate some errors from git-annex when working with its JSON output. (#3751)
- With the Python API, callers are allowed to pass a string or list of strings as the cfg_proc argument to create, but the string form was mishandled. (#3761)
- Incorrect command quoting for SSH calls on Windows that rendered basic SSH-related functionality (e.g., sshrun) on Windows unusable. (#3688)
- Annex JSON result handling assumed platform-specific paths on Windows instead of the POSIX-style that is happening across all platforms. (#3719)
- path_is_under() was incapable of comparing Windows paths with different drive letters. (#3728)

Enhancements and new features

- Provide a collection of “public” call_git* helpers within GitRepo and replace use of “private” and less specific _git_custom_command calls. (#3791)
- status gained a --report-filetype. Setting it to “raw” can give a performance boost for the price of no longer distinguishing symlinks that point to annexed content from other symlinks. (#3701)
- save disables file type reporting by status to improve performance. (#3712)
- subdatasets (#3743)
  - now extends its result records with a contains field that lists which contains arguments matched a given subdataset.
  - yields an ‘impossible’ result record when a contains argument wasn’t matched to any of the reported subdatasets.
- install now shows more readable output when cloning fails. (#3775)
- SSHConnection now displays a more informative error message when it cannot start the ControlMaster process. (#3776)
- If the new configuration option datalad.log.result-level is set to a single level, all result records will be logged at that level. If you’ve been bothered by DataLad’s double reporting of failures, consider setting this to “debug”. (#3754)
- Configuration values from datalad -c OPTION=VALUE ... are now validated to provide better errors. (#3695)
• **rerun** learned how to handle history with merges. As was already the case when cherry picking non-run commits, re-creating merges may result in conflicts, and **rerun** does not yet provide an interface to let the user handle these. (#2754)

• The **fsck** method of **AnnexRepo** has been enhanced to expose more features of the underlying **git fsck** command. (#3693)

• **GitRepo** now has a **for_each_ref** method that wraps **git for-each-ref**, which is used in various spots that used to rely on **GitPython** functionality. (#3705)

• Do not pretend to be able to work in optimized (**python -O**) mode, crash early with an informative message. (#3803)

1.1.33 0.12.0rc5 (September 04, 2019) – .

Various fixes and enhancements that bring the 0.12.0 release closer.

Major refactoring and deprecations

• The two modules below have a new home. The old locations still exist as compatibility shims and will be removed in a future release.

  – **datalad.distribution.subdatasets** has been moved to **datalad.local.subdatasets** (#3429)

  – **datalad.interface.run** has been moved to **datalad.core.local.run** (#3444)

• The **lock** method of **AnnexRepo** and the **options** parameter of **AnnexRepo.unlock** were unused internally and have been removed. (#3459)

• The **get_submodules** method of **GitRepo** has been rewritten without **GitPython**. When the new **compat** flag is true (the current default), the method returns a value that is compatible with the old return value. This backwards-compatible return value and the **compat** flag will be removed in a future release. (#3508)

• The logic for resolving relative paths given to a command has changed (#3435). The new rule is that relative paths are taken as relative to the dataset only if a dataset **instance** is passed by the caller. In all other scenarios they’re considered relative to the current directory.

  The main user-visible difference from the command line is that using the **--dataset** argument does not result in relative paths being taken as relative to the specified dataset. (The undocumented distinction between “rel/path” and “./rel/path” no longer exists.)

  All commands under **datalad.core** and **datalad.local**, as well as **unlock** and **addurls**, follow the new logic. The goal is for all commands to eventually do so.

Fixes

• The function for loading JSON streams wasn’t clever enough to handle content that included a Unicode line separator like U2028. (#3524)

• When **unlock** was called without an explicit target (i.e., a directory or no paths at all), the call failed if any of the files did not have content present. (#3459)

• **AnnexRepo.get_content_info** failed in the rare case of a key without size information. (#3534)

• **save ignored** **--on-failure** in its underlying call to **status**. (#3470)

• Calling **remove** with a subdirectory displayed spurious warnings about the subdirectory files not existing. (#3586)
• Our processing of `git-annex --json` output mishandled info messages from special remotes. (#3546)

• `create`
  – didn’t bypass the “existing subdataset” check when called with `--force` as of 0.12.0rc3 (#3552)
  – failed to register the up-to-date revision of a subdataset when `--cfg-proc` was used with `--dataset` (#3591)

• The base downloader had some error handling that wasn’t compatible with Python 3. (#3622)

• Fixed a number of Unicode py2-compatibility issues. (#3602)

• `AnnexRepo.get_content_annexinfo` did not properly chunk file arguments to avoid exceeding the command-line character limit. (#3587)

### Enhancements and new features

• New command `create-sibling-gitlab` provides an interface for creating a publication target on a GitLab instance. (#3447)

• subdatasets (#3429)
  – now supports path-constrained queries in the same manner as commands like `save` and `status`
  – gained an `--contains=PATH` option that can be used to restrict the output to datasets that include a specific path.
  – now narrows the listed subdatasets to those underneath the current directory when called with no arguments

• `status` learned to accept a plain `--annex` (no value) as shorthand for `--annex basic`. (#3534)

• The `.dirty` property of `GitRepo` and `AnnexRepo` has been sped up. (#3460)

• The `get_content_info` method of `GitRepo`, used by `status` and commands that depend on `status`, now restricts its git calls to a subset of files, if possible, for a performance gain in repositories with many files. (#3508)

• Extensions that do not provide a command, such as those that provide only metadata extractors, are now supported. (#3531)

• When calling `git-annex` with `--json`, we log standard error at the debug level rather than the warning level if a non-zero exit is expected behavior. (#3518)

• `create` no longer refuses to create a new dataset in the odd scenario of an empty `.git/` directory upstairs. (#3475)

• As of v2.22.0 Git treats a sub-repository on an unborn branch as a repository rather than as a directory. Our documentation and tests have been updated appropriately. (#3476)

• `addurls` learned to accept a `--cfg-proc` value and pass it to its `create` calls. (#3562)

### 1.1.34 0.12.0rc4 (May 15, 2019) – the revolution is over

With the replacement of the `save` command implementation with `rev-save` the revolution effort is now over, and the set of key commands for local dataset operations (create, run, save, status, diff) is now complete. This new core API is available from `datalad.core.local` (and also via `datalad.api`, as any other command).

### Major refactoring and deprecations

• The `add` command is now deprecated. It will be removed in a future release.
Fixes

- Remove hard-coded dependencies on POSIX path conventions in SSH support code (#3400)
- Emit an add result when adding a new subdataset during save (#3398)
- SSH file transfer now actually opens a shared connection, if none exists yet (#3403)

Enhancements and new features

- `SSHConnection` now offers methods for file upload and download (`get()`, `put()`). The previous `copy()` method only supported upload and was discontinued (#3401)

1.1.35 0.12.0rc3 (May 07, 2019) – the revolution continues

Continues API consolidation and replaces the `create` and `diff` command with more performant implementations.

Major refactoring and deprecations

- The previous `diff` command has been replaced by the `diff` variant from the `datalad-revolution` extension. (#3366)
- `rev-create` has been renamed to `create`, and the previous `create` has been removed. (#3383)
- The `--nosave` of `addurls` now affects only added content, not newly created subdatasets (#3259).
- `Dataset.get_subdatasets` (deprecated since v0.9.0) has been removed. (#3336)
- The `.is_dirty` method of `GitRepo` and `AnnexRepo` has been replaced by `.status` or, for a subset of cases, the `.dirty` property. (#3330)
- `AnnexRepo.get_status` has been replaced by `AnnexRepo.status`. (#3330)

Fixes

- `status`
  - reported on directories that contained only ignored files (#3238)
  - gave a confusing failure when called from a subdataset with an explicitly specified dataset argument and `"."` as a path (#3325)
  - misleadingly claimed that the locally present content size was zero when `--annex basic` was specified (#3378)
- An informative error wasn’t given when a download provider was invalid. (#3258)
- Calling `rev-save PATH` saved unspecified untracked subdatasets. (#3288)
- The available choices for command-line options that take values are now displayed more consistently in the help output. (#3326)
- The new `pathlib`-based code had various encoding issues on Python 2. (#3332)
Enhancements and new features

- `wtf` now includes information about the Python version. (#3255)
- When operating in an annex repository, checking whether git-annex is available is now delayed until a call to `git-annex` is actually needed, allowing systems without git-annex to operate on annex repositories in a restricted fashion. (#3274)
- The `load_stream` on helper now supports auto-detection of compressed files. (#3289)
- `create` (formerly `rev-create`)
  - learned to be speedier by passing a path to `status` (#3294)
  - gained a `--cfg-proc` (or `-c`) convenience option for running configuration procedures (or more accurately any procedure that begins with “cfg_”) in the newly created dataset (#3353)
- `AnnexRepo.set_metadata` now returns a list while `AnnexRepo.set_metadata_` returns a generator, a behavior which is consistent with the `add` and `add_` method pair. (#3298)
- `AnnexRepo.get_metadata` now supports batch querying of known annex files. Note, however, that callers should carefully validate the input paths because the batch call will silently hang if given non-annex files. (#3364)
- `status`
  - now reports a “bytesize” field for files tracked by Git (#3299)
  - gained a new option `eval_subdataset_state` that controls how the subdataset state is evaluated. Depending on the information you need, you can select a less expensive mode to make `status` faster. (#3324)
  - colors deleted files “red” (#3334)
- Querying repository content is faster due to batching of `git cat-file` calls. (#3301)
- The dataset ID of a subdataset is now recorded in the superdataset. (#3304)
- `GitRepo.diffstatus`
  - now avoids subdataset recursion when the comparison is not with the working tree, which substantially improves performance when diffing large dataset hierarchies (#3314)
  - got smarter and faster about labeling a subdataset as “modified” (#3343)
- `GitRepo.get_content_info` now supports disabling the file type evaluation, which gives a performance boost in cases where this information isn’t needed. (#3362)
- The XMP metadata extractor now filters based on file name to improve its performance. (#3329)

1.1.36 0.12.0rc2 (Mar 18, 2019) – revolution!

Fixes

- `GitRepo.dirty` does not report on nested empty directories (#3196).
- `GitRepo.save()` reports results on deleted files.
Enhancements and new features

- Absorb a new set of core commands from the datalad-revolution extension:
  - `rev-status`: like `git status`, but simpler and working with dataset hierarchies
  - `rev-save`: a 2-in-1 replacement for `save` and `add`
  - `rev-create`: a ~30% faster `create`
- JSON support tools can now read and write compressed files.

1.1.37 0.12.0rc1 (Mar 03, 2019) – to boldly go . . .

Major refactoring and deprecations

- Discontinued support for `git-annex` direct-mode (also no longer supported upstream).

Enhancements and new features

- Dataset and Repo object instances are now hashable, and can be created based on `pathlib Path` object instances
- Imported various additional methods for the Repo classes to query information and save changes.

1.1.38 0.11.8 (Oct 11, 2019) – annex-we-are-catching-up

Fixes

- Our internal command runner failed to capture output in some cases. (#3656)
- Workaround in the tests around python in cPython >= 3.7.5 ‘;’ in the filename confusing mimetypes (#3769) (#3770)

Enhancements and new features

- Prepared for upstream changes in `git-annex`, including support for the latest `git-annex`
  - 7.20190912 auto-upgrades v5 repositories to v7. (#3648) (#3682)
  - 7.20191009 fixed treatment of (larger/smaller)than in .gitattributes (#3765)
- The `cfg_text2git` procedure, as well the `--text-no-annex` option of `create`, now configure .gitattributes so that empty files are stored in git rather than annex. (#3667)

1.1.39 0.11.7 (Sep 06, 2019) – python2-we-still-love-you-but- . . .

Primarily bugfixes with some optimizations and refactorings.
Fixes

- **addurls**
  - now provides better handling when the URL file isn’t in the expected format. (#3579)
  - always considered a relative file for the URL file argument as relative to the current working directory, which goes against the convention used by other commands of taking relative paths as relative to the dataset argument. (#3582)

- **run-procedure**
  - hard coded “python” when formatting the command for non-executable procedures ending with “.py”. sys.executable is now used. (#3624)
  - failed if arguments needed more complicated quoting than simply surrounding the value with double quotes. This has been resolved for systems that support shlex.quote, but note that on Windows values are left unquoted. (#3626)

- **siblings** now displays an informative error message if a local path is given to --url but --name isn’t specified. (#3555)

- **sshrun**, the command DataLad uses for GIT_SSH_COMMAND, didn’t support all the parameters that Git expects it to. (#3616)

- Fixed a number of Unicode py2-compatibility issues. (#3597)

- **download-url** now will create leading directories of the output path if they do not exist (#3646)

Enhancements and new features

- The **annotate-paths** helper now caches subdatasets it has seen to avoid unnecessary calls. (#3570)

- A repeated configuration query has been dropped from the handling of --proc-pre and --proc-post. (#3576)

- Calls to git annex find now use --in=. instead of the alias --in=here to take advantage of an optimization that git-annex (as of the current release, 7.20190730) applies only to the former. (#3574)

- **addurls** now suggests close matches when the URL or file format contains an unknown field. (#3594)

- Shared logic used in the setup.py files of Datalad and its extensions has been moved to modules in the _datalad_build_support/ directory. (#3600)

- Get ready for upcoming git-annex dropping support for direct mode (#3631)

1.1.40 0.11.6 (Jul 30, 2019) – am I the last of 0.11.x?

Primarily bug fixes to achieve more robust performance

Fixes

- Our tests needed various adjustments to keep up with upstream changes in Travis and Git. (#3479) (#3492) (#3493)

- **AnnexRepo.is_special_annex_remote** was too selective in what it considered to be a special remote. (#3499)

- We now provide information about unexpected output when git-annex is called with --json. (#3516)
• Exception logging in the `__del__` method of `GitRepo` and `AnnexRepo` no longer fails if the names it needs are no longer bound. (#3527)

• `addurls` botched the construction of subdataset paths that were more than two levels deep and failed to create datasets in a reliable, breadth-first order. (#3561)

• Cloning a `type=git` special remote showed a spurious warning about the remote not being enabled. (#3547)

Enhancements and new features

• For calls to `git` and `git-annex`, we disable automatic garbage collection due to past issues with GitPython’s state becoming stale, but doing so results in a larger `.git/objects/` directory that isn’t cleaned up until garbage collection is triggered outside of DataLad. Tests with the latest GitPython didn’t reveal any state issues, so we’ve re-enabled automatic garbage collection. (#3458)

• `rerun` learned an `--explicit` flag, which it relays to its calls to `[run][[]]`. This makes it possible to call `rerun` in a dirty working tree (#3498).

• The `metadata` command aborts earlier if a metadata extractor is unavailable. (#3525)

1.1.41 0.11.5 (May 23, 2019) – stability is not overrated

Should be faster and less buggy, with a few enhancements.

Fixes

• `create-sibling` (#3318)
  – Siblings are no longer configured with a post-update hook unless a web interface is requested with `--ui`.
  – `git submodule update --init` is no longer called from the post-update hook.
  – If `--inherit` is given for a dataset without a superdataset, a warning is now given instead of raising an error.

• The internal command runner failed on Python 2 when its `env` argument had unicode values. (#3332)

• The safeguard that prevents creating a dataset in a subdirectory that already contains tracked files for another repository failed on Git versions before 2.14. For older Git versions, we now warn the caller that the safeguard is not active. (#3347)

• A regression introduced in v0.11.1 prevented `save` from committing changes under a subdirectory when the subdirectory was specified as a path argument. (#3106)

• A workaround introduced in v0.11.1 made it possible for `save` to do a partial commit with an annex file that has gone below the `annex.largefiles` threshold. The logic of this workaround was faulty, leading to files being displayed as `typechanged` in the index following the commit. (#3365)

• The `resolve_path()` helper confused paths that had a semicolon for SSH RIs. (#3425)

• The detection of SSH RIs has been improved. (#3425)

Enhancements and new features

• The internal command runner was too aggressive in its decision to sleep. (#3322)

• The “INFO” label in log messages now retains the default text color for the terminal rather than using white, which only worked well for terminals with dark backgrounds. (#3334)
• A short flag `-R` is now available for the `--recursion-limit` flag, a flag shared by several subcommands. (#3340)

• The authentication logic for create-sibling-github has been revamped and now supports 2FA. (#3180)

• New configuration option `datalad.ui.progressbar` can be used to configure the default backend for progress reporting (“none”, for example, results in no progress bars being shown). (#3396)

• A new progress backend, available by setting `datalad.ui.progressbar` to “log”, replaces progress bars with a log message upon completion of an action. (#3396)

• DataLad learned to consult the `NO_COLOR` environment variable and the new `datalad.ui.color` configuration option when deciding to color output. The default value, “auto”, retains the current behavior of coloring output if attached to a TTY (#3407).

• `clean` now removes annex transfer directories, which is useful for cleaning up failed downloads. (#3374)

• `clone` no longer refuses to clone into a local path that looks like a URL, making its behavior consistent with `git clone`. (#3425)

• `wtf`
  – Learned to fall back to the `dist` package if `platform.dist`, which has been removed in the yet-to-be-release Python 3.8, does not exist. (#3439)
  – Gained a `--section` option for limiting the output to specific sections and a `--decor` option, which currently knows how to format the output as GitHub’s `<details>` section. (#3440)

### 1.1.42 0.11.4 (Mar 18, 2019) – get-ready

Largely a bug fix release with a few enhancements

**Important**

• 0.11.x series will be the last one with support for direct mode of `git-annex` which is used on crippled (no symlinks and no locking) filesystems. v7 repositories should be used instead.

**Fixes**

• Extraction of `.gz` files is broken without p7zip installed. We now abort with an informative error in this situation. (#3176)

• Committing failed in some cases because we didn’t ensure that the path passed to `git read-tree --index-output=...` resided on the same filesystem as the repository. (#3181)

• Some pointless warnings during metadata aggregation have been eliminated. (#3186)

• With Python 3 the LORIS token authenticator did not properly decode a response (#3205).

• With Python 3 downloaders unnecessarily decoded the response when getting the status, leading to an encoding error. (#3210)

• In some cases, our internal command Runner did not adjust the environment’s `PWD` to match the current working directory specified with the `cwd` parameter. (#3215)

• The specification of the `pyliblzma` dependency was broken. (#3220)

• `search` displayed an uninformative blank log message in some cases. (#3222)
• The logic for finding the location of the aggregate metadata DB anchored the search path incorrectly, leading to a spurious warning. (#3241)

• Some progress bars were still displayed when stdout and stderr were not attached to a tty. (#3281)

• Check for stdin/out/err to not be closed before checking for .isatty. (#3268)

Enhancements and new features

• Creating a new repository now aborts if any of the files in the directory are tracked by a repository in a parent directory. (#3211)

• run learned to replace the {tmpdir} placeholder in commands with a temporary directory. (#3223)

• duecredit support has been added for citing DataLad itself as well as datasets that an analysis uses. (#3184)

• The eval_results interface helper unintentionally modified one of its arguments. (#3249)

• A few DataLad constants have been added, changed, or renamed (#3250):
  – HANDLE_META_DIR is now DATALAD_DOTDIR. The old name should be considered deprecated.
  – METADATA_DIR now refers to DATALAD_DOTDIR/metadata rather than DATALAD_DOTDIR/meta (which is still available as OLDMETADATA_DIR).
  – The new DATASET_METADATA_FILE refers to METADATA_DIR/dataset.json.
  – The new DATASET_CONFIG_FILE refers to DATALAD_DOTDIR/config.
  – METADATA_FILENAME has been renamed to OLDMETADATA_FILENAME.

1.1.43 0.11.3 (Feb 19, 2019) – read-me-gently

Just a few of important fixes and minor enhancements.

Fixes

• The logic for setting the maximum command line length now works around Python 3.4 returning an unreasonably high value for SC_ARG_MAX on Debian systems. (#3165)

• DataLad commands that are conceptually “read-only”, such as datalad ls -L, can fail when the caller lacks write permissions because git-annex tries merging remote git-annex branches to update information about availability. DataLad now disables annex.merge-annex-branches in some common “read-only” scenarios to avoid these failures. (#3164)

Enhancements and new features

• Accessing an “unbound” dataset method now automatically imports the necessary module rather than requiring an explicit import from the Python caller. For example, calling Dataset.add no longer needs to be preceded by from datalad.distribution.add import Add or an import of datalad.api. (#3156)

• Configuring the new variable datalad.ssh.identityfile instructs DataLad to pass a value to the -i option of ssh. (#3149) (#3168)

1.1.44 0.11.2 (Feb 07, 2019) – live-long-and-prosper

A variety of bugfixes and enhancements
Major refactoring and deprecations

- All extracted metadata is now placed under git-annex by default. Previously files smaller than 20 kb were stored in git. (#3109)
- The function `datalad.cmd.get_runner` has been removed. (#3104)

Fixes

- Improved handling of long commands:
  - The code that inspected `SC_ARG_MAX` didn’t check that the reported value was a sensible, positive number. (#3025)
  - More commands that invoke `git` and `git-annex` with file arguments learned to split up the command calls when it is likely that the command would fail due to exceeding the maximum supported length. (#3138)
- The `setup_yoda_dataset` procedure created a malformed `.gitattributes` line. (#3057)
- `download-url` unnecessarily tried to infer the dataset when `--no-save` was given. (#3029)
- `rerun` aborted too late and with a confusing message when a ref specified via `--onto` didn’t exist. (#3019)
- `run`:
  - `run` didn’t preserve the current directory prefix (".") on inputs and outputs, which is problematic if the caller relies on this representation when formatting the command. (#3037)
  - Fixed a number of unicode py2-compatibility issues. (#3035) (#3046)
  - To proceed with a failed command, the user was confusingly instructed to use `save` instead of `add` even though `run` uses `add` underneath. (#3080)
- Fixed a case where the helper class for checking external modules incorrectly reported a module as unknown. (#3051)
- `add-archive-content` mishandled the archive path when the leading path contained a symlink. (#3058)
- Following denied access, the credential code failed to consider a scenario, leading to a type error rather than an appropriate error message. (#3091)
- Some tests failed when executed from a `git worktree` checkout of the source repository. (#3129)
- During metadata extraction, batched annex processes weren’t properly terminated, leading to issues on Windows. (#3137)
- `add` incorrectly handled an “invalid repository” exception when trying to add a submodule. (#3141)
- Pass `GIT_SSH_VARIANT=ssh` to git processes to be able to specify alternative ports in SSH urls

Enhancements and new features

- `search` learned to suggest closely matching keys if there are no hits. (#3089)
- `create-sibling`:
  - gained a `--group` option so that the caller can specify the file system group for the repository. (#3098)
  - now understands SSH URLs that have a port in them (i.e. the “ssh://[[user@[]]host.xz[[]]:port[]]/path/to/repo.git/” syntax mentioned in man `git-fetch`). (#3146)
- Interface classes can now override the default renderer for summarizing results. (#3061)
• run:
  – `--input` and `--output` can now be shortened to `-i` and `-o`. (#3066)
  – Placeholders such as `{inputs}` are now expanded in the command that is shown in the commit message subject. (#3065)
  – `interface.run.run_command` gained an `extra_inputs` argument so that wrappers like `datalad-container` can specify additional inputs that aren’t considered when formatting the command string. (#3038)
  – “–” can now be used to separate options for `run` and those for the command in ambiguous cases. (#3119)

• The utilities `create_tree` and `ok_file_has_content` now support “.gz” files. (#3049)

• The Singularity container for 0.11.1 now uses `nd_freeze` to make its builds reproducible.

• A `publications` page has been added to the documentation. (#3099)

• `GitRepo.set_gitattributes` now accepts a `mode` argument that controls whether the `.gitattributes` file is appended to (default) or overwritten. (#3115)

• `datalad --help` now avoids using `man` so that the list of subcommands is shown. (#3124)

**1.1.45 0.11.1 (Nov 26, 2018) – v7-better-than-v6**

Rushed out bugfix release to stay fully compatible with recent `git-annex` which introduced v7 to replace v6.

**Fixes**

• `install`: be able to install recursively into a dataset (#2982)

• `save`: be able to commit/save changes whenever files potentially could have swapped their storage between git and annex (#1651) (#2752) (#3009)

• [aggregate-metadata][]:
  – dataset’s itself is now not “aggregated” if specific paths are provided for aggregation (#3002). That resolves the issue of `-r` invocation aggregating all subdatasets of the specified dataset as well
  – also compare/verify the actual content checksum of aggregated metadata while considering subdataset metadata for re-aggregation (#3007)

• `annex` commands are now chunked assuming 50% “safety margin” on the maximal command line length. Should resolve crashes while operating ot too many files at ones (#3001)

• `run` sidecar config processing (#2991)

• no double trailing period in docs (#2984)

• correct identification of the repository with symlinks in the paths in the tests (#2972)

• re-evaluation of dataset properties in case of dataset changes (#2946)

• [text2git][] procedure to use `ds.repo.set_gitattributes` (#2974) (#2954)

• Switch to use plain `os.getcwd()` if inconsistency with env var `PWD` is detected (#2914)

• Make sure that credential defined in env var takes precedence (#2960) (#2950)
Enhancements and new features

- `shub://datalad/datalad:git-annex-dev` provides a Debian buster Singularity image with build environment for `git-annex`. `tools/bisect-git-annex` provides a helper for running `git bisect` on `git-annex` using that Singularity container (#2995)
- Added `.zenodo.json` for better integration with Zenodo for citation
- `run-procedure` now provides names and help messages with a custom renderer for (#2993)
- Documentation: point to `datalad-revolution` extension (prototype of the greater DataLad future)
- `run`
  - support injecting of a detached command (#2937)
- `annex` metadata extractor now extracts `annex.key` metadata record. Should allow now to identify uses of specific files etc (#2952)
- Test that we can install from http://datasets.datalad.org
- Proper rendering of `CommandError` (e.g. in case of “out of space” error) (#2958)

1.1.46 0.11.0 (Oct 23, 2018) – Soon-to-be-perfect

git-annex 6.20180913 (or later) is now required - provides a number of fixes for v6 mode operations etc.

Major refactoring and deprecations

- `datalad.consts.LOCAL_CENTRAL_PATH` constant was deprecated in favor of `datalad.locaions.default-dataset configuration` variable (#2835)

Minor refactoring

- "notneeded" messages are no longer reported by default results renderer
- `run` no longer shows commit instructions upon command failure when `explicit` is true and no outputs are specified (#2922)
- `get_git_dir` moved into GitRepo (#2886)
- `_gitpy_custom_call` removed from GitRepo (#2894)
- `GitRepo.get_merge_base` argument is now called `commitishes` instead of `treeishes` (#2903)

Fixes

- `update` should not leave the dataset in non-clean state (#2858) and some other enhancements (#2859)
- Fixed chunking of the long command lines to account for decorators and other arguments (#2864)
- Progress bar should not crash the process on some missing progress information (#2891)
- Default value for `jobs` set to be "auto" (not None) to take advantage of possible parallel get if in `-g` mode (#2861)
- `wtf` must not crash if `git-annex` is not installed etc (#2865), (#2865), (#2918), (#2917)
- Fixed paths (with spaces etc) handling while reporting annex error output (#2892), (#2893)
datalad Documentation, Release 0.15.5

- *__del__* should not access .repo but _repo to avoid attempts for reinstantiation etc (#2901)
- Fix up submodule .git right in GitRepo.add_submodule to avoid added submodules being non git-annex friendly (#2909), (#2904)
- run-procedure (#2905)
  - now will provide dataset into the procedure if called within dataset
  - will not crash if procedure is an executable without .py or .sh suffixes
- Use centralized .gitattributes handling while setting annex backend (#2912)
- GlobbedPaths.expand(..., full=True) incorrectly returned relative paths when called more than once (#2921)

Enhancements and new features

- Report progress on clone when installing from “smart” git servers (#2876)
- Stale/unused sth_like_file_has_content was removed (#2860)
- Enhancements to search to operate on “improved” metadata layouts (#2878)
- Output of git annex init operation is now logged (#2881)
- New
  - GitRepo.cherry_pick (#2900)
  - GitRepo.format_commit (#2902)
- run-procedure (#2905)
  - procedures can now recursively be discovered in subdatasets as well. The uppermost has highest priority
  - Procedures in user and system locations now take precedence over those in datasets.

1.1.47 0.10.3.1 (Sep 13, 2018) – Nothing-is-perfect

Emergency bugfix to address forgotten boost of version in datalad/version.py.

1.1.48 0.10.3 (Sep 13, 2018) – Almost-perfect

This is largely a bugfix release which addressed many (but not yet all) issues of working with git-annex direct and version 6 modes, and operation on Windows in general. Among enhancements you will see the support of public S3 buckets (even with periods in their names), ability to configure new providers interactively, and improved egrep search backend.

Although we do not require with this release, it is recommended to make sure that you are using a recent git-annex since it also had a variety of fixes and enhancements in the past months.

Fixes

- Parsing of combined short options has been broken since DataLad v0.10.0. (#2710)
- The datalad save instructions shown by datalad run for a command with a non-zero exit were incorrectly formatted. (#2692)
- Decompression of zip files (e.g., through datalad add-archive-content) failed on Python 3. (#2702)
• Windows:
  – colored log output was not being processed by colorama. (#2707)
  – more codepaths now try multiple times when removing a file to deal with latency and locking issues on Windows. (#2795)

• Internal git fetch calls have been updated to work around a GitPython BadName issue. (#2712), (#2794)

• The progress bar for annex file transferring was unable to handle an empty file. (#2717)

• datalad add-readme halted when no aggregated metadata was found rather than displaying a warning. (#2731)

• datalad rerun failed if --onto was specified and the history contained no run commits. (#2761)

• Processing of a command’s results failed on a result record with a missing value (e.g., absent field or subfield in metadata). Now the missing value is rendered as “N/A”. (#2725)

• A couple of documentation links in the “Delineation from related solutions” were misformatted. (#2773)

• With the latest git-annex, several known V6 failures are no longer an issue. (#2777)

• In direct mode, commit changes would often commit annexed content as regular Git files. A new approach fixes this and resolves a good number of known failures. (#2770)

• The reporting of command results failed if the current working directory was removed (e.g., after an unsuccessful install). (#2788)

• When installing into an existing empty directory, datalad install removed the directory after a failed clone. (#2788)

• datalad run incorrectly handled inputs and outputs for paths with spaces and other characters that require shell escaping. (#2798)

• Globbing inputs and outputs for datalad run didn’t work correctly if a subdataset wasn’t installed. (#2796)

• Minor (in)compatibility with git 2.19 - (no) trailing period in an error message now. (#2815)

Enhancements and new features

• Anonymous access is now supported for S3 and other downloaders. (#2708)

• A new interface is available to ease setting up new providers. (#2708)

• Metadata: changes to egrep mode search (#2735)
  – Queries in egrep mode are now case-sensitive when the query contains any uppercase letters and are case-insensitive otherwise. The new mode egrepcs can be used to perform a case-sensitive query with all lower-case letters.
  – Search can now be limited to a specific key.
  – Multiple queries (list of expressions) are evaluated using AND to determine whether something is a hit.
  – A single multi-field query (e.g., pa*:findme) is a hit, when any matching field matches the query.
  – All matching key/value combinations across all (multi-field) queries are reported in the query_matched result field.
  – egrep mode now shows all hits rather than limiting the results to the top 20 hits.

• The documentation on how to format commands for datalad run has been improved. (#2703)

• The method for determining the current working directory on Windows has been improved. (#2707)
• `datalad --version` now simply shows the version without the license. (#2733)

• `datalad export-archive` learned to export under an existing directory via its `--filename` option. (#2723)

• `datalad export-to-figshare` now generates the zip archive in the root of the dataset unless `--filename` is specified. (#2723)

• After importing `datalad.api.help(datalad.api)` (or `datalad.api?` in IPython) now shows a summary of the available DataLad commands. (#2728)

• Support for using `datalad` from IPython has been improved. (#2722)

• `datalad wtf` now returns structured data and reports the version of each extension. (#2741)

• The internal handling of gitattributes information has been improved. A user-visible consequence is that `datalad create --force` no longer duplicates existing attributes. (#2744)

• The “annex” metadata extractor can now be used even when no content is present. (#2724)

• The `add_url_to_file` method (called by commands like `datalad download-url` and `datalad add-archive-content`) learned how to display a progress bar. (#2738)

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**1.1.49 0.10.2 (Jul 09, 2018) – Thesecuriestever**

Primarily a bugfix release to accommodate recent git-annex release forbidding `file://` and `http://localhost/` URLs which might lead to revealing private files if annex is publicly shared.

**Fixes**

• fixed testing to be compatible with recent git-annex (6.20180626)

• `download-url` will now download to current directory instead of the top of the dataset

**Enhancements and new features**

• do not quote ~ in URLs to be consistent with quote implementation in Python 3.7 which now follows RFC 3986

• `run` support for user-configured placeholder values

• documentation on native git-annex metadata support

• handle 401 errors from LORIS tokens

• `yoda` procedure will instantiate `README.md`

• `--discover` option added to `run-procedure` to list available procedures

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**1.1.50 0.10.1 (Jun 17, 2018) – OHBM polish**

The is a minor bugfix release.
Fixes

• Be able to use backports.lzma as a drop-in replacement for pyliblzma.
• Give help when not specifying a procedure name in run-procedure.
• Abort early when a downloader received no filename.
• Avoid rerun error when trying to unlock non-available files.

1.1.51 0.10.0 (Jun 09, 2018) – The Release

This release is a major leap forward in metadata support.

Major refactoring and deprecations

• Metadata
  – Prior metadata provided by datasets under .datalad/meta is no longer used or supported. Metadata must be reaggregated using 0.10 version
  – Metadata extractor types are no longer auto-guessed and must be explicitly specified in datalad.metadata.nativetype config (could contain multiple values)
  – Metadata aggregation of a dataset hierarchy no longer updates all datasets in the tree with new metadata. Instead, only the target dataset is updated. This behavior can be changed via the –update-mode switch. The new default prevents needless modification of (3rd-party) subdatasets.
  – Neuroimaging metadata support has been moved into a dedicated extension: https://github.com/datalad/datalad-neuroimaging

• Crawler
  – moved into a dedicated extension: https://github.com/datalad/datalad-crawler

• export_tarball plugin has been generalized to export_archive and can now also generate ZIP archives.

• By default a dataset X is now only considered to be a super-dataset of another dataset Y, if Y is also a registered subdataset of X.

Fixes

A number of fixes did not make it into the 0.9.x series:

• Dynamic configuration overrides via the –c option were not in effect.
• save is now more robust with respect to invocation in subdirectories of a dataset.
• unlock now reports correct paths when running in a dataset subdirectory.
• get is more robust to path that contain symbolic links.
• symlinks to subdatasets of a dataset are now correctly treated as a symlink, and not as a subdataset
• add now correctly saves staged subdataset additions.
• Running datalad save in a dataset no longer adds untracked content to the dataset. In order to add content a path has to be given, e.g. datalad save .
• wtf now works reliably with a DataLad that wasn’t installed from Git (but, e.g., via pip)
• More robust URL handling in simple_with_archives crawler pipeline.

Enhancements and new features

• Support for DataLad extension that can contribute API components from 3rd-party sources, incl. commands, metadata extractors, and test case implementations. See https://github.com/datalad/datalad-extension-template for a demo extension.

• Metadata (everything has changed!)
  – Metadata extraction and aggregation is now supported for datasets and individual files.
  – Metadata query via search can now discover individual files.
  – Extracted metadata can now be stored in XZ compressed files, is optionally annexed (when exceeding a configurable size threshold), and obtained on demand (new configuration option `datalad.metadata.create-aggregate-annex-limit`).
  – Status and availability of aggregated metadata can now be reported via `metadata --get-aggregates`
  – New configuration option `datalad.metadata.maxfieldsize` to exclude too large metadata fields from aggregation.
  – The type of metadata is no longer guessed during metadata extraction. A new configuration option `datalad.metadata.nativetype` was introduced to enable one or more particular metadata extractors for a dataset.
  – New configuration option `datalad.metadata.store-aggregate-content` to enable the storage of aggregated metadata for dataset content (i.e. file-based metadata) in contrast to just metadata describing a dataset as a whole.

• `search` was completely reimplemented. It offers three different modes now:
  – ‘egrep’ (default): expression matching in a plain string version of metadata
  – ‘textblob’: search a text version of all metadata using a fully featured query language (fast indexing, good for keyword search)
  – ‘autofield’: search an auto-generated index that preserves individual fields of metadata that can be represented in a tabular structure (substantial indexing cost, enables the most detailed queries of all modes)

• New extensions:
  – `addurls`, an extension for creating a dataset (and possibly subdatasets) from a list of URLs.
  – `export_to_figshare`
  – `extract_metadata`
  – `add_readme` makes use of available metadata

• By default the wtf extension now hides sensitive information, which can be included in the output by passing `--sensitive=some` or `--sensitive=all`.

• Reduced startup latency by only importing commands necessary for a particular command line call.

• `create`:
  – `-d <parent> --nosave` now registers subdatasets, when possible.
  – `--fake-dates` configures dataset to use fake-dates

• `run` now provides a way for the caller to save the result when a command has a non-zero exit status.
• `datalad rerun` now has a `--script` option that can be used to extract previous commands into a file.

• A DataLad Singularity container is now available on Singularity Hub.

• More casts have been embedded in the use case section of the documentation.

• `datalad --report-status` has a new value ‘all’ that can be used to temporarily re-enable reporting that was disable by configuration settings.

1.1.52 0.9.3 (Mar 16, 2018) – pi+0.02 release

Some important bug fixes which should improve usability

Fixes

• `datalad-archives` special remote now will lock on acquiring or extracting an archive - this allows for it to be used with `-J` flag for parallel operation

• relax introduced in 0.9.2 demand on git being configured for datalad operation - now we will just issue a warning

• `datalad ls` should now list “authored date” and work also for datasets in detached HEAD mode

• `datalad save` will now save original file as well, if file was “git mv”ed, so you can now `datalad run git mv old new` and have changes recorded

Enhancements and new features

• `--jobs` argument now could take `auto` value which would decide on # of jobs depending on the # of available CPUs. `git-annex > 6.20180314` is recommended to avoid regression with `-J`.

• memoize calls to RI meta-constructor – should speed up operation a bit

• DATALAD_SEED environment variable could be used to seed Python RNG and provide reproducible UUIDs etc (useful for testing and demos)

1.1.53 0.9.2 (Mar 04, 2018) – it is (again) better than ever

Largely a bugfix release with a few enhancements.

Fixes

• Execution of external commands (git) should not get stuck when lots of both stdout and stderr output, and should not loose remaining output in some cases

• Config overrides provided in the command line (`-c`) should now be handled correctly

• Consider more remotes (not just tracking one, which might be none) while installing subdatasets

• Compatibility with git 2.16 with some changed behaviors/annotations for submodules

• Fail `remove_if annex drop failed`

• Do not fail operating on files which start with dash (`-`)

• URL unquote paths within S3, URLs and DataLad RIs (///)

• In non-interactive mode fail if authentication/access fails
• Web UI:
  – refactored a little to fix incorrect listing of submodules in subdirectories
  – now auto-focuses on search edit box upon entering the page
• Assure that extracted from tarballs directories have executable bit set

Enhancements and new features

• A log message and progress bar will now inform if a tarball to be downloaded while getting specific files (requires git-annex > 6.20180206)
• A dedicated `datalad rerun` command capable of rerunning entire sequences of previously run commands. Reproducibility through VCS. Use "run" even if not interested in "rerun"
• Alert the user if git is not yet configured but git operations are requested
• Delay collection of previous ssh connections until it is actually needed. Also do not require ‘:’ while specifying ssh host
• AutomagicIO: Added proxying of isfile, lzma.LZMAFile and io.open
• Testing:
  – added DATALAD_DATASETS_TOPURL=http://datasets-tests.datalad.org to run tests against another website to not obscure access stats
  – tests run against temporary HOME to avoid side-effects
  – better unit-testing of interactions with special remotes
• CONTRIBUTING.md describes how to setup and use `git-hub` tool to “attach” commits to an issue making it into a PR
• DATALAD_USE_DEFAULT_GIT env variable could be used to cause DataLad to use default (not the one possibly bundled with git-annex) git
• Be more robust while handling not supported requests by annex in special remotes
• Use of `swallow_logs` in the code was refactored away – less mysteries now, just increase logging level
• `wtf` plugin will report more information about environment, externals and the system

1.1.54  0.9.1 (Oct 01, 2017) – “DATALAD!”(JBTM)

Minor bugfix release

Fixes

• Should work correctly with subdatasets named as numbers of bool values (requires also GitPython >= 2.1.6)
• Custom special remotes should work without crashing with git-annex >= 6.20170924

1.1.55  0.9.0 (Sep 19, 2017) – isn’t it a lucky day even though not a Friday?

Major refactoring and deprecations

• the `files` argument of `save` has been renamed to `path` to be uniform with any other command
• all major commands now implement more uniform API semantics and result reporting. Functionality for modification detection of dataset content has been completely replaced with a more efficient implementation

• `publish` now features a `--transfer-data` switch that allows for a disambiguous specification of whether to publish data – independent of the selection which datasets to publish (which is done via their paths). Moreover, `publish` now transfers data before repository content is pushed.

**Fixes**

• `drop` no longer errors when some subdatasets are not installed

• `install` will no longer report nothing when a Dataset instance was given as a source argument, but rather perform as expected

• `remove` doesn’t remove when some files of a dataset could not be dropped

• `publish`
  – no longer hides error during a repository push
  – publish behaves “correctly” for `--since=` in considering only the differences the last “pushed” state
  – data transfer handling while publishing with dependencies, to github

• improved robustness with broken Git configuration

• `search` should search for unicode strings correctly and not crash

• robustify git-annex special remotes protocol handling to allow for spaces in the last argument

• UI credentials interface should now allow to Ctrl-C the entry

• should not fail while operating on submodules named with numerics only or by bool (true/false) names

• crawl templates should not now override settings for `largefiles` if specified in `.gitattributes`

**Enhancements and new features**

• **Exciting new feature** `run` command to protocol execution of an external command and rerun computation if desired. See screencast

• `save` now uses Git for detecting with sundatasets need to be inspected for potential changes, instead of performing a complete traversal of a dataset tree

• `add` looks for changes relative to the last commited state of a dataset to discover files to add more efficiently

• `diff` can now report untracked files in addition to modified files

• `[uninstall][]` will check itself whether a subdataset is properly registered in a superdataset, even when no superdataset is given in a call

• `subdatasets` can now configure subdatasets for exclusion from recursive installation (datalad-recursiveinstall submodule configuration property)

• precrafted pipelines of `[crawl][]` now will not override annex.largefiles setting if any was set within `.gitattributes` (e.g. by `datalad create --text-no-annex`)

• framework for screencasts: `tools/cast*` tools and sample cast scripts under `doc/casts` which are published at datalad.org/features.html

• new project YouTube channel

• tests failing in direct and/or v6 modes marked explicitly
1.1.56 0.8.1 (Aug 13, 2017) – the best birthday gift

Bugfixes

Fixes

• Do not attempt to update a not installed sub-dataset
• In case of too many files to be specified for get or copy_to, we will make multiple invocations of underlying git-annex command to not overfill command line
• More robust handling of unicode output in terminals which might not support it

Enhancements and new features

• Ship a copy of numpy.testing to facilitate [test][] without requiring numpy as dependency. Also allow to pass to command which test(s) to run
• In get and copy_to provide actual original requested paths, not the ones we deduced need to be transferred, solely for knowing the total

1.1.57 0.8.0 (Jul 31, 2017) – it is better than ever

A variety of fixes and enhancements

Fixes

• publish would now push merged git-annex branch even if no other changes were done
• publish should be able to publish using relative path within SSH URI (git hook would use relative paths)
• publish should better tolerate publishing to pure git and git-annex special remotes

Enhancements and new features

• plugin mechanism came to replace export. See export_tarball for the replacement of export. Now it should be easy to extend datalad’s interface with custom functionality to be invoked along with other commands.
• Minimalistic coloring of the results rendering
• publish/copy_to got progress bar report now and support of --jobs
• minor fixes and enhancements to crawler (e.g. support of recursive removes)

1.1.58 0.7.0 (Jun 25, 2017) – when it works - it is quite awesome!

New features, refactorings, and bug fixes.

Major refactoring and deprecations

• add-sibling has been fully replaced by the siblings command
• create-sibling, and unlock have been re-written to support the same common API as most other commands
Enhancements and new features

- **siblings** can now be used to query and configure a local repository by using the sibling name *here*
- **siblings** can now query and set annex preferred content configuration. This includes *wanted* (as previously supported in other commands), and now also *required*
- New **metadata** command to interface with datasets/files meta-data
- Documentation for all commands is now built in a uniform fashion
- Significant parts of the documentation of been updated
- Instantiate GitPython’s Repo instances lazily

Fixes

- API documentation is now rendered properly as HTML, and is easier to browse by having more compact pages
- Closed files left open on various occasions (Popen PIPEs, etc)
- Restored basic (consumer mode of operation) compatibility with Windows OS

1.1.59 0.6.0 (Jun 14, 2017) – German perfectionism

This release includes a **huge** refactoring to make code base and functionality more robust and flexible
- outputs from API commands could now be highly customized. See **--output-format**, **--report-status**, **--report-type**, and **--report-type** options for **datalad** command.
- effort was made to refactor code base so that underlying functions behave as generators where possible
- input paths/arguments analysis was redone for majority of the commands to provide unified behavior

Major refactoring and deprecations

- **add-sibling** and **rewrite-urls** were refactored in favor of new **siblings** command which should be used for siblings manipulations
- ‘datalad.api.alwaysrender’ config setting/support is removed in favor of new outputs processing

Fixes

- Do not flush manually git index in pre-commit to avoid “Death by the Lock” issue
- Deployed by **publish post-update** hook script now should be more robust (tolerate directory names with spaces, etc.)
- A variety of fixes, see list of pull requests and issues closed for more information

Enhancements and new features

- new **annotate-paths** plumbing command to inspect and annotate provided paths. Use **--modified** to summarize changes between different points in the history
- new **clone** plumbing command to provide a subset (install a single dataset from a URL) functionality of **install**
- new **diff** plumbing command
• new siblings command to list or manipulate siblings
• new subdatasets command to list subdatasets and their properties
• drop and remove commands were refactored
• benchmarks/ collection of Airspeed velocity benchmarks initiated. See reports at http://datalad.github.io/datalad/
• crawler would try to download a new url multiple times increasing delay between attempts. Helps to resolve problems with extended crawls of Amazon S3
• CRCNS crawler pipeline now also fetches and aggregates meta-data for the datasets from datacite
• overall optimisations to benefit from the aforementioned refactoring and improve user-experience
• a few stub and not (yet) implemented commands (e.g. move) were removed from the interface
• Web frontend got proper coloring for the breadcrumbs and some additional caching to speed up interactions. See http://datasets.datalad.org
• Small improvements to the online documentation. See e.g. summary of differences between git/git-annex/datalad

1.1.60 0.5.1 (Mar 25, 2017) – cannot stop the progress

A bugfix release

Fixes

• add was forcing addition of files to annex regardless of settings in .gitattributes. Now that decision is left to annex by default
• tools/testing/run_doc_examples used to run doc examples as tests, fixed up to provide status per each example and not fail at once
• doc/examples
  – 3rdparty_analysis_workflow.sh was fixed up to reflect changes in the API of 0.5.0.
• progress bars
  – should no longer crash datalad and report correct sizes and speeds
  – should provide progress reports while using Python 3.x

Enhancements and new features

• doc/examples
  – nipype_workshop_dataset.sh new example to demonstrate how new super- and sub- datasets were established as a part of our datasets collection

1.1.61 0.5.0 (Mar 20, 2017) – it’s huge

This release includes an avalanche of bug fixes, enhancements, and additions which at large should stay consistent with previous behavior but provide better functioning. Lots of code was refactored to provide more consistent code-base, and some API breakage has happened. Further work is ongoing to standardize output and results reporting (#1350)
Most notable changes

- **requires** `git-annex >= 6.20161210` (or better even `>= 6.20161210` for improved functionality)

- commands should now operate on paths specified (if any), without causing side-effects on other dirty/staged files

  - `save`
    - `--a` is deprecated in favor of `--u` or `--all-updates` so only changes known components get saved, and no new files automagically added
    - `--S` does no longer store the originating dataset in its commit message

- **add**
  - can specify commit/save message with `--m`

- **add-sibling** and **create-sibling**
  - now take the name of the sibling (remote) as `--s (--name)` option, not a positional argument
  - `--publish-depends` to setup publishing data and code to multiple repositories (e.g. github + web-serve) should now be functional see this comment
  - `got --publish-by-default` to specify what refs should be published by default
  - `got --annex-wanted`, `--annex-groupwanted` and `--annex-group` settings which would be used to instruct annex about preferred content. `publish` then will publish data using those settings if wanted is set.
  - `got --inherit` option to automagically figure out url/wanted and other git/annex settings for new remote sub-dataset to be constructed

- **publish**
  - `got --skip-failing refactored into --missing option which could use new feature of create-sibling`
    `--inherit`

Fixes

- More consistent interaction through ssh - all ssh connections go through sshrun shim for a “single point of authentication”, etc.

- More robust `ls` operation outside of the datasets

- A number of fixes for direct and v6 mode of annex

Enhancements and new features

- New `drop` and `remove` commands

- clean
  - `got --what` to specify explicitly what cleaning steps to perform and now could be invoked with `-r`

- `datalad` and `git-annex-remote*` scripts now do not use setuptools entry points mechanism and rely on simple import to shorten start up time

- Dataset is also now using Flyweight pattern, so the same instance is reused for the same dataset

- progressbars should not add more empty lines
Internal refactoring

- Majority of the commands now go through _prep for arguments validation and pre-processing to avoid recursive invocations

1.1.62 0.4.1 (Nov 10, 2016) – CA release

Requires now GitPython >= 2.1.0

Fixes

- save
  - to not save staged files if explicit paths were provided
- improved (but not yet complete) support for direct mode
- update to not crash if some sub-datasets are not installed
- do not log calls to git config to avoid leakage of possibly sensitive settings to the logs

Enhancements and new features

- New rfc822-compliant metadata format
- save
  - -S to save the change also within all super-datasets
- add now has progress-bar reporting
- create-sibling-github to create a :term: sibling of a dataset on github
- OpenfMRI crawler and datasets were enriched with URLs to separate files where also available from openfmri s3 bucket (if upgrading your datalad datasets, you might need to run `git annex enableremote datalad` to make them available)
- various enhancements to log messages
- web interface
  - populates “install” box first thus making UX better over slower connections

1.1.63 0.4 (Oct 22, 2016) – Paris is waiting

Primarily it is a bugfix release but because of significant refactoring of the install and get implementation, it gets a new minor release.

Fixes

- be able to get or install while providing paths while being outside of a dataset
- remote annex datasets get properly initialized
- robust detection of outdated `git-annex`
Enhancements and new features

- interface changes
  - `get --recursion-limit=existing` to not recurse into not-installed subdatasets
  - `get -n` to possibly install sub-datasets without getting any data
  - `install --jobs|-J` to specify number of parallel jobs for annex get call could use (ATM would not work when data comes from archives)
- more (unit-)testing
- documentation: see http://docs.datalad.org/en/latest/basics.html for basic principles and useful shortcuts in referring to datasets
- various webface improvements: breadcrumb paths, instructions how to install dataset, show version from the tags, etc.

1.1.64 0.3.1 (Oct 1, 2016) – what a wonderful week

Primarily bugfixes but also a number of enhancements and core refactorings

Fixes

- do not build manpages and examples during installation to avoid problems with possibly previously outdated dependencies
- `install` can be called on already installed dataset (with `-r` or `-g`)

Enhancements and new features

- complete overhaul of datalad configuration settings handling (see Configuration documentation), so majority of the environment. Now uses git format and stores persistent configuration settings under `.datalad/config` and local within `.git/config` variables we have used were renamed to match configuration names
- `create-sibling` does not now by default upload web front-end
- `export` command with a plug-in interface and `tarball` plugin to export datasets
- in Python, `.api` functions with rendering of results in command line got a `_suffixed sibling, which would render results as well in Python as well (e.g., using `search_` instead of `search` would also render results, not only output them back as Python objects)
- `get`
  - `--jobs` option (passed to annex get) for parallel downloads
  - total and per-download (with git-annex >= 6.20160923) progress bars (note that if content is to be obtained from an archive, no progress will be reported yet)
- `install --reckless` mode option
- `search`
  - highlights locations and fieldmaps for better readability
  - supports `-d^` or `-d///` to point to top-most or centrally installed meta-datasets
  - “complete” paths to the datasets are reported now
– \(-s\) option to specify which fields (only) to search

• various enhancements and small fixes to \textit{meta-data} handling, \texttt{ls}, custom remotes, code-base formatting, down-loaders, etc

• completely switched to \texttt{tqdm} library (\texttt{progressbar} is no longer used/supported)

\subsection*{1.1.65 0.3 (Sep 23, 2016) – winter is coming}

Lots of everything, including but not limited to

• enhanced index viewer, as the one on \url{http://datasets.datalad.org}

• initial new data providers support: Kaggle, BALSA, NDA, NITRC

• initial \textit{meta-data} support and management

• new and/or improved crawler pipelines for BALSA, CRCNS, OpenfMRI

• refactored \texttt{install} command, now with separate \texttt{get}

• some other commands renaming/refactoring (e.g., \texttt{create-sibling})

• \texttt{datalad search} would give you an option to install datalad’s \texttt{super-dataset} under \texttt{~/datalad} if ran outside of a dataset

\subsection*{0.2.3 (Jun 28, 2016) – busy OHBM}

New features and bugfix release

• support of /// urls to point to \url{http://datasets.datalad.org}

• variety of fixes and enhancements throughout

\subsection*{0.2.2 (Jun 20, 2016) – OHBM we are coming!}

New feature and bugfix release

• greatly improved documentation

• publish command API RFing allows for custom options to annex, and uses –to \texttt{REMOTE} for consistent with annex invocation

• variety of fixes and enhancements throughout

\subsection*{0.2.1 (Jun 10, 2016)}

• variety of fixes and enhancements throughout

\subsection*{1.1.66 0.2 (May 20, 2016)}

Major RFing to switch from relying on rdf to git native submodules etc

\subsection*{1.1.67 0.1 (Oct 14, 2015)}

Release primarily focusing on interface functionality including initial publishing
1.2 Acknowledgments

DataLad development is being performed as part of a US-German collaboration in computational neuroscience (CR-CNS) project “DataGit: converging catalogues, warehouses, and deployment logistics into a federated ‘data distribution’” (Halchenko/Hanke), co-funded by the US National Science Foundation (NSF 1429999) and the German Federal Ministry of Education and Research (BMBF 01GQ1411). Additional support is provided by the German federal state of Saxony-Anhalt and the European Regional Development Fund (ERDF), Project: Center for Behavioral Brain Sciences, Imaging Platform

DataLad is built atop the git-annex software that is being developed and maintained by Joey Hess.

1.3 Publications

Further conceptual and technical information on DataLad, and applications built on DataLad, are available from the publications listed below.

The best of both worlds: Using semantic web with JSOB-LD. An example with NIDM Results & DataLad [poster]

- Camille Maumet, Satrajit Ghosh, Yaroslav O. Halchenko, Dorota Jarecka, Nolan Nichols, Jean-Baptist POline, Michael Hanke

One thing to bind them all: A complete raw data structure for auto-generation of BIDS datasets [poster]

- Benjamin Poldrack, Kyle Meyer, Yaroslav O. Halchenko, Michael Hanke

Fantastic containers and how to tame them [poster]

- Yaroslav O. Halchenko, Kyle Meyer, Matt Travers, Dorota Jarecka, Satrajit Ghosh, Jakub Kaczmarzyk, Michael Hanke

YODA: YODA’s Organigram on Data Analysis [poster]

- An outline of a simple approach to structuring and conducting data analyses that aims to tightly connect all their essential ingredients: data, code, and computational environments in a transparent, modular, accountable, and practical way.

- Michael Hanke, Kyle A. Meyer, Matteo Visconti di Oleggio Castello, Benjamin Poldrack, Yaroslav O. Halchenko


Go FAIR with DataLad [talk]

- On DataLad’s capabilities to create and maintain Findable, Accessible, Interoperable, and Re-Usable (FAIR) resources.

- Michael Hanke, Yaroslav O. Halchenko

- Bernstein Conference 2018 workshop: Practical approaches to research data management and reproducibility (slides)

- OpenNeuro kick-off meeting, 2018, Stanford (slide sources)

1.4 Concepts and technologies

1.4.1 Background and motivation
Vision

Data is at the core of science, and unobstructed access promotes scientific discovery through collaboration between data producers and consumers. The last years have seen dramatic improvements in availability of data resources for collaborative research, and new data providers are becoming available all the time.

However, despite the increased availability of data, their accessibility is far from being optimal. Potential consumers of these public datasets have to manually browse various disconnected warehouses with heterogeneous interfaces. Once obtained, data is disconnected from its origin and data versioning is often ad-hoc or completely absent. If data consumers can be reliably informed about data updates at all, review of changes is difficult, and re-deployment is tedious and error-prone. This leads to wasteful friction caused by outdated or faulty data.

The vision for this project is to transform the state of data-sharing and collaborative work by providing uniform access to available datasets – independent of hosting solutions or authentication schemes – with reliable versioning and versatile deployment logistics. This is achieved by means of a dataset handle, a lightweight representation of a dataset that is capable of tracking the identity and location of a dataset’s content as well as carry meta-data. Together with associated software tools, scientists are able to obtain, use, extend, and share datasets (or parts thereof) in a way that is traceable back to the original data producer and is therefore capable of establishing a strong connection between data consumers and the evolution of a dataset by future extension or error correction.

Moreover, DataLad aims to provide all tools necessary to create and publish data distributions — an analog to software distributions or app-stores that provide logistics middleware for software deployment. Scientific communities can use these tools to gather, curate, and make publicly available specialized collections of datasets for specific research topics or data modalities. All of this is possible by leveraging existing data sharing platforms and institutional resources without the need for funding extra infrastructure of duplicate storage. Specifically, this project aims to provide a comprehensive, extensible data distribution for neuroscientific datasets that is kept up-to-date by an automated service.

Technological foundation: git-annex

The outlined task is not unique to the problem of data-sharing in science. Logistical challenges such as delivering data, long-term storage and archiving, identity tracking, and synchronization between multiple sites are rather common. Consequently, solutions have been developed in other contexts that can be adapted to benefit scientific data-sharing.

The closest match is the software tool git-annex. It combines the features of the distributed version control system (dVCS) Git — a technology that has revolutionized collaborative software development – with versatile data access and delivery logistics. Git-annex was originally developed to address use cases such as managing a collection of family pictures at home. With git-annex, any family member can obtain an individual copy of such a picture library — the annex. The annex in this example is essentially an image repository that presents individual pictures to users as files in a single directory structure, even though the actual image file contents may be distributed across multiple locations, including a home-server, cloud-storage, or even off-line media such as external hard-drives.

Git-annex provides functionality to obtain file contents upon request and can prompt users to make particular storage devices available when needed (e.g. a backup hard-drive kept in a fire-proof compartment). Git-annex can also remove files from a local copy of that image repository, for example to free up space on a laptop, while ensuring a configurable level of data redundancy across all known storage locations. Lastly, git-annex is able to synchronize the content of multiple distributed copies of this image repository, for example in order to incorporate images added with the git-annex on the laptop of another family member. It is important to note that git-annex is agnostic of the actual file types and is not limited to images.

We believe that the approach to data logistics taken by git-annex and the functionality it is currently providing are an ideal middleware for scientific data-sharing. Its data repository model annex readily provides the majority of principal features needed for a dataset handle such as history recording, identity tracking, and item-based resource locators. Consequently, instead of a from-scratch development, required features, such as dedicated support for existing data-sharing portals and dataset meta-information, can be added to a working solution that is already in production for several years. As a result, DataLad focuses on the expansion of git-annex’s functionality and the development of tools
that build atop Git and git-annex and enable the creation, management, use, and publication of dataset handles and collections thereof.

**Objective**

Building atop git-annex, DataLad aims to provide a single, uniform interface to access data from various data-sharing initiatives and data providers, and functionality to create, deliver, update, and share datasets for individuals and portal maintainers. As a command-line tool, it provides an abstraction layer for the underlying Git-based middleware implementing the actual data logistics, and serves as a foundation for other future user front-ends, such as a web-interface.

**1.4.2 Delineation from related solutions**

To our knowledge, there is no other effort with a scope as broad as DataLad’s. DataLad aims to unify access to vast arrays of (scientific) data in a domain and data modality agnostic fashion with as few and universally available software dependencies as possible.

The most comparable project regarding the idea of federating access to various data providers is the iRODS-based INCF Dataspase project. IRODS is a powerful, NSF-supported framework, but it requires non-trivial deployment and management procedures. As a representative of data grid technology, it is more suitable for an institutional deployment, as data access, authentication, permission management, and versioning are complex and not-feasible to be performed directly by researchers. DataLad on the other hand federates institutionally hosted data, but in addition enables individual researchers and small labs to contribute datasets to the federation with minimal cost and without the need for centralized coordination and permission management.

**Data catalogs**

Existing data-portals, such as DataDryad, or domain-specific ones (e.g. Human Connectome, OpenfMRI), concentrate on collecting, cataloging, and making data available. They offer an abstraction from local data management peculiarities (organization, updates, sharing). Ad-hoc collections of pointers to available data, such as reddit datasets and Inside-R datasets, do not provide any unified interface to assemble and manage such data. Data portals can be used as seed information and data providers for DataLad. These portals could in turn adopt DataLad to expose readily usable data collections via a federated infrastructure.

**Data delivery/management middleware**

Even though there are projects to manage data directly with dVCS (e.g. Git), such as the Rdatasets Git repository this approach does not scale, for example to the amount of data typically observed in a scientific context. DataLad uses git-annex to support managing large amounts of data with Git, while avoiding the scalability issues of putting data directly into Git repositories.

In scientific software development, frequently using Git for source code management, many projects are also confronted with the problem of managing large data arrays needed, for example, for software testing. An exemplar project is ITK Data which is conceptually similar to git-annex: data content is referenced by unique keys (checksums), which are made redundantly available through multiple remote key-store farms and can be obtained using specialized functionality in the CMake software build system. However, the scope of this project is limited to software QA, and only provides an ad-hoc collection of guidelines and supporting scripts.

The git-annex website provides a comparison of Git-annex to other available distributed data management tools, such as git-media, git-fat, and others. None of the alternative frameworks provides all of the features of git-annex, such as integration with native Git workflows, distributed redundant storage, and partial checkouts in one project. Additional features of git-annex which are not necessarily needed by DataLad (git-annex assistant, encryption support, etc.) make it even more appealing for extended coverage of numerous scenarios. Moreover, neither of the alternative solutions has already reached a maturity, availability, and level of adoption that would be comparable to that of git-annex.
**Git/Git-annex/DataLad**

Although it is possible, and intended, to use DataLad without ever invoking git or git-annex commands directly, it is useful to appreciate that DataLad is built atop of very flexible and powerful tools. Knowing basics of git and git-annex in addition to DataLad helps to not only make better use of DataLad but also to enable more advanced and more efficient data management scenarios. DataLad makes use of lower-level configuration and data structures as much as possible. Consequently, it is possible to manipulate DataLad datasets with low-level tools if needed. Moreover, DataLad datasets are compatible with tools and services designed to work with plain Git repositories, such as the popular GitHub service.

To better illustrate the different scopes, the following table provides an overview of the features that are contributed by each software technology layer.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Git</th>
<th>Git-annex</th>
<th>DataLad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version control (text, code)</td>
<td>✓</td>
<td>✓ can mix</td>
<td>✓ can mix</td>
</tr>
<tr>
<td>(not advised)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auto-crawling available</td>
<td>✓ RSS feeds</td>
<td>✓ flexible</td>
<td></td>
</tr>
<tr>
<td>resources</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unified dataset handling</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• recursive operation on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>datasets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• seamless operation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>across datasets boundaries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• meta-data support</td>
<td>✓ per-file</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• meta-data aggregation</td>
<td></td>
<td>✓ flexible</td>
<td></td>
</tr>
<tr>
<td>Unified authentication</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>interface</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 1.4.3 Basic principles

DataLad is designed to be used both as a command-line tool, and as a Python module. The sections *Command line reference* and *Python module reference* provide detailed description of the commands and functions of the two interfaces. This section presents common concepts. Although examples will frequently be presented using command line interface commands, all functionality with identically named functions and options are available through Python API as well.

**Datasets**

A DataLad *dataset* is a Git repository that may or may not have a data *annex* that is used to manage data referenced in a dataset. In practice, most DataLad datasets will come with an annex.
Types of IDs used in datasets

Four types of unique identifiers are used by DataLad to enable identification of different aspects of datasets and their components.

**Dataset ID** A UUID that identifies a dataset as a whole across its entire history and flavors. This ID is stored in a dataset's own configuration file (`<dataset root>/.datalad/config`) under the configuration key `datalad.dataset.id`. As this configuration is stored in a file that is part of the Git history of a dataset, this ID is identical for all “clones” of a dataset and across all its versions. If the purpose or scope of a dataset changes enough to warrant a new dataset ID, it can be changed by altering the dataset configuration setting.

**Annex ID** A UUID assigned to an annex of each individual clone of a dataset repository. Git-annex uses this UUID to track file content availability information. The UUID is available under the configuration key `annex.uuid` and is stored in the configuration file of a local clone (`<dataset root>/.git/config`). A single dataset instance (i.e. clone) can only have a single annex UUID, but a dataset with multiple clones will have multiple annex UUIDs.

**Commit ID** A Git hexsha or tag that identifies a version of a dataset. This ID uniquely identifies the content and history of a dataset up to its present state. As the dataset history also includes the dataset ID, a commit ID of a DataLad dataset is unique to a particular dataset.

**Content ID** Git-annex key (typically a checksum) assigned to the content of a file in a dataset’s annex. The checksum reflects the content of a file, not its name. Hence the content of multiple identical files in a single (or across) dataset(s) will have the same checksum. Content IDs are managed by Git-annex in a dedicated annex branch of the dataset’s Git repository.

Dataset nesting

Datasets can contain other datasets (subdatasets), which can in turn contain subdatasets, and so on. There is no limit to the depth of nesting datasets. Each dataset in such a hierarchy has its own annex and its own history. The parent or superdataset only tracks the specific state of a subdataset, and information on where it can be obtained. This is a powerful yet lightweight mechanism for combining multiple individual datasets for a specific purpose, such as the combination of source code repositories with other resources for a tailored application. In many cases DataLad can work with a hierarchy of datasets just as if it were a single dataset. Here is a demo:

```
~ % datalad create demo
[INFO ] Creating a new annex repo at /demo/demo
create(ok): /demo/demo (dataset)
~ % cd demo

A DataLad dataset is just a Git repo with some initial configuration

~/demo % git log --oneline
472e34b (HEAD -> master) [DATALAD] new dataset
f968257 [DATALAD] Set default backend for all files to be MD5E

We can generate nested datasets, by telling DataLad to register a new dataset in a parent dataset

~/demo % datalad create -d . sub1
[INFO ] Creating a new annex repo at /demo/demo/sub1
add(ok): sub1 (dataset) [added new subdataset]
add(notneeded): sub1 (dataset) [nothing to add from /demo/demo/sub1]
add(notneeded): .gitmodules (file) [already included in the dataset]
save(ok): /demo/demo (dataset)
create(ok): sub1 (dataset)
action summary:
```

(continues on next page)
A subdataset is nothing more than regular Git submodule

```
~/demo % git submodule
5f0cddf2026e3fb4864139f27e7415fd72c7d4d0 sub1 (heads/master)
```

Of course subdatasets can be nested

```
~/demo % datalad create -d . sub1/justadir/sub2
[INFO ] Creating a new annex repo at /demo/demo/sub1/justadir/sub2
add(ok): sub1/justadir/sub2 (dataset) [already known subdataset]
add(notneeded): sub1/justadir/sub2 (dataset) [nothing to add from /demo/demo/sub1/
    --justadir/sub2]
add(notneeded): sub1/.gitmodules (file) [already included in the dataset]
add(notneeded): sub1 (dataset) [already known subdataset]
save(ok): /demo/demo/sub1 (dataset)
save(ok): /demo/demo (dataset)
create(ok): sub1/justadir/sub2 (dataset)
action summary:
    add (notneeded: 3, ok: 1)
    create (ok: 1)
    save (ok: 2)
```

Unlike Git, DataLad automatically takes care of committing all changes associated with the added subdataset up to the given parent dataset

```
~/demo % git status
On branch master
nothing to commit, working tree clean
```

Let's create some content in the deepest subdataset

```
~/demo % mkdir sub1/justadir/sub2/anotherdir
~/demo % touch sub1/justadir/sub2/anotherdir/afile
```

Git can only tell us that something underneath the top-most subdataset was modified

```
~/demo % git status
On branch master
Changes not staged for commit:
 (use "git add <file>..." to update what will be committed)
 (use "git checkout -- <file>..." to discard changes in working directory)
 (commit or discard the untracked or modified content in submodules)
     modified:   sub1 (untracked content)
no changes added to commit (use "git add" and/or "git commit -a")
```

DataLad saves us from further investigation

```
~/demo % datalad diff -r
modified(dataset): sub1
modified(dataset): sub1/justadir/sub2
untracked(directory): sub1/justadir/sub2/anotherdir
```
Like Git, it can report individual untracked files, but also across repository boundaries

```bash
~/demo % datalad diff -r --report-untracked all
 modified(dataset): subl
 modified(dataset): subl/justadir/sub2
   untracked(file): subl/justadir/sub2/anotherdir/afile
```

Adding this new content with Git or git-annex would be an exercise

```bash
~/demo % git add subl/justadir/sub2/anotherdir/afile
fatal: Pathspec 'subl/justadir/sub2/anotherdir/afile' is in submodule 'subl'
```

DataLad does not require users to determine the correct repository in the tree

```bash
~/demo % datalad add -d . subl/justadir/sub2/anotherdir/afile
add(ok): subl/justadir/sub2/anotherdir/afile (file)
 save(ok): /demo/demo/subl/justadir/sub2 (dataset)
 save(ok): /demo/demo/subl (dataset)
 save(ok): /demo/demo (dataset)
action summary:
  add (ok: 1)
  save (ok: 3)
```

Again, all associated changes in the entire dataset tree, up to the given parent dataset, were committed

```bash
~/demo % git status
On branch master
nothing to commit, working tree clean
```

DataLad’s ‘diff’ is able to report the changes from these related commits throughout the repository tree

```bash
~/demo % datalad diff --revision @~1 -r
 modified(dataset): subl
 modified(dataset): subl/justadir/sub2
   added(file): subl/justadir/sub2/anotherdir/afile
```

Dataset collections

A superdataset can also be seen as a curated collection of datasets, for example, for a certain data modality, a field of science, a certain author, or from one project (maybe the resource for a movie production). This lightweight coupling between super and subdatasets enables scenarios where individual datasets are maintained by a disjoint set of people, and the dataset collection itself can be curated by a completely independent entity. Any individual dataset can be part of any number of such collections.

Benefiting from Git’s support for workflows based on decentralized “clones” of a repository, DataLad’s datasets can be (re-)published to a new location without loosing the connection between the “original” and the new “copy”. This is extremely useful for collaborative work, but also in more mundane scenarios such as data backup, or temporary deployment of a dataset on a compute cluster, or in the cloud. Using git-annex, data can also get synchronized across different locations of a dataset (siblings in DataLad terminology). Using metadata tags, it is even possible to configure different levels of desired data redundancy across the network of dataset, or to prevent publication of sensitive data to publicly accessible repositories. Individual datasets in a hierarchy of (sub)datasets need not be stored at the same location. Continuing with an earlier example, it is possible to post a curated collection of datasets, as a superdataset, on Github, while the actual datasets live on different servers all around the world.
Basic command line usage

All of DataLad’s functionality is available through a single command: `datalad`

Running the datalad command without any arguments, gives a summary of basic options, and a list of available subcommands.

```
~ % datalad
          [--dbg] [--idbg] [-c KEY=VALUE]
          [-f {default, json, json_pp, tailored, '<template>'})]
          [--report-status {success, failure, ok, notneeded, impossible, error}]
          [--report-type {dataset, file}]
          [--on-failure {ignore, continue, stop}] [--cmd]
          {create, install, get, publish, uninstall, drop, remove, update, create-
           → sibling, create-sibling-github, unlock, save, search, metadata, aggregate-metadata, test,
           → ls, clean, add-archive-content, download-url, run, rerun, addurls, export-archive, extract-
           → metadata, export-to-figshare, no-annex, wtf, add-readme, annotate-paths, clone, create-
           → test-dataset, diff, siblings, sshrun, subdatasets}
... 
[ERROR ] Please specify the command
~ % #
```

More comprehensive information is available via the –help long-option (we will truncate the output here)

```
~ % datalad --help | head -n20
Usage: datalad [global-opts] command [command-opts]

DataLad provides a unified data distribution with the convenience of git-annex repositories as a backend. DataLad command line tools allow to manipulate (obtain, create, update, publish, etc.) datasets and their collections.

*Commands for dataset operations*

create
  Create a new dataset from scratch
install
  Install a dataset from a (remote) source
get
  Get any dataset content (files/directories/subdatasets)
publish
  Publish a dataset to a known sibling
uninstall
  Uninstall subdatasets
```

Getting information on any of the available sub commands works in the same way – just pass –help AFTER the sub-command (output again truncated)

```
~ % datalad create --help | head -n20
          [--nosave] [--annex-version ANNEX_VERSION]
          [--annex-backend ANNEX_BACKEND]
          [--native-metadata-type LABEL] [--shared-access MODE]
          [--git-opts STRING] [--annex-opts STRING]
          [--annex-init-opts STRING] [--text-no-annex]
          [PATH]

Create a new dataset from scratch.
(continues on next page)
```

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This command initializes a new dataset at a given location, or the current directory. The new dataset can optionally be registered in an existing superdataset (the new dataset's path needs to be located within the superdataset for that, and the superdataset needs to be given explicitly). It is recommended to provide a brief description to label the dataset's nature and location, e.g. "Michael's music on black laptop". This helps humans to identify data locations in distributed scenarios. By default an identifier comprised of user and machine name, plus path will be generated.

**API principles**

You can use DataLad’s `install` command to download datasets. The command accepts URLs of different protocols (http, ssh) as an argument. Nevertheless, the easiest way to obtain a first dataset is downloading the default superdataset from https://datasets.datalad.org/ using a shortcut.

**Downloading DataLad’s default superdataset**

https://datasets.datalad.org provides a super-dataset consisting of datasets from various portals and sites. Many of them were crawled, and periodically updated, using `datalad-crawler` extension. The argument `///` can be used as a shortcut that points to the superdataset located at https://datasets.datalad.org/. Here are three common examples in command line notation:

```
datalad install /// installs this superdataset (metadata without subdatasets) in a datasets.datalad.org/ subdirectory under the current directory

datalad install -r ///openfmri installs the openfmri superdataset into an openfmri/ subdirectory. Additionally, the -r flag recursively downloads all metadata of datasets available from http://openfmri.org as subdatasets into the openfmri/ subdirectory

datalad install -g -J3 -r ///labs/haxby installs the superdataset of datasets released by the lab of Dr. James V. Haxby and all subdatasets’ metadata. The -g flag indicates getting the actual data, too. It does so by using 3 parallel download processes (-J3 flag).
```

`datalad search` command, if ran outside of any dataset, will install this default superdataset under a path specified in `datalad.locations.default-dataset configuration` variable (by default $HOME/datalad).

**Downloading datasets via http**

In most places where DataLad accepts URLs as arguments these URLs can be regular http or https protocol URLs. For example:

```
datalad install https://github.com/psychoinformatics-de/studyforrest-data-phase2.git
```

**Downloading datasets via ssh**

DataLad also supports SSH URLs, such as ssh://me@localhost/path.

```
datalad install ssh://me@localhost/path
```

Finally, DataLad supports SSH login style resource identifiers, such as me@localhost:/path.
The `install` and `get` commands might seem confusingly similar at first. Both of them could be used to install any number of subdatasets, and fetch content of the data files. Differences lie primarily in their default behaviour and outputs, and thus intended use. Both `install` and `get` take local paths as their arguments, but their default behavior and output might differ:

- **install** primarily operates and reports at the level of **datasets**, and returns as a result dataset(s) which either were just installed, or were installed previously already under specified locations. So result should be the same if the same `install` command ran twice on the same datasets. It **does not fetch** data files by default.

- **get** primarily operates at the level of **paths** (datasets, directories, and/or files). As a result it returns only what was installed (datasets) or fetched (files). So result of rerunning the same `get` command should report that nothing new was installed or fetched. It **fetches** data files by default.

In how both commands operate on provided paths, it could be said that `install == get -n`, and `install -g == get`. But `install` also has ability to install new datasets from remote locations given their URLs (e.g., https://datasets.datalad.org/ for our super-dataset) and SSH targets (e.g., [login@]host:path) if they are provided as the argument to its call or explicitly as --source option. If `datalad install --source URL DESTINATION` (command line example) is used, then dataset from URL gets installed under PATH. In case of `datalad install URL` invocation, PATH is taken from the last name within URL similar to how `git clone` does it. If former specification allows to specify only a single URL and a PATH at a time, later one can take multiple remote locations from which datasets could be installed.

So, as a rule of thumb – if you want to install from external URL or fetch a sub-dataset without downloading data files stored under annex – use `install`. In Python API `install` is also to be used when you want to receive in output the corresponding Dataset object to operate on, and be able to use it even if you rerun the script. In all other cases, use `get`.

### 1.4.4 Metadata

#### Overview

DataLad has built-in, modular, and extensible support for metadata in various formats. Metadata is extracted from a dataset and its content by one or more extractors that have to be enabled in a dataset’s configuration. Extractors yield metadata in a JSON-LD-like structure that can be arbitrarily complex and deeply nested. Metadata from each extractor is kept unmodified, unmangled, and separate from metadata of other extractors. This design enables tailored applications using particular metadata that can use DataLad as a content-agnostic aggregation and transport layer without being limited or impacted by other metadata sources and schemas.

Extracted metadata is stored in a dataset in (compressed) files using a JSON stream format, separately for metadata describing a dataset as a whole, and metadata describing individual files in a dataset. This limits the amount of metadata that has to be obtained and processed for applications that do not require all available metadata.

DataLad provides a content-agnostic metadata aggregation mechanism that stores metadata of sub-datasets (with arbitrary nesting levels) in a superdataset, where it can then be queried without having the subdatasets locally present.

Lastly, DataLad comes with a `search` command that enable metadata queries via a flexible query language. However, alternative applications for metadata queries (e.g. graph-based queries) can be built on DataLad, by requesting a complete or partial dump of aggregated metadata available in a dataset.
Supported metadata sources

This following sections provide an overview of included metadata extractors for particular types of data structures and file formats. Note that DataLad extension packages, such as the neuroimaging extension, can provide additional extractors for particular domains and formats.

Only annex and datalad_core extractors are enabled by default. Any additional metadata extractor should be enabled by setting the datalad.metadata.nativetype configuration variable via the git config command or by editing .datalad/config directly. For example, git config -f .datalad/config --add datalad.metadata.nativetype audio would add audio metadata extractor to the list.

Annex metadata (annex)

Content tracked by git-annex can have associated metadata records. From DataLad’s perspective, git-annex metadata is just another source of metadata that can be extracted and aggregated.

You can use the git-annex metadata command to assign git-annex metadata. And, if you have a table or records that contain data sources and metadata, you can use datalad addurls to quickly populate a dataset with files and associated git-annex metadata. (/labs/openneurolab/metasearch is an example of such a dataset.)

Pros of git-annex level metadata

- Many git-annex commands, such as git-annex get and git-annex copy, can use metadata to decide which files (keys) to operate on, making it possible to automate file (re)distribution based on their metadata annotation
- Assigned metadata is available for use by git-annex right away without requiring any additional “aggregation” step
- git-annex view can be used to quickly generate completely new layouts of the repository solely based on the metadata fields associated with the files

Cons of git-annex level metadata

- Metadata fields are actually stored per git-annex key rather than per file. If multiple files contain the same content, metadata will be shared among them.
- Files whose content is tracked directly by git cannot have git-annex metadata assigned.
- No per repository/directory metadata, and no mechanism to use/aggregate metadata from sub-datasets
- Field names cannot contain some symbols, such as ‘:’
- Metadata is stored within the git-annex branch, so it is distributed across all clones of the dataset, making it hard to scale for large metadata sizes or to work with sensitive metadata (not intended to be redistributed)
- It is a generic storage with no prescribed vocabulary, making it very flexible but also requiring consistency and harmonization to make the stored metadata useful for search

Example uses of git-annex metadata
Annotating files for different purposes

FreeSurfer project uses git-annex for managing their source code+data base within a single git/git-annex repository. Files necessary for different scenarios (deployment, testing) are annotated and can be fetched selectively for the scenario at hand.

Automating “non-distribution” of sensitive files

In the ReproIn framework for automated conversion of BIDS dataset and in some manually prepared datasets (such as //labs/gobbini/famface/data and //labs/haxby/raiders), we annotated materials that must not be publicly shared with a git-annex metadata field distribution-restrictions. We used the following of values to describe why any particular file (content) should not be redistributed:

- **sensitive** - files which potentially contain participant sensitive information, such as non-defaced anatomicals
- **proprietary** - files which contain proprietary data, which we have no permissions to share (e.g., movie video files)

Having annotated files this way, we could instruct git-annex to publish all but those restricted files to our server: *git annex wanted datalad-public "not metadata=distribution-restrictions=*".*

**Warning:** The above setup depends on *git annex copy --auto* deciding to *not* copy the content. To avoid inadvertently publishing sensitive data, make sure that public targets (“datalad-public” in the example above) do not want the content for another reason, in particular due to numcopies or required content configuration. If numcopies is set to a value greater than 1 (the default) and the requested number of copies cannot be verified, *git annex copy --auto* will transfer the data regardless of the preferred content expression set by the *git annex wanted* call above.

Flexible directory layout

If you are maintaining a collection of music files or PDFs for the lab, you may want to display the files in an alternative or filtered hierarchy. *git-annex view* could be of help. Example:

```
datalad install ///labs/openneurolab/metasearch
cd metasearch
git annex view sex=* handedness=ambidextrous
```

would give you two directories (Male, Female) with only the files belonging to ambidextrous subjects.

Various audio file formats (**audio**)

This extractor uses the *mutagen* package to extract essential metadata from a range of audio file formats. For the most common metadata properties a constrained vocabulary, based on the *Music Ontology* is employed.

**datacite.org compliant datasets (**datacite**)

This extractor can handle dataset-level metadata following the *datacite.org* specification. No constrained vocabulary is identified at the moment.
Datalad’s internal metadata storage (datalad_core)

This extractor can express Datalad’s internal metadata representation, such as the relationship of a super- and a sub-dataset. It uses DataLad’s own constrained vocabulary.

RFC822-compliant metadata (datalad_rfc822)

This is a custom metadata format, inspired by the standard used for Debian software packages that is particularly suited for manual entry. This format is a good choice when metadata describing a dataset as a whole cannot be obtained from some other structured format. The syntax is RFC 822-compliant. In other words: this is a text-based format that uses the syntax of email headers. Metadata must be placed in DATASETROOT/.datalad/meta.rfc822 for this format.

Here is an example:

Name: myamazingdataset
Version: 1.0.0-rc3
Description: Basic summary
  A text with arbitrary length and content that can span multiple
  paragraphs (this is a new one)
License: CC0-1.0
The person who associated a work with this deed has dedicated the work to the
public domain by waiving all of his or her rights to the work worldwide under
copyright law, including all related and neighboring rights, to the extent
allowed by law.
.
You can copy, modify, distribute and perform the work, even for commercial
purposes, all without asking permission.
Homepage: http://example.com
Funding: Grandma's and Grandpa's support
Issue-Tracker: https://github.com/datalad/datalad/issues
Cite-As: Mike Author (2016). We made it. The breakthrough journal of unlikely
events. 1, 23-453.
DOI: 10.0000/nothere.48421

The following fields are supported:

**Audience:** A description of the target audience of the dataset.

**Author:** A comma-delimited list of authors of the dataset, preferably in the format. Firstname Lastname <Email Address>

**Cite-as:** Instructions on how to cite the dataset, or a structured citation.

**Description:** Description of the dataset as a whole. The first line should represent a compact short description with no more than 6-8 words.

**DOI:** A digital object identifier for the dataset.

**Funding:** Information on potential funding for the creation of the dataset and/or its content. This field can also be used to acknowledge non-monetary support.

**Homepage:** A URL to a project website for the dataset.

**Issue-tracker:** A URL to an issue tracker where known problems are documented and/or new reports can be submitted.
**License:** A description of the license or terms of use for the dataset. The first lines should be the SPDX License Identifier from the SPDX License List (e.g. “CC0-1.0” or “PPDL-1.0”). More complex licensing situation can be expressed using SPDX License Expressions. Full license texts or term descriptions can be included.

**Maintainer:** Can be used in addition and analog to **Author**, when authors (creators of the data) need to be distinguished from maintainers of the dataset.

**Name:** A short name for the dataset. It may be beneficial to avoid special characters, umlauts, spaces, etc. to enable widespread use of this name for URL, catalog keys, etc. in unmodified form.

**Version:** A version for the dataset. This should be in a format that is alphanumerically sortable and lead to a “greater” version for an update of a dataset.

Metadata keys used by this extractor are defined in DataLad’s own constrained vocabulary.

### Friction-less data packages (**frictionless_datapackage**)  

DataLad has basic support for extraction of essential dataset-level metadata from friction-less data packages (**datapackage.json**) file. Metadata keys are constrained to DataLad’s own vocabulary.

### Exchangeable Image File Format (**exif**)  

The extractor yields EXIF metadata from any compatible file. It uses the W3C EXIF vocabulary (http://www.w3.org/2003/12/exif/).

### Various image/photo formats (**image**)  

Standard image metadata is extractor using the Pillow package. Core metadata is available using an adhoc vocabulary defined by the extractor.

### Extensible Metadata Platform (**xmp**)  

This extractor yields any XMP-compliant metadata from any supported file (e.g. PDFs, photos). XMP metadata uses fully qualified terms from standard vocabularies that are simply passed through by the extractor. At the moment metadata extraction from side-car files is not supported, but would be easy to add.

### Metadata aggregation and query

Metadata aggregation can be performed with the **aggregate-metadata** command. Aggregation is done for two interrelated but distinct reasons:

- Fast uniform metadata access, independent of local data availability
- Comprehensive data discovery without access to or knowledge of individual datasets

In an individual dataset, metadata aggregation engages any number of enabled metadata extractors to build a JSON-LD based metadata representation that is separate from the original data files. These metadata objects are added to the dataset and are tracked with the same mechanisms that are used for any other dataset content. Based on this metadata, DataLad can provide fast and uniform access to metadata for any dataset component (individual files, subdatasets, the whole dataset itself), based on the relative path of a component within a dataset (available via the **metadata** command). This extracted metadata can be kept or made available locally for any such query, even when it is impossible or undesirable to keep the associated data files around (e.g. due to size constraints).
For any superdataset (a dataset that contains subdatasets as components), aggregation can go one step further. In this case, aggregation imports extracted metadata from subdatasets into the superdataset to offer the just described query feature for any aggregated subdataset too. This works across any number of levels of nesting. For example, a subdataset that contains the aggregated metadata for eight other datasets (that might have never been available locally) can be aggregated into a local superdataset with all its metadata. In that superdataset, a DataLad user is then able to query information on any content of any subdataset, regardless of their actual availability. This principle also allows any user to install the superdataset from https://datasets.datalad.org and perform local and offline queries about any dataset available online from this server.

Besides full access to all aggregated metadata by path (via the `metadata` command), DataLad also comes with a `search` command that provides different search modes to query the entirety of the locally available metadata. Its capabilities include simple keyword searches as well as more complex queries using date ranges or logical conjunctions.

**Internal metadata representation**

**Warning:** The information in this section is meant to provide insight into how DataLad structures extracted and aggregated metadata. However, this representation is not considered stable or part of the public API, hence these data should not be accessed directly. Instead, all metadata access should happen via the `metadata` API command.

A dataset’s metadata is stored in the `.datalad/metadata` directory. This directory contains two main elements:

- a metadata inventory or catalog
- a store for metadata “objects”

**The metadata inventory**

The inventory is kept in a JSON file, presently named `aggregate_v1.json`. It contains a single top-level dictionary/object. Each element in this dictionary represents one subdataset from which metadata has been extracted and aggregated into the dataset at hand. Keys in this dictionary are paths to the respective (sub)datasets (relative to the root of the dataset). If a dataset has no subdataset and metadata extraction was performed, the dictionary will only have a single element under the key `"."`.

Here is an excerpt of an inventory dictionary showing the record of the root dataset itself.

```json
{
  "." : {
    "content_info" : "objects/0c/cn-b046b2c3a5e2b9c5599c980c7b5fab.xz",
    "datalad_version" : "0.10.0.zc4.dev191",
    "dataset_info" : "objects/0c/ds-b046b2c3a5e2b9c5599c980c7b5fab",
    "extractors" : [ "datalad_core", "annex", "bids", "niftii"
      ],
    "id" : "00ce405e-6589-11e8-b749-a0369fb55db0",
    "refcommit" : ...
  }
}
```

(continues on next page)
The record of each dataset contains the following elements:

- **id**: The DataLad dataset UUID of the dataset metadata was extracted and aggregated from.
- **refcommit**: The SHA sum of the last metadata-relevant commit in the history of the dataset metadata was extracted from. Metadata-relevant commits are any commits that modify dataset content that is not exclusively concerning DataLad’s own internal status and configuration.
- **datalad_version**: The version string of the DataLad version that was used to perform the metadata extraction (not necessarily the metadata aggregation, as pre-extracted metadata can be aggregated from other superdatasets for a dataset that is itself not available locally).
- **extractors**: A list with the names of all enabled metadata extractors for this dataset. This list may include names for extractors that are provided by extensions, and may not be available for any given DataLad installation.
- **content_info, dataset_info**: Path to the object files containing the actual metadata on the dataset as a whole, and on individual files in a dataset (content). Paths are to be interpreted relative to the inventory file, and point to the metadata object store.

Read-access to the metadata inventory is available via the `metadata` command and its `--get-aggregates` option.

### The metadata object store

The object store holds the files containing dataset and content metadata for each aggregated dataset. The object store is located in `.datalad/metadata/objects`. However, this directory itself and the subdirectory structure within it have no significance, they are completely defined and exclusively discoverable via the `content_info` and `dataset_info` values in the metadata inventory records.

Metadata objects for datasets and content use a slightly different internal format. Both files could be either compressed (XZ) or uncompressed. Current practice uses compression for content metadata, but not for dataset metadata. Any metadata object file could be directly committed to Git, or it could be tracked via Git-annex. Reasons to choose one over the other could be file size, or privacy concerns.

Read-access to the metadata objects of dataset and individual files is available via the `metadata` command. Importantly, metadata can be requested.

### Metadata objects for datasets

These files have a single top-level JSON object/dictionary as content. A JSON-LD `@content` field is used to assign a semantic markup to allow for programmatic interpretation of metadata as linked data. Any other top-level key identifies the name of a metadata extractor, and the value stored under this key represents the output of the corresponding extractor.

Structure and content of an extractor’s output are unconstrained and completely up to the implementation of that particular extractor. Extractor can report additional JSON-LD context information (but there is no requirement).

The output of one extractor does not interfere or collide with the output of any other extractor.
Metadata objects for content/file

In contrast to metadata objects for entire datasets, these files use a JSON stream format, i.e. one JSON object/dictionary per line (no surrounding list). This makes it possible to process the content line-by-line instead of having to load an entire file (with potentially millions of records).

The only other difference to dataset metadata objects is an additional top-level key `path` that identifies the relative path (relative to the root of its parent dataset) of the file the metadata record is associated with. Otherwise, the extractor-specific metadata structure and content is unconstrained.

Content metadata objects tend to contain massively redundant information (e.g. a dataset with a thousand 12 megapixel images will report the identical resolution information a thousand times). Therefore, content metadata objects are by default XZ compressed – as this compressor is particularly capable discovering such redundancy and yield a very compact file size.

The reason for gathering all metadata into a single file across all content files and metadata extractors is to limit the impact on the performance of the underlying Git repository. Large superdataset could otherwise quickly grow into dimensions where tens of thousands of files would be required just to manage the metadata. Such a configuration would also limit the compatibility of DataLad datasets with constrained storage environments (think e.g. inode limits on super computers), as these files are tracked in Git and would therefore be present in any copy, regardless of whether metadata access is desired or not.

Vocabulary

The following sections describe details and changes in the metadata specifications implemented in datalad.

v2.0

- Current development version that will be released together with DataLad v0.10.

v1.0

- Original implementation that did not really see the light of the day.

1.4.5 Customization and extension of functionality

DataLad provides numerous commands that cover many use cases. However, there will always be a demand for further customization or extensions of built-in functionality at a particular site, or for an individual user. DataLad addresses this need with a mechanism for extending particular Datalad functionality, such as metadata extractor, or providing entire command suites for a specialized purpose.

As the name suggests, a `DataLad extension` package is a proper Python package. Consequently, there is a significant amount of boilerplate code involved in the creation of a new Datalad extension. However, this overhead enables a number of useful features for extension developers:

- extensions can provide any number of additional commands that can be grouped into labeled command suites, and are automatically exposed via the standard DataLad commandline and Python API
- extensions can define `entry_points` for any number of additional metadata extractors that become automatically available to DataLad
- extensions can define `entry_points` for their test suites, such that the standard `datalad test` command will automatically run these tests in addition to the tests shipped with Datalad core
• extensions can ship additional dataset procedures by installing them into a directory `resources/procedures` underneath the extension module directory

Using an extension

A `DataLad extension` is a standard Python package. Beyond installation of the package there is no additional setup required.

Writing your own extensions

A good starting point for implementing a new extension is the “helloworld” demo extension available at https://github.com/datalad/datalad-extension-template. This repository can be cloned and adjusted to suit one’s needs. It includes:

• a basic Python package setup
• simple demo command implementation
• Travis test setup

A more complex extension setup can be seen in the DataLad Neuroimaging extension: https://github.com/datalad/datalad-neuroimaging, including additional metadata extractors, test suite registration, and a sphinx-based documentation setup for a DataLad extension.

As a DataLad extension is a standard Python package, an extension should declare dependencies on an appropriate DataLad version, and possibly other extensions via the standard mechanisms.

1.4.6 Design

The chapter described command API principles and the design of particular subsystems in DataLad.

dataset argument

<table>
<thead>
<tr>
<th>Specification scope and status</th>
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<tbody>
<tr>
<td>This specification describes the current implementation.</td>
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All commands which operate on datasets have a `dataset` argument (`-d` or `--dataset` for the CLI) to identify a single dataset as the context of an operation. If `--dataset` argument is not provided, the context of an operation is command-specific. For example, `clone` command will consider the `dataset` which is being cloned to be the context. But typically, a dataset which current working directory belongs to is the context of an operation. In the latter case, if operation (e.g., `get`) does not find a dataset in current working directory, operation fails with an `NoDatasetFound` error.

Impact on relative path resolution

With one exception, the nature of a provided `dataset` argument does not impact the interpretation of relative paths. Relative paths are always considered to be relative to the process working directory.

The one exception to this rule is passing a `Dataset` object instance as `dataset` argument value in the Python API. In this, and only this, case, a relative path is interpreted as relative to the root of the respective dataset.
Special values

There are some pre-defined “shortcut” values for dataset arguments:

^ Represents to the topmost superdataset that contains the dataset the current directory is part of.

^ Represents the root directory of the dataset the current directory is part of.

/// Represents the “default” dataset located under $HOME/datalad/.

Use cases

Save modification in superdataset hierarchy

Sometimes it is convenient to work only in the context of a subdataset. Executing a `datalad save <subdataset content>` will record changes to the subdataset, but will leave existing superdatasets dirty, as the subdataset state change will not be saved there. Using the `dataset` argument it is possible to redefine the scope of the save operation. For example:

```
datalad save -d^ <subdataset content>
```

will perform the exact same save operation in the subdataset, but additionally save all subdataset state changes in all superdatasets until the root of a dataset hierarchy. Except for the specification of the dataset scope there is no need to adjust path arguments or change the working directory.

Log levels

Log messages are emitted by a wide range of operations within DataLad. They are categorized into distinct levels. While some levels have self-explanatory descriptions (e.g. `warning`, `error`), others are less specific (e.g. `info`, `debug`).

Common principles

Parenthetical log message use the same level When log messages are used to indicate the start and end of an operation, both start and end message use the same log-level.

Use cases

Command execution

For the `WitlessRunner` and its protocols the following log levels are used:

- High-level execution -> `debug`
- Process start/finish -> 8
- Threading and IO -> 5
Drop dataset components

Specification scope and status

This specification is a proposal, subject to review and further discussion.

§1 The **drop** command is the antagonist of **get**. Whatever a *drop* can do, should be undoable by a subsequent **get** (given unchanged remote availability).

§2 Like **get**, **drop** primarily operates on a mandatory path specification (to discover relevant files and subdatasets to operate on).

§3 **drop** has `--what` parameter that serves as an extensible “mode-switch” to cover all relevant scenarios, like ‘drop all file content in the work-tree’ (e.g. `--what files`, default, #5858), ‘drop all keys from any branch’ (i.e. `--what allkeys`, #2328), but also “drop” AKA uninstall entire subdataset hierarchies’ (e.g. `--what all`), or drop preferred content (`--what preferred-content`, #3122).

§4 **drop** prevents data loss by default (#4750). Like **get** it features a `--reckless` “mode-switch” to disable some or all potentially slow safety mechanism, i.e. ‘key available in sufficient number of other remotes’, ‘main or all branches pushed to remote(s)’ (#1142), ‘only check availability of keys associated with the worktree, but not other branches’. “Reckless operation” can be automatic, when following a reckless **get** (#4744).

§5 **drop** properly manages annex lifetime information, e.g. by announcing an annex as dead on removal of a repository (#3887).

§6 Like **get**, **drop** supports parallization #1953

§7 **datalad drop** is not intended to be a comprehensive frontend to **git annex drop** (e.g. limited support for e.g. #1482 outside standard use cases like #2328).

**Note:** It is understood that the current **uninstall** command is largely or completely made obsolete by this **drop** concept.

§8 Given the development in #5842 towards the complete obsolescence of **remove** it becomes necessary to import one of its proposed features:

§9 **drop** should be able to recognize a botched attempt to delete a dataset with a plain `rm -rf`, and act on it in a meaningful way, even if it is just hinting at `chmod + rm -rf`.

**Use cases**

The following use cases operate in the dataset hierarchy depicted below:

```
+ super
  |  dir
  |  + fileD1
  |  + fileD2
  |  + fileS1
  |  + fileS2
  |  + subA
  |  |  + fileA
  |  |  + subsubC
  |  |  |  + fileC
  |  |  + subsubD
```

(continues on next page)
Unless explicitly stated, all command are assumed to be executed in the root of `super`.

- **U1:** `datalad drop fileS1`
  
  Drops the file content of `fileS1` (as currently done by `drop`)

- **U2:** `datalad drop dir`
  
  Drop all file content in the directory `(fileD1,2)`; as currently done by `drop`

- **U3:** `datalad drop subB`
  
  Drop all file content from the entire `subB (fileB)`

- **U4:** `datalad drop subB --what all`
  
  Same as above (default `--what files`), because it is not operating in the context of a superdataset (no automatic upward lookups). Possibly hint at next usage pattern.

- **U5:** `datalad drop -d . subB --what all`
  
  Drop all from the superdataset under this path. I.e. drop all from the subdataset and drop the subdataset itself (AKA uninstall)

- **U6:** `datalad drop subA --what all`
  
  Error: “`subA contains subdatasets, forgot -recursive?`”

- **U7:** `datalad drop -d . subA -r --what all`
  
  Drop all content from the subdataset (`fileA`) and its subdatasets (`fileC`), uninstall the subdataset (`subA`) and its subdatasets (`subsubC`, `subsubD`)

- **U8:** `datalad drop subA -r --what all`
  
  Same as above, but keep `subA` installed

- **U9:** `datalad drop sub-A -r`
  
  Drop all content from the subdataset and its subdatasets (`fileA`, `fileC`)

- **U10:** `datalad drop . -r --what all`
  
  Drops all file content and subdatasets, but leaves the superdataset repository behind

- **U11:** `datalad drop -d . subB`
  
  Does nothing and hints at alternative usage, see https://github.com/datalad/datalad/issues/5832#issuecomment-889656335

- **U12:** `cd .. && datalad drop super/dir`
  
  Like `get`, errors because the execution is not associated with a dataset. This avoids complexities, when the given `path`’s point to multiple (disjoint) datasets. It is understood that it could be done, but it is intentionally not done. `datalad -C super drop dir` or `datalad drop -d super super/dir` would work.

### Python import statements
Specification scope and status

This specification describes the current (albeit incomplete) implementation.

The following rules apply to any import statement in the code base:

- All imports must be absolute, unless they import individual pieces of an integrated code component that is only split across several source code files for technical or organizational reasons.

- Imports must be placed at the top of a source file, unless there is a specific reason not to do so (e.g., delayed import due to performance concerns, circular dependencies). If such a reason exists, it must be documented by a comment at the import statement.

- There must be no more than one import per line.

- Multiple individual imports from a single module must follow the pattern:

  ```python
  from <module> import (symbol1, symbol2,
  )
  ```

  Individual imported symbols should be sorted alphabetically. The last symbol line should end with a comma.

- Imports from packages and modules should be grouped in categories like
  - Standard library packages
  - 3rd-party packages
  - Datalad core (absolute imports)
  - Datalad extensions
  - Datalad core (“local” relative imports)

  Sorting imports can be aided by https://github.com/PyCQA/isort (e.g. python -m isort -m3 --fgw 2 --tc <filename>).

Examples

```python
from collections import OrderedDict
import logging
import os

from datalad.utils import (bytes2human,
                        ensure_list,
                        ensure_unicode,
                        get_dataset_root as gdr,
                    )
```

In the `datalad/submodule/tests/test_mod.py` test file demonstrating an "exception" to absolute imports rule where test files are accompanying corresponding files of the underlying module:

```python
import os

from datalad.utils import ensure_list
```

(continues on next page)
from ..mod import func1
from datalad.tests.utils import assert_true

**Miscellaneous patterns**

DataLad is the result of a distributed and collaborative development effort over many years. During this time the scope of the project has changed multiple times. As a consequence, the API and employed technologies have been adjusted repeatedly. Depending on the age of a piece of code, a clear software design is not always immediately visible. This section documents a few design patterns that the project strives to adopt at present. Changes to existing code and new contributions should follow these guidelines.

**Generator methods in *Repo* classes**

Substantial parts of DataLad are implemented to behave like Python generators in order to be maximally responsive when processing long-running tasks. This included methods of the core API classes *GitRepo* and *AnnexRepo*. By convention, such methods carry a trailing `_` in their name. In some cases, sibling methods with the same name, but without the trailing underscore are provided. These behave like their generator-equivalent, but eventually return an iterable once processing is fully completed.

**Calls to Git commands**

DataLad is built on Git, so calls to Git commands are a key element of the code base. All such calls should be made through methods of the *GitRepo* class. This is necessary, as only there it is made sure that Git operates under the desired conditions (environment configuration, etc.).

For some functionality, for example querying and manipulating *gitattributes*, dedicated methods are provided. However, in many cases simple one-off calls to get specific information from Git, or trigger certain operations are needed. For these purposes the *GitRepo* class provides a set of convenience methods aiming to cover use cases requiring particular return values:

- test success of a command: `call_git_success()`
- obtain *stdout* of a command: `call_git()`
- obtain a single output line: `call_git_oneline()`
- obtain items from output split by a separator: `call_git_items_()`

All these methods take care of raising appropriate exceptions when expected conditions are not met. Whenever desired functionality can be achieved using simple custom calls to Git via these methods, their use is preferred over the implementation of additional, dedicated wrapper methods.

**Command examples**

Examples of Python and commandline invocations of DataLad’s user-oriented commands are defined in the class of the respective command as dictionaries within _examples_: 
The formatting of code lines is preserved. Changes to existing examples and new contributions should provide examples for Python and commandline API, as well as a concise description.

**Exception handling**

### Specification scope and status

This specification describes the current implementation target.

### Catching exceptions

Whenever we catch an exception in an `except` clause, the following rules apply:

- unless we (re-)raise, the first line instantiates a `CapturedException`:

```python
except Exception as e:
    ce = CapturedException(e)
```

First, this ensures a low-level (8) log entry including the traceback of that exception. The depth of the included traceback can be limited by setting the `datalad.exc.str.tb_limit` config accordingly.

Second, it deletes the frame stack references of the exception and keeps textual information only, in order to avoid circular references, where an object (whose method raised the exception) isn’t going to be picked by the garbage collection. This can be particularly troublesome if that object holds a reference to a subprocess for example. However, it’s not easy to see in what situation this would really be needed and we never need anything other than the textual information about what happened. Making the reference cleaning a general rule is easiest to write, maintain and review.

- if we raise, neither a log entry nor such a `CapturedException` instance is to be created. Eventually, there will be a spot where that (re-)raised exception is caught. This then is the right place to log it. That log entry will have the traceback, there’s no need to leave a trace by means of log messages!

- if we raise, but do not simply reraise that exact same exception, in order to change the exception class and/or its message, `raise from` must be used!:

```python
except SomeError as e:
    raise NewError("new message") from e
```

This ensures that the original exception is properly registered as the cause for the exception via its `__cause__` attribute. Hence, the original exception’s traceback will be part of the later on logged traceback of the new exception.
Messaging about an exception

In addition to the auto-generated low-level log entry there might be a need to create a higher-level log, a user message or a (result) dictionary that includes information from that exception. While such messaging may use anything the (captured) exception provides, please consider that “technical” details about an exception are already auto-logged and generally not incredibly meaningful for users.

For message creation CapturedException comes with a couple of format_ helper methods, its __str__ provides a short representation of the form `ExceptionClass(message)` and its __repr__ the log form with a traceback that is used for the auto-generated log.

For result dictionaries CapturedException can be assigned to the field `exception`. Currently, get_status_dict will consider this field and create an additional field with a traceback string. Hence, whether putting a captured exception into that field actually has an effect depends on whether get_status_dict is subsequently used with that dictionary. In the future such functionality may move into result renderers instead, leaving the decision of what to do with the passed CapturedException to them. Therefore, even if of no immediate effect, enhancing the result dicts accordingly makes sense already, since it may be useful when using datalad via its python interface already and provide instant benefits whenever the result rendering gets such an upgrade.

Credential management

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Various components of DataLad need to be passed credentials to interact with services that require authentication. This includes downloading files, but also things like REST API usage.

Supported credential types include basic user/password combinations, access tokens, and a range of tailored solutions for particular services. All credential type implementations are derived from a common `Credential` base class.

Importantly, credentials must be identified by a name. This name is a label that is often hard-coded in the program code of DataLad, any of its extensions, or specified in a dataset.

Given a credential name, one or more credential component(s) (e.g., token, username, or password) can be looked up by DataLad in at least two different locations. These locations are tried in the following order, and the first successful lookup yields the final value.

1. A configuration item `datalad.credential.<name>.<component>`. Such configuration items can be defined in any location supported by DataLad’s configuration system. As with any other specification of configuration items, environment variables can be used to set or override credentials. Variable names take the form of `DATALAD_CREDENTIAL_<NAME>_<COMPONENT>`, and standard replacement rules into configuration variable names apply.

2. DataLad uses the `keyring` package https://pypi.org/project/keyring to connect to any of its supported back-ends for setting or getting credentials. This provides support for credential storage on all major platforms, but also extensibility, providing 3rd-parties to implement and use specialized solutions.

When a credential is required for operation, but could not be obtained via any of the above approaches, DataLad can prompt for credentials in interactive terminal sessions. Interactively entered credentials will be stored in the active credential store available via the `keyring` package.

When a credential value is known but invalid, the invalid value must be removed or replaced in the active credential store. By setting the configuration flag `datalad.credentials.force-ask`, DataLad can be instructed to force interactive credential re-entry to effectively override any store credential with a new value.
URL substitution

**Specification scope and status**

This specification describes the current implementation. This implementation is covering URL substitution in `clone` only. A further extension to URL processing elsewhere is possible.

URL substitution is a transformation of a given URL using a set of specifications. Such specification can be provided as configuration settings (via all supported configuration sources). These configuration items must follow the naming scheme `datalad.clone.url-substitute.<label>`, where `<label>` is an arbitrary identifier.

A substitution specification is a string with a match and substitution expression, each following Python’s regular expression syntax. Both expressions are concatenated into a single string with an arbitrary delimiter character. The delimiter is defined by prefixing the string with the delimiter. Prefix and delimiter are stripped from the expressions before processing. Example:

```
,^http://(.*$),https://\1
```

A particular configuration item can be defined multiple times (see examples below) to form a substitution series. Substitutions in the same series will be applied incrementally, in order of their definition. If the first substitution expression does not match, the entire series will be ignored. However, following a first positive match all further substitutions in a series are processed, regardless whether intermediate expressions match or not.

Any number of substitution series can be configured. They will be considered in no particular order. Consequently, it advisable to implement the first match specification of any series as specific as possible, in order to prevent undesired transformations.

**Examples**

Change the protocol component of a given URL in order to hand over further processing to a dedicated Git remote helper. Specifically, the following example converts Open Science Framework project URLs like `https://osf.io/f5j3e/` into `osf://f5j3e`, a URL that can be hande by `git-remote-osf`, the Git remote helper provided by the `datalad-osf` extension package:

```

datalad.clone.url-substitute.osf = ,^https://osf.io/([^/]+)[/]*$,osf://\1
```

Here is a more complex examples with a series of substitutions. The first expression ensures that only GitHub URLs are being processed. The associated substitution disassembles the URL into its two only relevant components, the organisation/user name, and the project name:

```

datalad.clone.url-substitute.github = ,https?://github.com/([^/]+)/(.*)$,[\1###\2
```

All other expressions in this series that are described below will only be considered if the above expression matched. The next two expressions in the series normalize URL components that maybe be auto-generated by some DataLad functionality, e.g. subdataset location candidate generation from directory names:

```

# replace (back)slashes with a single dash
datalad.clone.url-substitute.github = ,([^/])\+,-

# replace with whitespace (URL-quoted or not) with a single underscore
datalad.clone.url-substitute.github = ,\s+|(%2520)+|(%20)+,_
```

The final expression in the series is recombining the organization/user name and project name components back into a complete URL:
1.4.7 Glossary

DataLad purposefully uses a terminology that is different from the one used by its technological foundations Git and git-annex. This glossary provides definitions for terms used in the datalad documentation and API, and relates them to the corresponding Git/git-annex concepts.

**annex** Extension to a Git repository, provided and managed by git-annex as means to track and distribute large (and small) files without having to inject them directly into a Git repository (which would slow Git operations significantly and impair handling of such repositories in general).

**CLI** A Command Line Interface. Could be used interactively by executing commands in a shell, or as a programmable API for shell scripts.

**DataLad extension** A Python package, developed outside of the core DataLad codebase, which (when installed) typically either provides additional top level datalad commands and/or additional metadata extractors. Visit Handbook, Ch.2. DataLad’s extensions for a representative list of extensions and instructions on how to install them.

**dataset** A regular Git repository with an (optional) annex.

**sibling** A dataset (location) that is related to a particular dataset, by sharing content and history. In Git terminology, this is a clone of a dataset that is configured as a remote.

**subdataset** A dataset that is part of another dataset, by means of being tracked as a Git submodule. As such, a subdataset is also a complete dataset and not different from a standalone dataset.

**superdataset** A dataset that contains at least one subdataset.

1.5 Commands and API

1.5.1 Command line reference

**Main command**

datalad

**Synopsis**

```
```
Description

Comprehensive data management solution

DataLad provides a unified data distribution system built on the Git and Git-annex. DataLad command line tools allow to manipulate (obtain, create, update, publish, etc.) datasets and provide a comprehensive toolbox for joint management of data and code. Compared to Git/annex it primarily extends their functionality to transparently and simultaneously work with multiple inter-related repositories.

Options

```
{create, install, get, push, uninstall, drop, remove, update, create-sibling, create-sibling-github, create-sibling-gitlab, create-sibling-ria, unlock, save, copy-file, search, metadata, aggregate-metadata, extract-metadata, wtf, no-annex, add-readme, addurls, check-dates, export-archive, export-to-figshare, test, clean, add-archive-content, download-url, shell-completion, run, rerun, run-procedure, export-archive-ora, annotate-paths, clone, create-test-dataset, status, diff, siblings, sshrun, subdatasets}
```

```
-l LEVEL, –log-level LEVEL
```

set logging verbosity level. Choose among critical, error, warning, info, debug. Also you can specify an integer <10 to provide even more debugging information

```
--pbs-runner {condor}
```

DEPRECATED, will be removed in a future release.

```
-C PATH
```

run as if datalad was started in <path> instead of the current working directory. When multiple -C options are given, each subsequent non-absolute -C <path> is interpreted relative to the preceding -C <path>. This option affects the interpretations of the path names in that they are made relative to the working directory caused by the -C option

```
--version
```

show the module and its version which provides the command

```
--dbg
```

enter Python debugger when uncaught exception happens

```
--idbg
```

enter IPython debugger when uncaught exception happens
-c KEY=VALUE

calidation variable setting. Overrides any configuration read from a file, but is potentially overridden itself by configuration variables in the process environment.

-f {default, json, json_pp, tailored,'<template>'}, --output-format {default, json, json_pp, tailored,'<template>'}

select format for returned command results. ‘tailored’ enables a command- specific rendering style that is typically tailored to human consumption, if there is one for a specific command, or otherwise falls back on the the ‘default’ output format (this is the standard behavior); ‘default’ give one line per result reporting action, status, path and an optional message; ‘json’ renders a JSON object with all properties for each result (one per line); ‘json_pp’ pretty-prints JSON spanning multiple lines; ‘<template>’ reports any value(s) of any result properties in any format indicated by the template (e.g. ‘{path}’; compare with JSON output for all key-value choices). The template syntax follows the Python “format()” language”. It is possible to report individual dictionary values, e.g. ‘{metadata[name]}’. If a 2nd-level key contains a colon, e.g. ‘music:Genre’, ‘:’ must be substituted by ‘#’ in the template, like so: ‘{metadata[music#Genre]}’. [Default: ‘tailored’]

--report-status {success, failure, ok, notneeded, impossible, error}

constrain command result report to records matching the given status. ‘success’ is a synonym for ‘ok’ OR ‘notneeded’, ‘failure’ stands for ‘impossible’ OR ‘error’.

--report-type {dataset, file}

constrain command result report to records matching the given type. Can be given more than once to match multiple types.

--on-failure {ignore, continue, stop}

when an operation fails: ‘ignore’ and continue with remaining operations, the error is logged but does not lead to a non-zero exit code of the command; ‘continue’ works like ‘ignore’, but an error causes a non-zero exit code; ‘stop’ halts on first failure and yields non-zero exit code. A failure is any result with status ‘impossible’ or ‘error’. [Default: ‘continue’]

--cmd

syntactical helper that can be used to end the list of global command line options before the subcommand label. Options taking an arbitrary number of arguments may require to be followed by a single --cmd in order to enable identification of the subcommand.

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

“Be happy!”
Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

Core commands

A minimal set of commands that cover essential functionality. Core commands receive special scrutiny with regard API composition and (breaking) changes.

Local operation

datalad create

Synopsis


Description

Create a new dataset from scratch.

This command initializes a new dataset at a given location, or the current directory. The new dataset can optionally be registered in an existing superdataset (the new dataset’s path needs to be located within the superdataset for that, and the superdataset needs to be given explicitly via --dataset). It is recommended to provide a brief description to label the dataset’s nature and location, e.g. “Michael’s music on black laptop”. This helps humans to identify data locations in distributed scenarios. By default an identifier comprised of user and machine name, plus path will be generated.

This command only creates a new dataset, it does not add existing content to it, even if the target directory already contains additional files or directories.

Plain Git repositories can be created via --no-annex. However, the result will not be a full dataset, and, consequently, not all features are supported (e.g. a description).

To create a local version of a remote dataset use the install command instead.

NOTE Power-user info: This command uses git init and git annex init to prepare the new dataset. Registering to a superdataset is performed via a git submodule add operation in the discovered superdataset.

Examples

Create a dataset ‘mydataset’ in the current directory:

```
% datalad create mydataset
```

Apply the text2git procedure upon creation of a dataset:

```
% datalad create -c text2git mydataset
```

Create a subdataset in the root of an existing dataset:

```
% datalad create -d . mysubdataset
```

Create a dataset in an existing, non-empty directory:
Create a plain Git repository:

```
datalad create --force
```

```
datalad create --no-annex mydataset
```

## Options

### PATH

path where the dataset shall be created, directories will be created as necessary. If no location is provided, a dataset will be created in the location specified by –dataset (if given) or the current working directory. Either way the command will error if the target directory is not empty. Use –force to create a dataset in a non-empty directory. Constraints: value must be a string, or Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

### INIT OPTIONS

options to pass to git init. Any argument specified after the destination path of the repository will be passed to git-init as-is. Note that not all options will lead to viable results. For example ‘–bare’ will not yield a repository where DataLad can adjust files in its working tree.

- **-h, –help, –help-np**
  
  show this help message. –help-np forcefully disables the use of a pager for displaying the help message

- **-f, –force**
  
  enforce creation of a dataset in a non-empty directory.

- **-D DESCRIPTION, –description DESCRIPTION**
  
  short description to use for a dataset location. Its primary purpose is to help humans to identify a dataset copy (e.g., “mike’s dataset on lab server”). Note that when a dataset is published, this information becomes available on the remote side. Constraints: value must be a string

- **-d DATASET, –dataset DATASET**
  
  specify the dataset to perform the create operation on. If a dataset is given along with PATH, a new subdataset will be created in it at the PATH provided to the create command. If a dataset is given but PATH is unspecified, a new dataset will be created at the location specified by this option. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

- **–no-annex**
  
  if set, a plain Git repository will be created without any annex.
–fake-dates

Configure the repository to use fake dates. The date for a new commit will be set to one second later than the latest commit in the repository. This can be used to anonymize dates.

-c PROC, –cfg-proc PROC

Run cfg_PROC procedure(s) (can be specified multiple times) on the created dataset. Use run-procedure –discover to get a list of available procedures, such as cfg_text2git.

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad save

Synopsis


Description

Save the current state of a dataset

Saving the state of a dataset records changes that have been made to it. This change record is annotated with a user-provided description. Optionally, an additional tag, such as a version, can be assigned to the saved state. Such tag enables straightforward retrieval of past versions at a later point in time.

NOTE Before Git v2.22, any Git repository without an initial commit located inside a Dataset is ignored, and content underneath it will be saved to the respective superdataset. DataLad datasets always have an initial commit, hence are not affected by this behavior.

Examples

Save any content underneath the current directory, without altering any potential subdataset:

`% datalad save`

Save specific content in the dataset:

`% datalad save myfile.txt`

Attach a commit message to save:
Save any content underneath the current directory, and recurse into any potential subdatasets:

```
% datalad save . -r
```

Save any modification of known dataset content in the current directory, but leave untracked files (e.g. temporary files) untouched:

```
% datalad save -u .
```

Tag the most recent saved state of a dataset:

```
% datalad save --version-tag 'bestyet'
```

Save a specific change but integrate into last commit keeping the already recorded commit message:

```
% datalad save myfile.txt --amend
```

**Options**

**PATH**

path/name of the dataset component to save. If given, only changes made to those components are recorded in the new state. Constraints: value must be a string

- **-h, --help, --help-np**

  show this help message. --help-np forcefully disables the use of a pager for displaying the help message

- **-m MESSAGE, --message MESSAGE**

  a description of the state or the changes made to a dataset. Constraints: value must be a string

- **-d DATASET, --dataset DATASET**

  “specify the dataset to save. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

- **-t ID, --version-tag ID**

  an additional marker for that state. Every dataset that is touched will receive the tag. Constraints: value must be a string

- **-r, --recursive**

  if set, recurse into potential subdataset.
**-R LEVELS, **–recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

**-u, **–updated

if given, only saves previously tracked paths.

**-F MESSAGE_FILE, **–message-file MESSAGE_FILE

take the commit message from this file. This flag is mutually exclusive with -m. Constraints: value must be a string

**–to-git

flag whether to add data directly to Git, instead of tracking data identity only. Use with caution, there is no guarantee that a file put directly into Git like this will not be annexed in a subsequent save operation. If not specified, it will be up to git-annex to decide how a file is tracked, based on a dataset’s configuration to track particular paths, file types, or file sizes with either Git or git-annex. (see https://git-annex.branchable.com/tips/largefiles).

**–J NJOBS, **–jobs NJOBS

how many parallel jobs (where possible) to use. “auto” corresponds to the number defined by ‘datalad.runtime.max-annex-jobs’ configuration item. Constraints: value must be convertible to type ‘int’, or value must be one of (‘auto’,)

**–amend

if set, changes are not recorded in a new, separate commit, but are integrated with the changeset of the previous commit, and both together are recorded by replacing that previous commit. This is mutually exclusive with recursive operation.

**–version

show the module and its version which provides the command

**Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad run

**Synopsis

datalad run [-h] [-d DATASET] [-i PATH] [-o PATH] [--expand {inputs|outputs|both}] [--assume-ready {inputs|outputs|both}] [--explicit] [-m MESSAGE] [--sidecar {yes|no}] [--dry-run {basic|command}] [--version] ...

1.5. Commands and API
Description

Run an arbitrary shell command and record its impact on a dataset.

It is recommended to craft the command such that it can run in the root directory of the dataset that the command will be recorded in. However, as long as the command is executed somewhere underneath the dataset root, the exact location will be recorded relative to the dataset root.

If the executed command did not alter the dataset in any way, no record of the command execution is made.

If the given command errors, a COMMANDERROR exception with the same exit code will be raised, and no modifications will be saved.

Command format

A few placeholders are supported in the command via Python format specification. “{pwd}” will be replaced with the full path of the current working directory. “{dspath}” will be replaced with the full path of the dataset that run is invoked on. “{tmpdir}” will be replaced with the full path of a temporary directory. “{inputs}” and “{outputs}” represent the values specified by –input and –output. If multiple values are specified, the values will be joined by a space. The order of the values will match that order from the command line, with any globs expanded in alphabetical order (like bash). Individual values can be accessed with an integer index (e.g., “{inputs[0]}”).

Note that the representation of the inputs or outputs in the formatted command string depends on whether the command is given as a list of arguments or as a string (quotes surrounding the command). The concatenated list of inputs or outputs will be surrounded by quotes when the command is given as a list but not when it is given as a string. This means that the string form is required if you need to pass each input as a separate argument to a preceding script (i.e., write the command as “./script {inputs}”, quotes included). The string form should also be used if the input or output paths contain spaces or other characters that need to be escaped.

To escape a brace character, double it (i.e., “{{” or “}}”).

Custom placeholders can be added as configuration variables under “datalad.run.substitutions”. As an example:

Add a placeholder “name” with the value “joe”:

```
% git config --file=.datalad/config datalad.run.substitutions.name joe
% datalad save -m "Configure name placeholder" .datalad/config
```

Access the new placeholder in a command:

```
% datalad run "echo my name is {name} >me"
```

Examples

Run an executable script and record the impact on a dataset:

```
% datalad run -m 'run my script' 'code/script.sh'
```

Run a command and specify a directory as a dependency for the run. The contents of the dependency will be retrieved prior to running the script:

```
% datalad run -m 'run my script' -i 'data/*' 'code/script.sh'
```

Run an executable script and specify output files of the script to be unlocked prior to running the script:

```
% datalad run -m 'run my script' -i 'data/*' -o 'output_dir/*' 'code/script.sh'
```

Specify multiple inputs and outputs:
\`
\texttt{\textbackslash d\textbackslash a\textbackslash t\textbackslash l\textbackslash d\textbackslash r\textbackslash u\textbackslash n \ -m \ 'run\ my\ script' \ -i \ 'data/*' \ -i \ 'datafile.txt' \ -o \ 'output_dir/*' \ -o \ 'outfile.txt' \ 'code/script.sh'}
\`

## Options

### COMMAND

command for execution. A leading ‘–’ can be used to disambiguate this command from the preceding options to DataLad.

-\texttt{\textbackslash h, \textbackslash help, \textbackslash help-np}

show this help message. \texttt{\textbackslash help-np} forcefully disables the use of a pager for displaying the help message

-\texttt{\textbackslash d\ DATASET, \textbackslash dataset\ DATASET}

specify the dataset to record the command results in. An attempt is made to identify the dataset based on the current working directory. If a dataset is given, the command will be executed in the root directory of this dataset. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

-\texttt{\textbackslash i\ PATH, \textbackslash input\ PATH}

A dependency for the run. Before running the command, the content for this relative path will be retrieved. A value of ‘.’ means “run datalad get .”. The value can also be a glob. This option can be given more than once.

-\texttt{\textbackslash o\ PATH, \textbackslash output\ PATH}

Prepare this relative path to be an output file of the command. A value of ‘.’ means “run datalad unlock .” (and will fail if some content isn’t present). For any other value, if the content of this file is present, unlock the file. Otherwise, remove it. The value can also be a glob. This option can be given more than once.

-\texttt{\textbackslash expand\ \{inputs|outputs|both\}}

Expand globs when storing inputs and/or outputs in the commit message. Constraints: value must be one of (‘inputs’, ‘outputs’, ‘both’)

-\texttt{\textbackslash assume-ready\ \{inputs|outputs|both\}}

Assume that inputs do not need to be retrieved and/or outputs do not need to unlocked or removed before running the command. This option allows you to avoid the expense of these preparation steps if you know that they are unnecessary. Constraints: value must be one of (‘inputs’, ‘outputs’, ‘both’)

1.5. Commands and API 97
Consider the specification of inputs and outputs to be explicit. Don’t warn if the repository is dirty, and only save modifications to the listed outputs.

-m MESSAGE, --message MESSAGE

a description of the state or the changes made to a dataset. Constraints: value must be a string

--sidecar {yes|no}

By default, the configuration variable ‘datalad.run.record-sidecar’ determines whether a record with information on a command’s execution is placed into a separate record file instead of the commit message (default: off). This option can be used to override the configured behavior on a case-by-case basis. Sidecar files are placed into the dataset’s ‘.datalad/runinfo’ directory (customizable via the ‘datalad.run.record-directory’ configuration variable). Constraints: value must be NONE, or value must be convertible to type bool

--dry-run {basic|command}

Do not run the command; just display details about the command execution. A value of “basic” reports a few important details about the execution, including the expanded command and expanded inputs and outputs. “command” displays the expanded command only. Note that input and output globs underneath an uninstalled dataset will be left unexpanded because no subdatasets will be installed for a dry run. Constraints: value must be one of (‘basic’, ‘command’)

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad status

Synopsis

datalad status [-h] [-d DATASET] [--annex [MODE]] [--untracked MODE] [-r] [-R LEVELS] [-e {no|commit|full}] [-t {raw|eval}] [--version] [PATH [PATH ...

Description

Report on the state of dataset content.
This is an analog to *git status* that is simultaneously crippled and more powerful. It is crippled, because it only supports a fraction of the functionality of its counter part and only distinguishes a subset of the states that Git knows about. But it is also more powerful as it can handle status reports for a whole hierarchy of datasets, with the ability to report on a subset of the content (selection of paths) across any number of datasets in the hierarchy.

### Path conventions

All reports are guaranteed to use absolute paths that are underneath the given or detected reference dataset, regardless of whether query paths are given as absolute or relative paths (with respect to the working directory, or to the reference dataset, when such a dataset is given explicitly). Moreover, so-called “explicit relative paths” (i.e. paths that start with ‘.’ or ‘.’) are also supported, and are interpreted as relative paths with respect to the current working directory regardless of whether a reference dataset with specified.

When it is necessary to address a subdataset record in a superdataset without causing a status query for the state _within_ the subdataset itself, this can be achieved by explicitly providing a reference dataset and the path to the root of the subdataset like so:

```
datalad status --dataset . subdspath
```

In contrast, when the state of the subdataset within the superdataset is not relevant, a status query for the content of the subdataset can be obtained by adding a trailing path separator to the query path (rsync-like syntax):

```
datalad status --dataset . subdspath/
```

When both aspects are relevant (the state of the subdataset content and the state of the subdataset within the superdataset), both queries can be combined:

```
datalad status --dataset . subdspath subdspath/
```

When performing a recursive status query, both status aspects of subdataset are always included in the report.

### Content types

The following content types are distinguished:

- ‘dataset’ – any top-level dataset, or any subdataset that is properly registered in superdataset
- ‘directory’ – any directory that does not qualify for type ‘dataset’
- ‘file’ – any file, or any symlink that is placeholder to an annexed file
- ‘symlink’ – any symlink that is not used as a placeholder for an annexed file

### Content states

The following content states are distinguished:

- ‘clean’
- ‘added’
- ‘modified’
- ‘deleted’
- ‘untracked’

### Examples

Report on the state of a dataset:

```
% datalad status
```

Report on the state of a dataset and all subdatasets:
Address a subdataset record in a superdataset without causing a status query for the state _within_ the subdataset itself:

```
% datalad status -d . mysubdataset
```

Get a status query for the state within the subdataset without causing a status query for the superdataset (using trailing path separator in the query path)):

```
% datalad status -d . mysubdataset/
```

Report on the state of a subdataset in a superdataset and on the state within the subdataset:

```
% datalad status -d . mysubdataset mysubdataset/
```

Report the file size of annexed content in a dataset:

```
% datalad status --annex
```

### Options

**PATH**

path to be evaluated. Constraints: value must be a string

**-h, --help, --help-np**

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

**-d DATASET, --dataset DATASET**

specify the dataset to query. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

**--annex [MODE]**

Switch whether to include information on the annex content of individual files in the status report, such as recorded file size. By default no annex information is reported (faster). Three report modes are available: basic information like file size and key name (‘basic’); additionally test whether file content is present in the local annex (‘availability’); requires one or two additional file system stat calls, but does not call git-annex), this will add the result properties ‘has_content’ (boolean flag) and ‘objloc’ (absolute path to an existing annex object file); or ‘all’ which will report all available information (presently identical to ‘availability’). The ‘basic’ mode will be assumed when this option is given, but no mode is specified. Constraints: value must be one of (‘basic’, ‘availability’, ‘all’)

**--untracked MODE**

If and how untracked content is reported when comparing a revision to the state of the working tree. ‘no’: no untracked content is reported; ‘normal’: untracked files and entire untracked directories are reported as such; ‘all’: report
individual files even in fully untracked directories. Constraints: value must be one of (‘no’, ‘normal’, ‘all’) [Default: ‘normal’]

-\textit{r}, \textit{--recursive}

if set, recurse into potential subdataset.

-\textit{R LEVELS}, \textit{--recursion-limit LEVELS}

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

-\textit{e} \{\textit{no}|\textit{commit}|\textit{full}\}, \textit{--eval-subdataset-state} \{\textit{no}|\textit{commit}|\textit{full}\}

Evaluation of subdataset state (clean vs. modified) can be expensive for deep dataset hierarchies as subdataset have to be tested recursively for uncommitted modifications. Setting this option to ‘no’ or ‘commit’ can substantially boost performance by limiting what is being tested. With ‘no’ no state is evaluated and subdataset result records typically do not contain a ‘state’ property. With ‘commit’ only a discrepancy of the HEAD commit shasum of a subdataset and the shasum recorded in the superdataset’s record is evaluated, and the ‘state’ result property only reflects this aspect. With ‘full’ any other modification is considered too (see the ‘untracked’ option for further tailoring modification testing). Constraints: value must be one of (‘no’, ‘commit’, ‘full’) [Default: ‘full’]

-\textit{t} \{\textit{raw}|\textit{eval}\}, \textit{--report-filetype} \{\textit{raw}|\textit{eval}\}

Report mode for file types. With ‘eval’ each symlink is inspected whether it is a pointer to an annex’ed file, and is reported as ‘type=file’ in this case, and ‘type=symlink’ otherwise. With ‘raw’ no type inspection is performed, and symlinks representing annex’ed files are indistinguishable from other symlinks. Type inspection is relatively expensive and can lead to slow operation in datasets with a large number of files. Constraints: value must be one of (‘raw’, ‘eval’) [Default: ‘eval’]

\textit{--version}

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad diff

Synopsis

datalad diff [-h] [-f REVISION] [-t REVISION] [-d DATASET] [--annex [MODE]]
   [--untracked MODE] [-r] [-R LEVELS] [--version] [PATH [PATH ...]]
**Description**

Report differences between two states of a dataset (hierarchy)

The two to-be-compared states are given via the `--from` and `--to` options. These state identifiers are evaluated in the context of the (specified or detected) dataset. In the case of a recursive report on a dataset hierarchy, corresponding state pairs for any subdataset are determined from the subdataset record in the respective superdataset. Only changes recorded in a subdataset between these two states are reported, and so on.

Any paths given as additional arguments will be used to constrain the difference report. As with Git’s `diff`, it will not result in an error when a path is specified that does not exist on the filesystem.

Reports are very similar to those of the `STATUS` command, with the distinguished content types and states being identical.

**Examples**

Show unsaved changes in a dataset:

```
% datalad diff
```

Compare a previous dataset state identified by shasum against current worktree:

```
% datalad diff --from <SHASUM>
```

Compare two branches against each other:

```
% datalad diff --from branch1 --to branch2
```

Show unsaved changes in the dataset and potential subdatasets:

```
% datalad diff --r
```

Show unsaved changes made to a particular file:

```
% datalad diff <path/to/file>
```

**Options**

**PATH**

path to constrain the report to. Constraints: value must be a string

**-h, --help, --help-np**

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

**-f REVISION, --from REVISION**

original state to compare to, as given by any identifier that Git understands. Constraints: value must be a string [Default: ‘HEAD’]
-t REVISION, –to REVISION

state to compare against the original state, as given by any identifier that Git understands. If none is specified, the state of the working tree will be compared. Constraints: value must be a string

-d DATASET, –dataset DATASET

specify the dataset to query. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

--annex [MODE]

Switch whether to include information on the annex content of individual files in the status report, such as recorded file size. By default no annex information is reported (faster). Three report modes are available: basic information like file size and key name (‘basic’); additionally test whether file content is present in the local annex (‘availability’; requires one or two additional file system stat calls, but does not call git-annex), this will add the result properties ‘has_content’ (boolean flag) and ‘objloc’ (absolute path to an existing annex object file); or ‘all’ which will report all available information (presently identical to ‘availability’). The ‘basic’ mode will be assumed when this option is given, but no mode is specified. Constraints: value must be one of (‘basic’, ‘availability’, ‘all’) [Default: ‘basic’]

--untracked MODE

If and how untracked content is reported when comparing a revision to the state of the working tree. ‘no’: no untracked content is reported; ‘normal’: untracked files and entire untracked directories are reported as such; ‘all’: report individual files even in fully untracked directories. Constraints: value must be one of (‘no’, ‘normal’, ‘all’) [Default: ‘normal’]

-r, –recursive

if set, recurse into potential subdataset.

-R LEVELS, –recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.
Distributed operation

datalad clone

Synopsis

```
datalad clone [-h] [-d DATASET] [-D DESCRIPTION] [--reckless
    [auto|ephemeral|shared-...]] [--version] SOURCE [PATH]
```

Description

Obtain a dataset (copy) from a URL or local directory

The purpose of this command is to obtain a new clone (copy) of a dataset and place it into a not-yet-existing or empty directory. As such CLONE provides a strict subset of the functionality offered by INSTALL. Only a single dataset can be obtained, and immediate recursive installation of subdatasets is not supported. However, once a (super)dataset is installed via CLONE, any content, including subdatasets can be obtained by a subsequent GET command.

Primary differences over a direct `git clone` call are 1) the automatic initialization of a dataset annex (pure Git repositories are equally supported); 2) automatic registration of the newly obtained dataset as a subdataset (submodule), if a parent dataset is specified; 3) support for additional resource identifiers (DataLad resource identifiers as used on datasets.datalad.org, and RIA store URLs as used for store.datalad.org - optionally in specific versions as identified by a branch or a tag; see examples); and 4) automatic configurable generation of alternative access URL for common cases (such as appending `.git` to the URL in case the accessing the base URL failed).

In case the clone is registered as a subdataset, the original URL passed to CLONE is recorded in `.GITMODULES` of the parent dataset in addition to the resolved URL used internally for git-clone. This allows to preserve datalad specific URLs like ria+ssh://... for subsequent calls to GET if the subdataset was locally removed later on.

URL mapping configuration

‘clone’ supports the transformation of URLs via (multi-part) substitution specifications. A substitution specification is defined as a configuration setting ‘datalad.clone.url-substitution.<seriesID>’ with a string containing a match and substitution expression, each following Python’s regular expression syntax. Both expressions are concatenated to a single string with an arbitrary delimiter character. The delimiter is defined by prefixing the string with the delimiter. Prefix and delimiter are stripped from the expressions (Example: “,^http://(.*)$,https://1”). This setting can be defined multiple times, using the same `<seriesID>`. Substitutions in a series will be applied incrementally, in order of their definition. The first substitution in such a series must match, otherwise no further substitutions in a series will be considered. However, following the first match all further substitutions in a series are processed, regardless whether intermediate expressions match or not. Substitution series themselves have no particular order, each matching series will result in a candidate clone URL. Consequently, the initial match specification in a series should be as precise as possible to prevent inflation of candidate URLs.

SEEALSO

handbook:3-001 (http://handbook.datalad.org/symbols) More information on Remote Indexed Archive (RIA) stores

Examples

Install a dataset from Github into the current directory:

```
% datalad clone https://github.com/datalad-datasets/longnow-podcasts.git
```

Install a dataset into a specific directory:
Install a dataset as a subdataset into the current dataset:

```shell
% datalad clone https://github.com/datalad-datasets/longnow-podcasts.git
myfavpodcasts
```

Install the main superdataset from datasets.datalad.org:

```shell
% datalad clone ///
```

Install a dataset identified by a literal alias from store.datalad.org:

```shell
% datalad clone ria+http://store.datalad.org#-hcp-openaccess
```

Install a dataset in a specific version as identified by a branch or tag name from store.datalad.org:

```shell
% datalad clone ria+http://store.datalad.org#76b6ca66-36b1-11ea-a2e6-f0d5bf7b5561@myidentifier
```

Install a dataset with group-write access permissions:

```shell
% datalad clone http://example.com/dataset --reckless shared-group
```

**Options**

**SOURCE**

URL, DataLad resource identifier, local path or instance of dataset to be cloned. Constraints: value must be a string

**PATH**

path to clone into. If no PATH is provided a destination path will be derived from a source URL similar to git clone.

- **-h, --help, --help-np**

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

- **-d DATASET, --dataset DATASET**

(parent) dataset to clone into. If given, the newly cloned dataset is registered as a subdataset of the parent. Also, if given, relative paths are interpreted as being relative to the parent dataset, and not relative to the working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

- **-D DESCRIPTION, --description DESCRIPTION**

short description to use for a dataset location. Its primary purpose is to help humans to identify a dataset copy (e.g., “mike’s dataset on lab server”). Note that when a dataset is published, this information becomes available on the remote side. Constraints: value must be a string

1.5. Commands and API
--reckless [auto|ephemeral|shared-...]

Obtain a dataset or subdataset and set it up in a potentially unsafe way for performance, or access reasons. Use with care, any dataset is marked as ‘untrusted’. The reckless mode is stored in a dataset’s local configuration under ‘datalad.clone.reckless’, and will be inherited to any of its subdatasets. Supported modes are: ['auto']: hard-link files between local clones. In-place modification in any clone will alter original annex content. ['ephemeral']: symlink annex to origin’s annex and discard local availability info via git-annex-dead ‘here’. Shares an annex between origin and clone w/o git-annex being aware of it. In case of a change in origin you need to update the clone before you’re able to save new content on your end. Alternative to ‘auto’ when hardlinks are not an option, or number of consumed inodes needs to be minimized. Note that this mode can only be used with clones from non-bare repositories or a RIA store! Otherwise two different annex object tree structures (dirhashmixed vs dirhashlower) will be used simultaneously, and annex keys using the respective other structure will be inaccessible. ['shared-<mode>']: set up repository and annex permission to enable multi-user access. This disables the standard write protection of annex’ed files. <mode> can be any value support by ‘git init --shared=’, such as ‘group’, or ‘all’. Constraints: value must be one of (True, False, ‘auto’, ‘ephemeral’), or value must start with ‘shared-’

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad push

Synopsis


Description

Push a dataset to a known sibling.

This makes a saved state of a dataset available to a sibling or special remote data store of a dataset. Any target sibling must already exist and be known to the dataset.

By default, all files tracked in the last saved state (of the current branch) will be copied to the target location. Optionally, it is possible to limit a push to changes relative to a particular point in the version history of a dataset (e.g. a release tag) using the --since option in conjunction with the specification of a reference dataset. In recursive mode subdatasets will also be evaluated, and only those subdatasets are pushed where a change was recorded that is reflected in the current state of the top-level reference dataset.

NOTE Power-user info: This command uses git push, and git annex copy to push a dataset. Publication targets are either configured remote Git repositories, or git-annex special remotes (if they support data upload).
Options

PATH

path to constrain a push to. If given, only data or changes for those paths are considered for a push. Constraints: value must be a string

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-d DATASET, --dataset DATASET

specify the dataset to push. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

--to SIBLING

name of the target sibling. If no name is given an attempt is made to identify the target based on the dataset’s configuration (i.e. a configured tracking branch, or a single sibling that is configured for push). Constraints: value must be a string

--since SINCE

specifies commit-ish (tag, shasum, etc.) from which to look for changes to decide whether pushing is necessary. If ‘^’ is given, the last state of the current branch at the sibling is taken as a starting point. Constraints: value must be a string

--data {anything|nothing|auto|auto-if-wanted}

what to do with (annex’ed) data. ‘anything’ would cause transfer of all annexed content, ‘nothing’ would avoid call to git annex copy altogether. ‘auto’ would use ‘git annex copy’ with ‘--auto’ thus transferring only data which would satisfy “wanted” or “numcopies” settings for the remote (thus “nothing” otherwise). ‘auto-if-wanted” would enable ‘--auto’ mode only if there is a “wanted” setting for the remote, and transfer ‘anything” otherwise. Constraints: value must be one of (‘anything’, ‘nothing’, ‘auto’, ‘auto-if-wanted’) [Default: ‘auto-if-wanted’]

-f {all|gitpush|checkdatapresent}, --force {all|gitpush|checkdatapresent}

force particular operations, possibly overruling safety protections or optimizations: use –force with git-push (‘git-push’); do not use –fast with git-annex copy (‘checkdatapresent’); combine all force modes (‘all’). Constraints: value must be one of (‘all’, ‘gitpush’, ‘checkdatapresent’)

-r, --recursive

if set, recurse into potential subdataset.
-R LEVELS, –recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

-J NJOBS, –jobs NJOBS

how many parallel jobs (where possible) to use. “auto” corresponds to the number defined by ‘datalad.runtime.max-annex-jobs’ configuration item. Constraints: value must be convertible to type ‘int’, or value must be one of (‘auto’,)

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

Extended set of functionality

Dataset operations

datalad add-readme

Synopsis

```
datalad add-readme [-h] [-d DATASET] [--existing {skip|append|replace}] [--version] [PATH]
```

Description

Add basic information about DataLad datasets to a README file

The README file is added to the dataset and the addition is saved in the dataset. Note: Make sure that no unsaved modifications to your dataset’s .gitattributes file exist.

Options

PATH

Path of the README file within the dataset. Constraints: value must be a string [Default: ‘README.md’]

-h, –help, –help-np

show this help message. –help-np forcefully disables the use of a pager for displaying the help message
-d DATASET, --dataset DATASET

Dataset to add information to. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

--existing {skip|append|replace}

How to react if a file with the target name already exists: ‘skip’: do nothing; ‘append’: append information to the existing file; ‘replace’: replace the existing file with new content. Constraints: value must be one of (‘skip’, ‘append’, ‘replace’) [Default: ‘skip’]

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad addurls

Synopsis


Description

Create and update a dataset from a list of URLs.

Format specification

Several arguments take format strings. These are similar to normal Python format strings where the names from URL-FILE (column names for comma- or tab-separated file or properties for JSON) are available as placeholders. If URL-FILE is a CSV or TSV file, a positional index can also be used (i.e., “[0]” for the first column). Note that a placeholder cannot contain a ‘:’ or ‘!’.

In addition, the FILENAME-FORMAT arguments has a few special placeholders:

• _repindex

The constructed file names must be unique across all fields rows. To avoid collisions, the special placeholder “_repindex” can be added to the formatter. Its value will start at 0 and increment every time a file name repeats.

• _url_hostname, _urlN, _url_basename*

Various parts of the formatted URL are available. Take “http://datalad.org/asciicast/seamless_nested_repos.sh” as an example.
“datalad.org” is stored as “_url_hostname”. Components of the URL’s path can be referenced as “_urlN”. “_url0” and “_url1” would map to “asciicast” and “seamless_nested_repos.sh”, respectively. The final part of the path is also available as “_url_basename”.

This name is broken down further. “_url_basename_root” and “_url_basename_ext” provide access to the root name and extension. These values are similar to the result of os.path.splitext, but, in the case of multiple periods, the extension is identified using the same length heuristic that git-annex uses. As a result, the extension of “file.tar.gz” would be “.tar.gz”, not “.gz”. In addition, the fields “_url_basename_root_py” and “_url_basename_ext_py” provide access to the result of os.path.splitext.

• _url_filename*

These are similar to _url_basename* fields, but they are obtained with a server request. This is useful if the file name is set in the Content-Disposition header.

Examples

Consider a file “avatars.csv” that contains:

<table>
<thead>
<tr>
<th>who</th>
<th>ext</th>
<th>link</th>
</tr>
</thead>
<tbody>
<tr>
<td>neurodebian</td>
<td>png</td>
<td><a href="https://avatars3.githubusercontent.com/u/260793">https://avatars3.githubusercontent.com/u/260793</a></td>
</tr>
<tr>
<td>datalad</td>
<td>png</td>
<td><a href="https://avatars1.githubusercontent.com/u/8927200">https://avatars1.githubusercontent.com/u/8927200</a></td>
</tr>
</tbody>
</table>

To download each link into a file name composed of the ‘who’ and ‘ext’ fields, we could run:

```
$ datalad addurls -d avatar_ds --fast avatars.csv '{link}' '{who}.{ext}'
```

The `-d avatar_ds` is used to create a new dataset in “$PWD/avatar_ds”.

If we were already in a dataset and wanted to create a new subdataset in an “avatars” subdirectory, we could use “///” in the FILENAME-FORMAT argument:

```
$ datalad addurls --fast avatars.csv '{link}' 'avatars///{who}.{ext}'
```

If the information is represented as JSON lines instead of comma separated values or a JSON array, you can use a utility like jq to transform the JSON lines into an array that addurls accepts:

```
$ ... | jq --slurp . | datalad addurls - '{link}' '{who}.{ext}'
```

NOTE

For users familiar with ‘git annex addurl’: A large part of this plugin’s functionality can be viewed as transforming data from URL-FILE into a “url filename” format that fed to ‘git annex addurl –batch –with-files’.

Options

URL-FILE

A file that contains URLs or information that can be used to construct URLs. Depending on the value of –input-type, this should be a comma- or tab-separated file (with a header as the first row) or a JSON file (structured as a list of objects with string values). If ‘-‘, read from standard input, taking the content as JSON when –input-type is at its default value of ‘ext’.

URL-FORMAT

A format string that specifies the URL for each entry. See the ‘Format Specification’ section above.
FILENAME-FORMAT

Like URL-FORMAT, but this format string specifies the file to which the URL’s content will be downloaded. The name should be a relative path and will be taken as relative to the top-level dataset, regardless of whether it is specified via –dataset or inferred. The file name may contain directories. The separator “/” can be used to indicate that the left-side directory should be created as a new subdataset. See the ‘Format Specification’ section above.

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-d DATASET, --dataset DATASET

Add the URLs to this dataset (or possibly subdatasets of this dataset). An empty or non-existent directory is passed to create a new dataset. New subdatasets can be specified with FILENAME-FORMAT. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

-t TYPE, --input-type TYPE

Whether URL-FILE should be considered a CSV file, TSV file, or JSON file. The default value, “ext”, means to consider URL-FILE as a JSON file if it ends with “.json” or a TSV file if it ends with “.tsv”. Otherwise, treat it as a CSV file. Constraints: value must be one of (‘ext’, ‘csv’, ‘tsv’, ‘json’) [Default: ‘ext’]

-x REGEXP, --exclude-autometa REGEXP

By default, metadata field=value pairs are constructed with each column in URL-FILE, excluding any single column that is specified via URL-FORMAT. This argument can be used to exclude columns that match a regular expression. If set to ‘*’ or an empty string, automatic metadata extraction is disabled completely. This argument does not affect metadata set explicitly with –meta.

-m FORMAT, --meta FORMAT

A format string that specifies metadata. It should be structured as “<field>=<value>”. As an example, “location={3}” would mean that the value for the “location” metadata field should be set the value of the fourth column. This option can be given multiple times.

–key FORMAT

A format string that specifies an annex key for the file content. In this case, the file is not downloaded; instead the key is used to create the file without content. The value should be structured as “[et:]<input backend>[-<s<bytes>]>–<hash>”.

The optional “et:” prefix, which requires git-annex 8.20201116 or later, signals to toggle extension state of the input backend (i.e., MD5 vs MD5E). As an example, “et:MD5-s{size}–{md5sum}” would use the ‘md5sum’ and ‘size’ columns to construct the key, migrating the key from MD5 to MD5E, with an extension based on the file name. Note: If the input backend itself is an annex extension backend (i.e., a backend with a trailing “E”), the key’s extension will not be updated to match the extension of the corresponding file name. Thus, unless the input keys and file names are generated from git-annex, it is recommended to avoid using extension backends as input. If an extension is desired, use the plain variant as input and prepend “et:” so that git-annex will migrate from the plain backend to the extension variant.

1.5. Commands and API
--message MESSAGE

Use this message when committing the URL additions. Constraints: value must be NONE, or value must be a string

-n, --dry-run

Report which URLs would be downloaded to which files and then exit.

--fast

If True, add the URLs, but don’t download their content. Underneath, this passes the --fast flag to git annex addurl.

--ifexists {overwrite|skip}

What to do if a constructed file name already exists. The default behavior is to proceed with the git annex addurl, which will fail if the file size has changed. If set to ‘overwrite’, remove the old file before adding the new one. If set to ‘skip’, do not add the new file. Constraints: value must be one of (‘overwrite’, ‘skip’)

--missing-value VALUE

When an empty string is encountered, use this value instead. Constraints: value must be NONE, or value must be a string

--nosave

by default all modifications to a dataset are immediately saved. Giving this option will disable this behavior.

--version-urls

Try to add a version ID to the URL. This currently only has an effect on HTTP URLs for AWS S3 buckets. s3:// URL versioning is not yet supported, but any URL that already contains a “versionId=” parameter will be used as is.

-c PROC, --cfg-proc PROC

Pass this --cfg_proc value when calling CREATE to make datasets.

-J NJOBS, --jobs NJOBS

how many parallel jobs (where possible) to use. “auto” corresponds to the number defined by ‘datalad.runtime.max-annex-jobs’ configuration item. Constraints: value must be convertible to type ‘int’, or value must be one of (‘auto’).

--drop-after

drop files after adding to annex.
--on-collision {error|error-if-different|take-first|take-last}

What to do when more than one row produces the same file name. By default an error is triggered. “error-if-different” suppresses that error if rows for a given file name collision have the same URL and metadata. “take-first” or “take-last” indicate to instead take the first row or last row from each set of colliding rows. Constraints: value must be one of (‘error’, ‘error-if-different’, ‘take-first’, ‘take-last’) [Default: ‘error’]

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad copy-file

Synopsis


Description

Copy files and their availability metadata from one dataset to another.

The difference to a system copy command is that here additional content availability information, such as registered URLs, is also copied to the target dataset. Moreover, potentially required git-annex special remote configurations are detected in a source dataset and are applied to a target dataset in an analogous fashion. It is possible to copy a file for which no content is available locally, by just copying the required metadata on content identity and availability.

NOTE At the moment, only URLs for the special remotes ‘web’ (git-annex built-in) and ‘datalad’ are recognized and transferred.

The interface is modeled after the POSIX ‘cp’ command, but with one additional way to specify what to copy where:
--specs-from allows the caller to flexibly input source-destination path pairs.

This command can copy files out of and into a hierarchy of nested datasets. Unlike with other DataLad command, the --recursive switch does not enable recursion into subdatasets, but is analogous to the POSIX ‘cp’ command switch and enables subdirectory recursion, regardless of dataset boundaries. It is not necessary to enable recursion in order to save changes made to nested target subdatasets.

Examples

Copy a file into a dataset ‘myds’ using a path and a target directory specification, and save its addition to ‘myds’:

```
datalad copy-file path/to/myfile -d path/to/myds
```

Copy a file to a dataset ‘myds’ and save it under a new name by providing two paths:
Copy a file into a dataset without saving it:

```
datalad copy-file path/to/myfile path/to/myds/new -d path/to/myds
```

Copy a directory and its subdirectories into a dataset ‘myds’ and save the addition in ‘myds’:

```
datalad copy-file path/to/dir -r -d path/to/myds
```

Copy files using a path and optionally target specification from a file:

```
datalad copy-file -d path/to/myds --specs-from specfile
```

Read a specification from stdin and pipe the output of a find command into the copy-file command:

```
find <expr> | datalad copy-file -d path/to/myds --specs-from -
```

**Options**

**PATH**

paths to copy (and possibly a target path to copy to). Constraints: value must be a string

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-d DATASET, --dataset DATASET

root dataset to save after copy operations are completed. All destination paths must be within this dataset, or its subdatasets. If no dataset is given, dataset modifications will be left unsaved. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

--recursive, -r

copy directories recursively.

--target-dir DIRECTORY, -t DIRECTORY

copy all source files into this DIRECTORY. This value is overridden by any explicit destination path provided via --specs-from. When not given, this defaults to the path of the dataset specified via --dataset. Constraints: value must be a string

--specs-from SOURCE

read list of source (and destination) path names from a given file, or stdin (with ‘-’). Each line defines either a source path, or a source/destination path pair (separated by a null byte character).
-m MESSAGE, –message MESSAGE

a description of the state or the changes made to a dataset. Constraints: value must be a string

–version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad drop

Synopsis

{fail,save-before,ignore}] [--version] [PATH [PATH ...]]

Description

Drop file content from datasets

This command takes any number of paths of files and/or directories. If a common (super)dataset is given explicitly, the given paths are interpreted relative to this dataset.

Recursion into subdatasets needs to be explicitly enabled, while recursion into subdirectories within a dataset is done automatically. An optional recursion limit is applied relative to each given input path.

By default, the availability of at least one remote copy is verified before file content is dropped. As these checks could lead to slow operation (network latencies, etc), they can be disabled.

Examples

Drop single file content:

```
% datalad drop <path/to/file>
```

Drop all file content in the current dataset:

```
% datalad drop
```

Drop all file content in a dataset and all its subdatasets:

```
% datalad drop -d <path/to/dataset> -r
```

Disable check to ensure the configured minimum number of remote sources for dropped data:

```
% datalad drop <path/to/content> --nocheck
```
Options

**PATH**

path/name of the component to be dropped. Constraints: value must be a string

-`-h, --help, --help-np`

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-`-d DATASET, --dataset DATASET`

specify the dataset to perform the operation on. If no dataset is given, an attempt is made to identify a dataset based on the PATH given. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

-`-r, --recursive`

if set, recurse into potential subdataset.

-`-R LEVELS, --recursion-limit LEVELS`

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

--nocheck

whether to perform checks to assure the configured minimum number (remote) source for data. Give this option to skip checks.

-`--if-dirty {fail,save-before,ignore}`

desired behavior if a dataset with unsaved changes is discovered: ‘fail’ will trigger an error and further processing is aborted; ‘save-before’ will save all changes prior any further action; ‘ignore’ let’s datalad proceed as if the dataset would not have unsaved changes. [Default: ‘save-before’]

-`--version`

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.
datalad get

Synopsis

[--reckless [auto|ephemeral|shared-...]] [-J NJOBS] [--version]
[PATH [PATH ...]]

Description

Get any dataset content (files/directories/subdatasets).

This command only operates on dataset content. To obtain a new independent dataset from some source use the CLONE command.

By default this command operates recursively within a dataset, but not across potential subdatasets, i.e. if a directory is provided, all files in the directory are obtained. Recursion into subdatasets is supported too. If enabled, relevant subdatasets are detected and installed in order to fulfill a request.

Known data locations for each requested file are evaluated and data are obtained from some available location (according to git-annex configuration and possibly assigned remote priorities), unless a specific source is specified.

Getting subdatasets

Just as DataLad supports getting file content from more than one location, the same is supported for subdatasets, including a ranking of individual sources for prioritization.

The following location candidates are considered. For each candidate a cost is given in parenthesis, higher values indicate higher cost, and thus lower priority:

• URL of any configured superdataset remote that is known to have the desired submodule commit, with the submodule path appended to it. There can be more than one candidate (cost 500).

• In case .GITMODULES contains a relative path instead of a URL, the URL of any configured superdataset remote that is known to have the desired submodule commit, with this relative path appended to it. There can be more than one candidate (cost 500).

• A URL or absolute path recorded in .GITMODULES (cost 600).

• In case .GITMODULES contains a relative path as a URL, the absolute path of the superdataset, appended with this relative path (cost 900).

Additional candidate URLs can be generated based on templates specified as configuration variables with the pattern

DATALAD.GET.SUBDATASET-SOURCE-CANDIDATE-<NAME>

where NAME is an arbitrary identifier. If NAME starts with three digits (e.g. ‘400myserver’) these will be interpreted as a cost, and the respective candidate will be sorted into the generated candidate list according to this cost. If no cost is given, a default of 700 is used.

A template string assigned to such a variable can utilize the Python format mini language and may reference a number of properties that are inferred from the parent dataset’s knowledge about the target subdataset. Properties include any submodule property specified in the respective .GITMODULES record. For convenience, an existing DATALAD-ID record is made available under the shortened name ID.

Lastly, all candidates are sorted according to their cost (lower values first), and duplicate URLs are stripped, while preserving the first item in the candidate list.
NOTE  Power-user info: This command uses git annex get to fulfill file handles.

Examples

Get a single file:

```
% datalad get <path/to/file>
```

Get contents of a directory:

```
% datalad get <path/to/dir/>
```

Get all contents of the current dataset and its subdatasets:

```
% datalad get . -r
```

Get (clone) a registered subdataset, but don’t retrieve data:

```
% datalad get -n <path/to/subds>
```

Options

**PATH**

path/name of the requested dataset component. The component must already be known to a dataset. To add new components to a dataset use the ADD command. Constraints: value must be a string

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-s LABEL, --source LABEL

label of the data source to be used to fulfill requests. This can be the name of a dataset sibling or another known source. Constraints: value must be a string

-d PATH, --dataset PATH

specify the dataset to perform the add operation on, in which case PATH arguments are interpreted as being relative to this dataset. If no dataset is given, an attempt is made to identify a dataset for each input PATH. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

-r, --recursive

if set, recurse into potential subdataset.
-R LEVELS, –recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Alternatively, ‘existing’ will limit recursion to subdatasets that already existed on the filesystem at the start of processing, and prevent new subdatasets from being obtained recursively. Constraints: value must be convertible to type ‘int’, or value must be one of (‘existing’).

-n, –no-data

whether to obtain data for all file handles. If disabled, GET operations are limited to dataset handles. This option prevents data for file handles from being obtained.

-D DESCRIPTION, –description DESCRIPTION

short description to use for a dataset location. Its primary purpose is to help humans to identify a dataset copy (e.g., “mike’s dataset on lab server”). Note that when a dataset is published, this information becomes available on the remote side. Constraints: value must be a string

–reckless [auto|ephemeral|shared-…]

Obtain a dataset or subdataset and set it up in a potentially unsafe way for performance, or access reasons. Use with care, any dataset is marked as ‘untrusted’. The reckless mode is stored in a dataset’s local configuration under ‘datalad.clone.reckless’, and will be inherited to any of its subdatasets. Supported modes are: [‘auto’]: hard-link files between local clones. In-place modification in any clone will alter original annex content. [‘ephemeral’]: symlink annex to origin’s annex and discard local availability info via git-annex-dead ‘here’. Shares an annex between origin and clone w/o git-annex being aware of it. In case of a change in origin you need to update the clone before you’re able to save new content on your end. Alternative to ‘auto’ when hardlinks are not an option, or number of consumed inodes needs to be minimized. Note that this mode can only be used with clones from non-bare repositories or a RIA store! Otherwise two different annex object tree structures (dirhashmixed vs dirhashlower) will be used simultaneously, and annex keys using the respective other structure will be inaccessible. [‘shared-<mode>’]: set up repository and annex permission to enable multi-user access. This disables the standard write protection of annex’ed files. <mode> can be any value support by ‘git init –shared=’, such as ‘group’, or ‘all’. Constraints: value must be one of (True, False, ‘auto’, ‘ephemeral’), or value must start with ‘shared-’

-J NJOBS, –jobs NJOBS

how many parallel jobs (where possible) to use. “auto” corresponds to the number defined by ‘datalad.runtime.max-annex-jobs’ configuration item. Constraints: value must be convertible to type ‘int’, or value must be one of (‘auto’). [Default: ‘auto’]

–version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.  

1.5. Commands and API

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**datalad install**

**Synopsis**

```
   [--reckless [auto|ephemeral|shared-...]] [-J NJOBS] [--version] 
   [PATH [PATH ...]]
```

**Description**

Install a dataset from a (remote) source.

This command creates a local sibling of an existing dataset from a (remote) location identified via a URL or path. Optional recursion into potential subdatasets, and download of all referenced data is supported. The new dataset can be optionally registered in an existing superdataset by identifying it via the DATASET argument (the new dataset's path needs to be located within the superdataset for that).

It is recommended to provide a brief description to label the dataset’s nature and location, e.g. “Michael’s music on black laptop”. This helps humans to identify data locations in distributed scenarios. By default an identifier comprised of user and machine name, plus path will be generated.

When only partial dataset content shall be obtained, it is recommended to use this command without the GET-DATA flag, followed by a get operation to obtain the desired data.

**NOTE** Power-user info: This command uses git clone, and git annex init to prepare the dataset. Registering to a superdataset is performed via a git submodule add operation in the discovered superdataset.

**Examples**

Install a dataset from Github into the current directory:

```
% datalad install https://github.com/datalad-datasets/longnow-podcasts.git
```

Install a dataset as a subdataset into the current dataset:

```
% datalad install -d . \
   --source='https://github.com/datalad-datasets/longnow-podcasts.git'
```

Install a dataset, and get all content right away:

```
% datalad install --get-data \
   -s https://github.com/datalad-datasets/longnow-podcasts.git
```

Install a dataset with all its subdatasets:

```
% datalad install -r \
   https://github.com/datalad-datasets/longnow-podcasts.git
```

**Options**

**PATH**

path/name of the installation target. If no PATH is provided a destination path will be derived from a source URL similar to git clone.
-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-s SOURCE, --source SOURCE

URL or local path of the installation source. Constraints: value must be a string

-d DATASET, --dataset DATASET

specify the dataset to perform the install operation on. If no dataset is given, an attempt is made to identify the dataset in a parent directory of the current working directory and/or the PATH given. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

-g, --get-data

if given, obtain all data content too.

-D DESCRIPTION, --description DESCRIPTION

short description to use for a dataset location. Its primary purpose is to help humans to identify a dataset copy (e.g., “mike’s dataset on lab server”). Note that when a dataset is published, this information becomes available on the remote side. Constraints: value must be a string

-r, --recursive

if set, recurse into potential subdataset.

-R LEVELS, --recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

-reckless [auto|ephemeral|shared-...]

Obtain a dataset or subdataset and set it up in a potentially unsafe way for performance, or access reasons. Use with care, any dataset is marked as ‘untrusted’. The reckless mode is stored in a dataset’s local configuration under ‘datalad.clone.reckless’, and will be inherited to any of its subdatasets. Supported modes are: ['auto']: hard-link files between local clones. In-place modification in any clone will alter original annex content. ['ephemeral']: symlink annex to origin’s annex and discard local availability info via git- annex-dead ‘here’. Shares an annex between origin and clone w/o git-annex being aware of it. In case of a change in origin you need to update the clone before you’re able to save new content on your end. Alternative to ‘auto’ when hardlinks are not an option, or number of consumed inodes needs to be minimized. Note that this mode can only be used with clones from non-bare repositories or a RIA store! Otherwise two different annex object tree structures (dirhashmixed vs dirhashlower) will be used simultaneously, and annex keys using the respective other structure will be inaccessible. ['shared-<mode>']: set up repository and annex permission to enable multi-user access. This disables the standard write protection of annex’ed files. <mode> can be any value support by ‘git init --shared=’, such as ‘group’, or ‘all’. Constraints: value must be one of (True, False, ‘auto’, ‘ephemeral’), or value must start with ‘shared-’
-J NJOBS, –jobs NJOBS

how many parallel jobs (where possible) to use. “auto” corresponds to the number defined by ‘datalad.runtime.max-annex-jobs’ configuration item. Constraints: value must be convertible to type ‘int’, or value must be one of (‘auto’,) [Default: ‘auto’]

–version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad no-annex

Synopsis


Description

Configure a dataset to never put some content into the dataset’s annex

This can be useful in mixed datasets that also contain textual data, such as source code, which can be efficiently and more conveniently managed directly in Git.

Patterns generally look like this:

code/*

which would match all file in the code directory. In order to match all files under CODE/, including all its subdirectories use such a pattern:

code/***

Note that this command works incrementally, hence any existing configuration (e.g. from a previous plugin run) is amended, not replaced.

Options

-h, –help, –help-np

show this help message. –help-np forcefully disables the use of a pager for displaying the help message
-d DATASET, --dataset DATASET

“specify the dataset to configure. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

--pattern PATTERN [PATTERN ...]

list of path patterns. Any content whose path is matching any pattern will not be annexed when added to a dataset, but instead will be tracked directly in Git. Path pattern have to be relative to the directory given by the REF_DIR option. By default, patterns should be relative to the root of the dataset.

--ref-dir REF_DIR

Relative path (within the dataset) to the directory that is to be configured. All patterns are interpreted relative to this path, and configuration is written to a .GITATTRIBUTES file in this directory. [Default: ‘.’]

--makedirs

If set, any missing directories will be created in order to be able to place a file into --REF-DIR.

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad remove

Synopsis

datalad remove [-h] [-d DATASET] [-r] [--nocheck] [--nosave] [-m MESSAGE] [--if-dirty {fail, save-before, ignore}] [--version] [PATH [PATH ...]]

Description

Remove components from datasets

This command can remove subdatasets and paths, including non-empty directories, from datasets. Removing a component implies dropping present content and uninstalling associated subdatasets. Subsequently, the component is “unregistered” from the respective dataset. This means that the component is no longer present on the file system.

By default, the availability of at least one remote copy is verified before file content is dropped. As these checks could lead to slow operation (network latencies, etc), they can be disabled.

Examples
Permanently remove a subdataset from a dataset and wipe out the subdataset association too:

```
% datalad remove -d <path/to/dataset> <path/to/subds>
```

Permanently remove a dataset and all subdatasets:

```
% datalad remove -d <path/to/dataset/> -r
```

Permanently remove a dataset and all subdatasets even if there are fewer than the configured minimum number of (remote) sources for data:

```
% datalad remove -d <path/to/dataset/> -r --nocheck
```

**Options**

**PATH**

path/name of the component to be removed. Constraints: value must be a string

-h, –help, –help-np

show this help message. –help-np forcefully disables the use of a pager for displaying the help message

-d DATASET, –dataset DATASET

specify the dataset to perform the operation on. If no dataset is given, an attempt is made to identify a dataset based on the PATH given. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

-r, –recursive

if set, recurse into potential subdataset.

–nocheck

whether to perform checks to assure the configured minimum number (remote) source for data. Give this option to skip checks.

–nosave

by default all modifications to a dataset are immediately saved. Giving this option will disable this behavior.

-m MESSAGE, –message MESSAGE

a description of the state or the changes made to a dataset. Constraints: value must be a string
--if-dirty {fail,save-before,ignore}

desired behavior if a dataset with unsaved changes is discovered: ‘fail’ will trigger an error and further processing is aborted; ‘save-before’ will save all changes prior any further action; ‘ignore’ let’s datalad proceed as if the dataset would not have unsaved changes. [Default: ‘save-before’]

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad subdatasets

Synopsis


Description

Report subdatasets and their properties.
The following properties are reported (if possible) for each matching subdataset record.
“name” Name of the subdataset in the parent (often identical with the relative path in the parent dataset)
“path” Absolute path to the subdataset
“parentds” Absolute path to the parent dataset
“gitshasum” SHA1 of the subdataset commit recorded in the parent dataset
“state” Condition of the subdataset: ‘absent’, ‘present’
“gitmodule_url” URL of the subdataset recorded in the parent
“gitmodule_name” Name of the subdataset recorded in the parent
“gitmodule_<label>” Any additional configuration property on record.

Performance note: Property modification, requesting BOTTOMUP reporting order, or a particular numerical RECURSION_LIMIT implies an internal switch to an alternative query implementation for recursive query that is more flexible, but also notably slower (performs one call to Git per dataset versus a single call for all combined).
The following properties for subdatasets are recognized by DataLad (without the ‘gitmodule_’ prefix that is used in the query results):
“datalad-recursiveinstall” If set to ‘skip’, the respective subdataset is skipped when DataLad is recursively installing its superdataset. However, the subdataset remains installable when explicitly requested, and no other features are impaired.
“datalad-url” If a subdataset was originally established by cloning, ‘datalad-url’ records the URL that was used to do so. This might be different from ‘url’ if the URL contains datalad specific pieces like any URL of the form “ria+<some protocol>...”.

Options

PATH

path/name to query for subdatasets. Defaults to the current directory. Constraints: value must be a string

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-d DATASET, --dataset DATASET

specify the dataset to query. If no dataset is given, an attempt is made to identify the dataset based on the input and/or the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

--fulfilled FULFILLED

if given, must be a boolean flag indicating whether to report either only locally present or absent datasets. By default subdatasets are reported regardless of their status. Constraints: value must be convertible to type bool

-r, --recursive

if set, recurse into potential subdataset.

-R LEVELS, --recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

--contains PATH

limit report to the subdatasets containing the given path. If a root path of a subdataset is given the last reported dataset will be the subdataset itself. This option can be given multiple times, in which case datasets will be reported that contain any of the given paths. Constraints: value must be a string

--bottomup

whether to report subdatasets in bottom-up order along each branch in the dataset tree, and not top-down.
--set-property NAME VALUE

Name and value of one or more subdataset properties to be set in the parent dataset’s .gitmodules file. The property name is case-insensitive, must start with a letter, and consist only of alphanumeric characters. The value can be a Python format() template string wrapped in ‘<>’ (e.g. ‘<gitmodule_name>’). Supported keywords are any item reported in the result properties of this command, plus ‘refds_relpth’ and ‘refds_relnname’: the relative path of a subdataset with respect to the base dataset of the command call, and, in the latter case, the same string with all directory separators replaced by dashes. This option can be given multiple times. Constraints: value must be a string

--delete-property NAME

Name of one or more subdataset properties to be removed from the parent dataset’s .gitmodules file. This option can be given multiple times. Constraints: value must be a string

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad uninstall

Synopsis

datalad uninstall [-h] [-d DATASET] [-r] [--nocheck] [--if-dirty {fail,save-before,ignore}] [--version] [PATH [PATH ...]]

Description

Uninstall subdatasets

This command can be used to uninstall any number of installed subdatasets. This command will error if individual files or non-dataset directories are given as input (use the drop or remove command depending on the desired goal), nor will it uninstall top-level datasets (i.e. datasets that are not a subdataset in another dataset; use the remove command for this purpose).

By default, the availability of at least one remote copy for each currently available file in any dataset is verified. As these checks could lead to slow operation (network latencies, etc), they can be disabled.

Any number of paths to process can be given as input. Recursion into subdatasets needs to be explicitly enabled, while recursion into subdirectories within a dataset is done automatically. An optional recursion limit is applied relative to each given input path.

Examples

Uninstall a subdataset (undo installation):
Uninstall a subdataset and all potential subdatasets:

```bash
% datalad uninstall <path/to/subds>
```

Skip checks that ensure a minimal number of (remote) sources:

```bash
% datalad uninstall <path/to/subds> --nocheck
```

### Options

**PATH**

path/name of the component to be uninstalled. Constraints: value must be a string

**-h, --help, --help-np**

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

**-d DATASET, --dataset DATASET**

specify the dataset to perform the operation on. If no dataset is given, an attempt is made to identify a dataset based on the PATH given. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

**-r, --recursive**

if set, recurse into potential subdataset.

**--nocheck**

whether to perform checks to assure the configured minimum number (remote) source for data. Give this option to skip checks.

**--if-dirty {fail,save-before,ignore}**

desired behavior if a dataset with unsaved changes is discovered: ‘fail’ will trigger an error and further processing is aborted; ‘save-before’ will save all changes prior any further action; ‘ignore’ let’s datalad proceed as if the dataset would not have unsaved changes. [Default: ‘save-before’]

**--version**

show the module and its version which provides the command
Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad unlock

Synopsis

datalad unlock [-h] [-d DATASET] [-r] [-R LEVELS] [--version] [path [path ...]]

Description

Unlock file(s) of a dataset
Unlock files of a dataset in order to be able to edit the actual content

Examples

Unlock a single file:

```
% datalad unlock <path/to/file>
```

Unlock all contents in the dataset:

```
% datalad unlock .
```

Options

path

file(s) to unlock. Constraints: value must be a string

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-d DATASET, --dataset DATASET

“specify the dataset to unlock files in. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

-r, --recursive

if set, recurse into potential subdataset.
-R LEVELS, --recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

Dataset siblings and 3rd-party platform support

datalad siblings

Synopsis


Description

Manage sibling configuration

This command offers four different actions: ‘query’, ‘add’, ‘remove’, ‘configure’, ‘enable’. ‘query’ is the default action and can be used to obtain information about (all) known siblings. ‘add’ and ‘configure’ are highly similar actions, the only difference being that adding a sibling with a name that is already registered will fail, whereas re-configuring a (different) sibling under a known name will not be considered an error. ‘enable’ can be used to complete access configuration for non-Git sibling (aka git-annex special remotes). Lastly, the ‘remove’ action allows for the removal (or de-configuration) of a registered sibling.

For each sibling (added, configured, or queried) all known sibling properties are reported. This includes:

“name” Name of the sibling

“path” Absolute path of the dataset

“url” For regular siblings at minimum a “fetch” URL, possibly also a “pushurl”

Additionally, any further configuration will also be reported using a key that matches that in the Git configuration.

By default, sibling information is rendered as one line per sibling following this scheme:

<dataset_path>: <sibling_name>(<+|->) [access_specification]

where the + and - labels indicate the presence or absence of a remote data annex at a particular remote, and ACCESS_SPECIFICATION contains either a URL and/or a type label for the sibling.
Options

{query|add|remove|configure|enable}


-h, –help, –help-np

show this help message. –help-np forcefully disables the use of a pager for displaying the help message

-d DATASET, –dataset DATASET

specify the dataset to configure. If no dataset is given, an attempt is made to identify the dataset based on the input and/or the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

-s NAME, –name NAME

name of the sibling. For addition with path “URLs” and sibling removal this option is mandatory, otherwise the hostname part of a given URL is used as a default. This option can be used to limit ‘query’ to a specific sibling. Constraints: value must be a string

-url [URL]

the URL of or path to the dataset sibling named by NAME. For recursive operation it is required that a template string for building subdataset sibling URLs is given. List of currently available placeholders: %NAME the name of the dataset, where slashes are replaced by dashes. Constraints: value must be a string

-pushurl PUSHURL

in case the URL cannot be used to publish to the dataset sibling, this option specifies a URL to be used instead. If no URL is given, PUSHURL serves as URL as well. Constraints: value must be a string

-D DESCRIPTION, –description DESCRIPTION

short description to use for a dataset location. Its primary purpose is to help humans to identify a dataset copy (e.g., “mike’s dataset on lab server”). Note that when a dataset is published, this information becomes available on the remote side. Constraints: value must be a string

-fetch

fetch the sibling after configuration.
--as-common-datasrc NAME

configure a sibling as a common data source of the dataset that can be automatically used by all consumers of the dataset. The sibling must be a regular Git remote with a configured HTTP(S) URL.

--publish-depends SIBLINGNAME

add a dependency such that the given existing sibling is always published prior to the new sibling. This equals setting a configuration item ‘remote.SIBLINGNAME.datalad-publish-depends’. This option can be given more than once to configure multiple dependencies. Constraints: value must be a string

--publish-by-default REFSPEC

add a refspec to be published to this sibling by default if nothing specified. Constraints: value must be a string

--annex-wanted EXPR

expression to specify ‘wanted’ content for the repository/sibling. See https://git-annex.branchable.com/gi t-annex-wanted/ for more information. Constraints: value must be a string

--annex-required EXPR

expression to specify ‘required’ content for the repository/sibling. See https://git-annex.branchable.com/gi t-annex-required/ for more information. Constraints: value must be a string

--annex-group EXPR

expression to specify a group for the repository. See https://git-annex.branchable.com/git-annex-group/ for more information. Constraints: value must be a string

--annex-groupwanted EXPR

expression for the groupwanted. Makes sense only if --annex-wanted="groupwanted" and annex-group is given too. See https://git-annex.branchable.com/git-annex-groupwanted/ for more information. Constraints: value must be a string

--inherit

if sibling is missing, inherit settings (git config, git annex wanted/group/groupwanted) from its super-dataset.

--no-annex-info

Whether to query all information about the annex configurations of siblings. Can be disabled if speed is a concern.
-r, --recursive

if set, recurse into potential subdataset.

-R LEVELS, --recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad create-sibling

Synopsis


Description

Create a dataset sibling on a UNIX-like Shell (local or SSH)-accessible machine

Given a local dataset, and a path or SSH login information this command creates a remote dataset repository and configures it as a dataset sibling to be used as a publication target (see PUBLISH command).

Various properties of the remote sibling can be configured (e.g. name location on the server, read and write access URLs, and access permissions.

Optionally, a basic web-viewer for DataLad datasets can be installed at the remote location.

This command supports recursive processing of dataset hierarchies, creating a remote sibling for each dataset in the hierarchy. By default, remote siblings are created in hierarchical structure that reflects the organization on the local file system. However, a simple templating mechanism is provided to produce a flat list of datasets (see –target-dir).
Options

SSHURL

Login information for the target server. This can be given as a URL (ssh://host/path), SSH-style (user@host:path) or just a local path. Unless overridden, this also serves the future dataset’s access URL and path on the server. Constraints: value must be a string

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-s [NAME], --name [NAME]

sibling name to create for this publication target. If RECURSIVE is set, the same name will be used to label all the subdatasets’ siblings. When creating a target dataset fails, no sibling is added. Constraints: value must be a string

--target-dir PATH

path to the directory on the server where the dataset shall be created. By default this is set to the URL (or local path) specified via SSHURL. If a relative path is provided here, it is interpreted as being relative to the user’s home directory on the server (or relative to SSHURL, when that is a local path). Additional features are relevant for recursive processing of datasets with subdatasets. By default, the local dataset structure is replicated on the server. However, it is possible to provide a template for generating different target directory names for all (sub)datasets. Templates can contain certain placeholder that are substituted for each (sub)dataset. For example: “/mydirectory/dataset%RELNAME”. Supported placeholders: %RELNAME - the name of the datasets, with any slashes replaced by dashes. Constraints: value must be a string

--target-url URL

“public” access URL of the to-be-created target dataset(s) (default: SSHURL). Accessibility of this URL determines the access permissions of potential consumers of the dataset. As with TARGET_DIR, templates (same set of placeholders) are supported. Also, if specified, it is provided as the annex description. Constraints: value must be a string

--target-pushurl URL

In case the TARGET_URL cannot be used to publish to the dataset, this option specifies an alternative URL for this purpose. As with TARGET_URL, templates (same set of placeholders) are supported. Constraints: value must be a string

--dataset DATASET, -d DATASET

specify the dataset to create the publication target for. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)
-r, --recursive

if set, recurse into potential subdataset.

-R LEVELS, --recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

--existing MODE

action to perform, if a sibling is already configured under the given name and/or a target (non-empty) directory already exists. In this case, a dataset can be skipped (‘skip’), the sibling configuration be updated (‘reconfigure’), or process interrupts with error (‘error’). DANGER ZONE: If ‘replace’ is used, an existing target directory will be forcefully removed, re-initialized, and the sibling (re-)configured (thus implies ‘reconfigure’). REPLACE could lead to data loss, so use with care. To minimize possibility of data loss, in interactive mode DataLad will ask for confirmation, but it would raise an exception in non-interactive mode. Constraints: value must be one of (‘skip’, ‘error’, ‘reconfigure’, ‘replace’) [Default: ‘error’]

--shared {false|true|umask|group|all|world|everybody|0xxx}

if given, configures the access permissions on the server for multi-users (this could include access by a webserver!). Possible values for this option are identical to those of git init --shared and are described in its documentation. Constraints: value must be a string, or value must be convertible to type bool

--group GROUP

Filesystem group for the repository. Specifying the group is particularly important when --shared=group. Constraints: value must be a string

--ui {false|true|html_filename}

publish a web interface for the dataset with an optional user-specified name for the html at publication target. defaults to INDEX.HTML at dataset root. Constraints: value must be convertible to type bool, or value must be a string [Default: False]

--as-common-datasrc NAME

configure the created sibling as a common data source of the dataset that can be automatically used by all consumers of the dataset (technical: git-annex auto-enabled special remote).

--publish-by-default REFSPEC

add a refspec to be published to this sibling by default if nothing specified. Constraints: value must be a string
---

### publish-depends SIBLINGNAME

add a dependency such that the given existing sibling is always published prior to the new sibling. This equals setting a configuration item ‘remote.SIBLINGNAME.datalad-publish-depends’. This option can be given more than once to configure multiple dependencies. Constraints: value must be a string

---

### annex-wanted EXPR

expression to specify ‘wanted’ content for the repository/sibling. See [https://git-annex.branchable.com/git-annex-wanted/](https://git-annex.branchable.com/git-annex-wanted/) for more information. Constraints: value must be a string

---

### annex-group EXPR

expression to specify a group for the repository. See [https://git-annex.branchable.com/git-annex-group/](https://git-annex.branchable.com/git-annex-group/) for more information. Constraints: value must be a string

---

### annex-groupwanted EXPR

expression for the groupwanted. Makes sense only if –annex-wanted="groupwanted" and annex-group is given too. See [https://git-annex.branchable.com/git-annex-groupwanted/](https://git-annex.branchable.com/git-annex-groupwanted/) for more information. Constraints: value must be a string

---

### inherit

if sibling is missing, inherit settings (git config, git annex wanted/group/groupwanted) from its super-dataset.

---

### since SINCE

limit processing to subdatasets that have been changed since a given state (by tag, branch, commit, etc). This can be used to create siblings for recently added subdatasets. Constraints: value must be a string

---

### version

show the module and its version which provides the command

---

**Authors**

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad create-sibling-github

**Synopsis**

Description

Create dataset sibling on GitHub.

An existing GitHub project, or a project created via the GitHub website can be configured as a sibling with the siblings command. Alternatively, this command can create a repository under a user’s GitHub account, or any organization a user is a member of (given appropriate permissions). This is particularly helpful for recursive sibling creation for subdatasets. In such a case, a dataset hierarchy is represented as a flat list of GitHub repositories.

GitHub cannot host dataset content (but LFS special remote could be used, http://handbook.datalad.org/r.html?LFS). However, in combination with other data sources (and siblings), publishing a dataset to GitHub can facilitate distribution and exchange, while still allowing any dataset consumer to obtain actual data content from alternative sources.

For GitHub authentication a personal access token is needed. Such a token can be generated by visiting https://github.com/settings/tokens or navigating via GitHub Web UI through: Settings -> Developer settings -> Personal access tokens. We will first consult Git configuration hub.oauthtoken for tokens possibly available there, and then from the system credential store.

If you provide --github-login NAME, we will consider only tokens associated with that GitHub login from hub.oauthtoken, and store/check the token in credential store as associated with that specific login name.

Options

REPONAME

GitHub repository name. When operating recursively, a suffix will be appended to this name for each subdataset. Constraints: value must be a string

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

--dataset DATASET, -d DATASET

specify the dataset to create the publication target for. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

-r, --recursive

if set, recurse into potential subdataset.
-R LEVELS, --recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

-s NAME, --name NAME

name to represent the GitHub repository in the local dataset installation. Constraints: value must be a string [Default: ‘github’]

--existing MODE

desired behavior when already existing or configured siblings are discovered. In this case, a dataset can be skipped (‘skip’), the sibling configuration be updated (‘reconfigure’), or process interrupts with error (‘error’). DANGER ZONE: If ‘replace’ is used, an existing github repository will be irreversibly removed, re-initialized, and the sibling (re-)configured (thus implies ‘reconfigure’). REPLACE could lead to data loss, so use with care. To minimize possibility of data loss, in interactive mode DataLad will ask for confirmation, but it would raise an exception in non-interactive mode. Constraints: value must be one of (‘skip’, ‘error’, ‘reconfigure’, ‘replace’) [Default: ‘error’]

--github-login NAME

GitHub user name or access token. Constraints: value must be a string

--github-organization NAME

If provided, the repository will be created under this GitHub organization. The respective GitHub user needs appropriate permissions. Constraints: value must be a string

--access-protocol {https|ssh}

Which access protocol/URL to configure for the sibling. Constraints: value must be one of (‘https’, ‘ssh’) [Default: ‘https’]

--publish-depends SIBLINGNAME

add a dependency such that the given existing sibling is always published prior to the new sibling. This equals setting a configuration item ‘remote.SIBLINGNAME.datalad-publish-depends’. This option can be given more than once to configure multiple dependencies. Constraints: value must be a string

--private

If this flag is set, the repository created on github will be marked as private and only visible to those granted access or by membership of a team/organization/etc.

--dryrun

Deprecated. Use the renamed –dry-run parameter.
–dry-run

If this flag is set, no repositories will be created. Instead tests for name collisions with existing projects will be performed, and would-be repository names are reported for all relevant datasets.

–version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad create-sibling-gitlab

Synopsis


Description

Create dataset sibling at a GitLab site

An existing GitLab project, or a project created via the GitLab web interface can be configured as a sibling with the siblings command. Alternatively, this command can create a GitLab project at any location/path a given user has appropriate permissions for. This is particularly helpful for recursive sibling creation for subdatasets. API access and authentication are implemented via python-gitlab, and all its features are supported. A particular GitLab site must be configured in a named section of a python-gitlab.cfg file (see https://python-gitlab.readthedocs.io/en/stable/cli.html#configuration for details), such as:

```bash
[mygit]
url = https://git.example.com
api_version = 4
private_token = abcdefghijklmnopqrstuvwxyz
```

Subsequently, this site is identified by its name (‘mygit’ in the example above).

(Recursive) sibling creation for all, or a selected subset of subdatasets is supported with three different project layouts (see –layout):

“hierarchy” Each dataset is placed into its own group, and the actual GitLab project for a dataset is put in a project named “_repo_” inside this group. Using this layout, arbitrarily deep hierarchies of nested datasets can be represented, while the hierarchical structure is reflected in the project path. This is the default layout, if no project path is specified.
“flat” All datasets are placed in the same group. The name of a project is its relative path within the root dataset, with all path separator characters replaced by ‘–’.

“collection” This is a hybrid layout, where the root dataset is placed in a “_repo_” project inside a group, and all nested subdatasets are represented inside the group using a “flat” layout.

GitLab cannot host dataset content. However, in combination with other data sources (and siblings), publishing a dataset to GitLab can facilitate distribution and exchange, while still allowing any dataset consumer to obtain actual data content from alternative sources.

Configuration

All configuration switches and options for GitLab sibling creation can be provided arguments to the command. However, it is also possible to specify a particular setup in a dataset’s configuration. This is particularly important when managing large collections of datasets. Configuration options are:

“datalad.gitlab-default-site” Name of the default GitLab site (see –site)

“datalad.gitlab-SITENAME-siblingname” Name of the sibling configured for the local dataset that points to the GitLab instance SITENAME (see –name)

“datalad.gitlab-SITENAME-layout” Project layout used at the GitLab instance SITENAME (see –layout)

“datalad.gitlab-SITENAME-access” Access method used for the GitLab instance SITENAME (see –access)

“datalad.gitlab-SITENAME-project” Project location/path used for a datasets at GitLab instance SITENAME (see –project). Configuring this is useful for deriving project paths for subdatasets, relative to superdataset.

Options

PATH

selectively create siblings for any datasets underneath a given path. By default only the root dataset is considered.

-h, –help, –help-np

show this help message. –help-np forcefully disables the use of a pager for displaying the help message

–site SITENAME

name of the GitLab site to create a sibling at. Must match an existing python- gitlab configuration section with location and authentication settings (see https://python-gitlab.readthedocs.io/en/stable/cli.html#configuration). By default the dataset configuration is consulted. Constraints: value must be NONE, or value must be a string

–project NAME/LOCATION

project name/location at the GitLab site. If a subdataset of the reference dataset is processed, its project path is automatically determined by the LAYOUT configuration, by default. Constraints: value must be NONE, or value must be a string
--layout {hierarchy|collection|flat}

layout of projects at the GitLab site, if a collection, or a hierarchy of datasets and subdatasets is to be created. By
default the dataset configuration is consulted. Constraints: value must be one of ('hierarchy', 'collection', 'flat')

--dataset DATASET, -d DATASET

reference or root dataset. If no path constraints are given, a sibling for this dataset will be created. In this and all other
cases, the reference dataset is also consulted for the GitLab configuration, and desired project layout. If no dataset is
given, an attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a
Dataset or a valid identifier of a Dataset (e.g. a path)

-r, --recursive

if set, recurse into potential subdataset.

-R LEVELS, --recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type 'int'

-s NAME, --name NAME

name to represent the GitLab sibling remote in the local dataset installation. If not specified a name is looked up in the
dataset configuration, or defaults to the SITE name. Constraints: value must be a string

--existing {skip|error|reconfigure}

desired behavior when already existing or configured siblings are discovered. ‘skip’: ignore; ‘error’: fail, if access
URLs differ; ‘reconfigure’: use the existing repository and reconfigure the local dataset to use it as a sibling. Con-
straints: value must be one of ('skip', 'error', 'reconfigure') [Default: 'error']

--access {http|ssh|ssh+http}

access method used for data transfer to and from the sibling. ‘ssh’: read and write access used the SSH protocol;
‘http’: read and write access use HTTP requests; ‘ssh+http’: read access is done via HTTP and write access performed
with SSH. Dataset configuration is consulted for a default, ‘http’ is used otherwise. Constraints: value must be one of
('http', 'ssh', 'ssh+http')

--publish-depends SIBLINGNAME

add a dependency such that the given existing sibling is always published prior to the new sibling. This equals setting
a configuration item ‘remote.SIBLINGNAME.datalad-publish-depends’. This option can be given more than once to
configure multiple dependencies. Constraints: value must be a string
--description DESCRIPTION

brief description for the GitLab project (displayed on the site). Constraints: value must be a string

--dryrun

If this flag is set, no communication with GitLab is performed, and no repositories will be created. Instead would-be
repository names and configurations are reported for all relevant datasets.

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad create-sibling-ria

Synopsis

datalad create-sibling-ria [-h] -s NAME [-d DATASET] [--storage-name NAME] [--alias ALIAS]
    ria+<ssh|file|https://<host>[/path]>

Description

Creates a sibling to a dataset in a RIA store

Communication with a dataset in a RIA store is implemented via two siblings. A regular Git remote (repository sibling)
and a git-annex special remote for data transfer (storage sibling) – with the former having a publication dependency
on the latter. By default, the name of the storage sibling is derived from the repository sibling’s name by appending
“-storage”.

The store’s base path is expected to not exist, be an empty directory, or a valid RIA store.

RIA store layout

A RIA store is a directory tree with a dedicated subdirectory for each dataset in the store. The subdirectory name
is constructed from the DataLad dataset ID, e.g. ‘124/68afe-59ec-11ea-93d7-f0d5bf7b5561’, where the first three
characters of the ID are used for an intermediate subdirectory in order to mitigate files system limitations for stores
containing a large number of datasets.

Each dataset subdirectory contains a standard bare Git repository for the dataset.
In addition, a subdirectory ‘annex’ hold a standard Git-annex object store. However, instead of using the ‘dirhashlower’ naming scheme for the object directories, like Git-annex would do, a ‘dirhashmixed’ layout is used – the same as for non-bare Git repositories or regular DataLad datasets.

Optionally, there can be a further subdirectory ‘archives’ with (compressed) 7z archives of annex objects. The storage remote is able to pull annex objects from these archives, if it cannot find in the regular annex object store. This feature can be useful for storing large collections of rarely changing data on systems that limit the number of files that can be stored.

Each dataset directory also contains a ‘ria-layout-version’ file that identifies the data organization (as, for example, described above).

Lastly, there is a global ‘ria-layout-version’ file at the store’s base path that identifies where dataset subdirectories themselves are located. At present, this file must contain a single line stating the version (currently “1”). This line MUST end with a newline character.

It is possible to define an alias for an individual dataset in a store by placing a symlink to the dataset location into an ‘alias’ directory in the root of the store. This enables dataset access via URLs of format: ‘ria+<protocol>://<storelocation>#~<aliasname>’.

**Error logging**

To enable error logging at the remote end, append a pipe symbol and an “l” to the version number in ria-layout-version (like so ‘1|ln’).

Error logging will create files in an “error_log” directory whenever the git-annex special remote (storage sibling) raises an exception, storing the Python traceback of it. The logfiles are named according to the scheme ‘<dataset id>.<annex uuid of the remote>.log’ showing “who” ran into this issue with which dataset. Because logging can potentially leak personal data (like local file paths for example), it can be disabled client-side by setting the configuration variable “annex.ora-remote.<storage-sibling-name>.ignore-remote-config”.

**Options**

`ria+<ssh|file|http(s)>://<host>[/path]`

URL identifying the target RIA store and access protocol. If –push-url is given in addition, this is used for read access only. Otherwise it will be used for write access too and to create the repository sibling in the RIA store. Note, that HTTP(S) currently is valid for consumption only thus requiring to provide –push-url. Constraints: value must be a string

`-h, –help, –help-np`

show this help message. –help-np forcefully disables the use of a pager for displaying the help message

`-s NAME, –name NAME`

Name of the sibling. With RECURSIVE, the same name will be used to label all the subdatasets’ siblings. Constraints: value must be a string
-d \textit{DATASET}, –dataset \textit{DATASET}

specify the dataset to process. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

–storage-name NAME

Name of the storage sibling (git-annex special remote). Must not be identical to the sibling name. If not specified, defaults to the sibling name plus ‘-storage’ suffix. If only a storage sibling is created, this setting is ignored, and the primary sibling name is used. Constraints: value must be a string

–alias ALIAS

Alias for the dataset in the RIA store. Add the necessary symlink so that this dataset can be cloned from the RIA store using the given ALIAS instead of its ID. With RECURSIVE=TRUE, only the top dataset will be aliased. Constraints: value must be a string

–post-update-hook

Enable git’s default post-update-hook for the created sibling.

–shared \{false|true|umask|group|all|world|everybody|0xxx\}

If given, configures the permissions in the RIA store for multi-users access. Possible values for this option are identical to those of \textit{git init} –shared and are described in its documentation. Constraints: value must be a string, or value must be convertible to type bool

–group GROUP

Filesystem group for the repository. Specifying the group is crucial when –shared=group. Constraints: value must be a string

–storage-sibling MODE

By default, an ORA storage sibling and a Git repository sibling are created (on). Alternatively, creation of the storage sibling can be disabled (off), or a storage sibling created only and no Git sibling (only). In the latter mode, no Git installation is required on the target host. Constraints: value must be one of (‘only’), or value must be convertible to type bool [Default: True]

–existing MODE

Action to perform, if a (storage) sibling is already configured under the given name and/or a target already exists. In this case, a dataset can be skipped (‘skip’), an existing target repository be forcefully re-initialized, and the sibling (re-)configured (‘reconfigure’), or the command be instructed to fail (‘error’). Constraints: value must be one of (‘skip’, ‘error’, ‘reconfigure’) [Default: ‘error’]
-trust-level TRUST-LEVEL

specify a trust level for the storage sibling. If not specified, the default git-annex trust level is used. ‘trust’ should be used with care (see the git-annex-trust man page). Constraints: value must be one of (‘trust’, ‘semitrust’, ‘untrust’)

-r, --recursive

if set, recurse into potential subdataset.

-R LEVELS, --recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

-no-storage-sibling

This option is deprecated. Use ‘--storage-sibling off’ instead.

-push-url ria+<ssh|file>://<host>[/path]

URL identifying the target RIA store and access protocol for write access to the storage sibling. If given this will also be used for creation of the repository sibling in the RIA store. Constraints: value must be a string

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad export-archive

Synopsis

datalad export-archive [-h] [-d DATASET] [-t {tar|zip}] [-c {gz|bz2}] [--missing-{error|continue|ignore}] [--version] [PATH]

Description

Export the content of a dataset as a TAR/ZIP archive.
Options

PATH

File name of the generated TAR archive. If no file name is given the archive will be generated in the current directory and will be named: datalad_<dataset_uuid>.(tar.*|zip). To generate that file in a different directory, provide an existing directory as the file name. Constraints: value must be a string

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-d DATASET, --dataset DATASET

‘specify the dataset to export. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

-t {tar|zip}, --archivetype {tar|zip}

Type of archive to generate. Constraints: value must be one of (‘tar’, ‘zip’) [Default: ‘tar’]

-c {gz|bz2|}, --compression {gz|bz2|}

Compression method to use. ‘bz2’ is not supported for ZIP archives. No compression is used when an empty string is given. Constraints: value must be one of (‘gz’, ‘bz2’, ‘’ ) [Default: ‘gz’]

--missing-content {error|continue|ignore}

By default, any discovered file with missing content will result in an error and the export is aborted. Setting this to ‘continue’ will issue warnings instead of failing on error. The value ‘ignore’ will only inform about problem at the ‘debug’ log level. The latter two can be helpful when generating a TAR archive from a dataset where some file content is not available locally. Constraints: value must be one of (‘error’, ‘continue’, ‘ignore’) [Default: ‘error’]

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.
datalad export-archive-ora

Synopsis

datalad export-archive-ora [-h] [-d DATASET] [--version] TARGET ...

Description

Export an archive of a local annex object store for the ORA remote.

Keys in the local annex object store are reorganized in a temporary directory (using links to avoid storage duplication) to use the ‘hashdirlower’ setup used by git-annex for bare repositories and the directory-type special remote. This alternative object store is then moved into a 7zip archive that is suitable for use in a ORA remote dataset store. Placing such an archive into:

<dataset location>/archives/archive.7z

Enables the ORA special remote to locate and retrieve all keys contained in the archive.

Options

TARGET

if an existing directory, an ‘archive.7z’ is placed into it, otherwise this is the path to the target archive. Constraints: value must be a string

... list of options for 7z to replace the default ‘-mx0’ to generate an uncompressed archive.

-h, –help, –help-np

show this help message. –help-np forcefully disables the use of a pager for displaying the help message

-d DATASET, –dataset DATASET

specify the dataset to process. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

–version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.
### Synopsis

```
datalad export-to-figshare [-h] [-d DATASET] [--missing-content {error|continue|ignore}] [--no-annex] [--article-id ID] [--version] [PATH]
```

### Description

Export the content of a dataset as a ZIP archive to figshare

Very quick and dirty approach. Ideally figshare should be supported as a proper git annex special remote. Unfortunately, figshare does not support having directories, and can store only a flat list of files. That makes it impossible for any sensible publishing of complete datasets.

The only workaround is to publish dataset as a zip-ball, where the entire content is wrapped into a .zip archive for which figshare would provide a navigator.

### Options

#### PATH

File name of the generated ZIP archive. If no file name is given the archive will be generated in the top directory of the dataset and will be named: datalad_<dataset_uuid>.zip. Constraints: value must be a string

-h, –help, –help-np

show this help message. –help-np forcefully disables the use of a pager for displaying the help message

-d DATASET, –dataset DATASET

“specify the dataset to export. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

--missing-content {error|continue|ignore}

By default, any discovered file with missing content will result in an error and the plugin is aborted. Setting this to ‘continue’ will issue warnings instead of failing on error. The value ‘ignore’ will only inform about problem at the ‘debug’ log level. The latter two can be helpful when generating a TAR archive from a dataset where some file content is not available locally. Constraints: value must be one of (‘error’, ‘continue’, ‘ignore’) [Default: ‘error’]

--no-annex

By default the generated .zip file would be added to annex, and all files would get registered in git-annex to be available from such a tarball. Also upon upload we will register for that archive to be a possible source for it in annex. Setting this flag disables this behavior.
--article-id ID

Which article to publish to. Constraints: value must be convertible to type ‘int’

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad update

Synopsis

datalad update [-h] [-s SIBLING] [--merge [ALLOWED]] [--how
  [{fetch|merge|ff-only|reset|checkout}]] [--how-subds
  [{fetch|merge|ff-only|reset|checkout}]] [--follow
  {sibling|parentds|parentds-lazy}] [-d DATASET] [-r] [-R LEVELS]
  [--fetch-all] [--reobtain-data] [--version] [PATH [PATH ...]]

Description

Update a dataset from a sibling.

Examples

Update from a particular sibling:

```bash
% datalad update -s <siblingname>
```

Update from a particular sibling and merge the changes from a configured or matching branch from the sibling (see
–follow for details):

```bash
% datalad update --how=merge -s <siblingname>
```

Update from the sibling ‘origin’, traversing into subdatasets. For subdatasets, merge the revision registered in the
parent dataset into the current branch:

```bash
% datalad update -s origin --how=merge --follow=parentds -r
```

Fetch and merge the remote tracking branch into the current dataset. Then update each subdataset by resetting its
current branch to the revision registered in the parent dataset, fetching only if the revision isn’t already present:

```bash
% datalad update --how=merge --how-subds=reset--follow=parentds-lazy -r
```
Options

PATH

constrain to-be-updated subdatasets to the given path for recursive operation. Constraints: value must be a string

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-s SIBLING, --sibling SIBLING

name of the sibling to update from. When unspecified, updates from all siblings are fetched. If there is more than one sibling and changes will be brought into the working tree (as requested via --merge, --how, or --how-subds), a sibling will be chosen based on the configured remote for the current branch. Constraints: value must be a string

--merge [ALLOWED]

merge obtained changes from the sibling. This is a subset of the functionality that can be achieved via the newer --how. --merge or --merge=any is equivalent to --how=merge. --merge=ff-only is equivalent to --how=ff-only. Constraints: value must be convertible to type bool, or value must be one of ('any', 'ff-only') [Default: False]

--how [{fetch|merge|ff-only|reset|checkout}]

how to update the dataset. The default ("fetch") simply fetches the changes from the sibling but doesn’t incorporate them into the working tree. A value of "merge" or "ff-only" merges in changes, with the latter restricting the allowed merges to fast-forwards. "reset" incorporates the changes with 'git reset --hard <target>', staying on the current branch but discarding any changes that aren’t shared with the target. "checkout", on the other hand, runs ‘git checkout <target>’, switching from the current branch to a detached state. When --recursive is specified, this action will also apply to subdatasets unless overridden by --how-subds. Constraints: value must be one of ('fetch', 'merge', 'ff-only', 'reset', 'checkout')

--how-subds [{fetch|merge|ff-only|reset|checkout}]

Override the behavior of --how in subdatasets. Constraints: value must be one of ('fetch', 'merge', 'ff-only', 'reset', 'checkout')

--follow {sibling|parentds|parentds-lazy}

source of updates for subdatasets. For ‘sibling’, the update will be done by merging in a branch from the (specified or inferred) sibling. The branch brought in will either be the current branch’s configured branch, if it points to a branch that belongs to the sibling, or a sibling branch with a name that matches the current branch. For ‘parentds’, the revision registered in the parent dataset of the subdataset is merged in. ‘parentds-lazy’ is like ‘parentds’, but prevents fetching from a subdataset’s sibling if the registered revision is present in the subdataset. Note that the current dataset is always updated according to ‘sibling’. This option has no effect unless a merge is requested and --recursive is specified. Constraints: value must be one of ('sibling', 'parentds', 'parentds-lazy') [Default: ‘sibling’]
-d DATASET, –dataset DATASET

specify the dataset to update. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

-r, –recursive

if set, recurse into potential subdataset.

-R LEVELS, –recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

–fetch-all

this option has no effect and will be removed in a future version. When no siblings are given, an all-sibling update will be performed.

–reobtain-data

if enabled, file content that was present before an update will be re-obtained in case a file was changed by the update.

–version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

Reproducible execution

Extending the functionality of the core run command.

datalad rerun

Synopsis

**Description**

Re-execute previous `datalad run` commands.

This will unlock any dataset content that is on record to have been modified by the command in the specified revision. It will then re-execute the command in the recorded path (if it was inside the dataset). Afterwards, all modifications will be saved.

**Report mode**

When called with `--report`, this command reports information about what would be re-executed as a series of records. There will be a record for each revision in the specified revision range. Each of these will have one of the following “rerun_action” values:

- **run**: the revision has a recorded command that would be re-executed
- **skip-or-pick**: the revision does not have a recorded command and would be either skipped or cherry picked
- **merge**: the revision is a merge commit and a corresponding merge would be made

The decision to skip rather than cherry pick a revision is based on whether the revision would be reachable from HEAD at the time of execution.

In addition, when a starting point other than HEAD is specified, there is a rerun_action value “checkout”, in which case the record includes information about the revision the would be checked out before rerunning any commands.

**NOTE** Currently the “onto” feature only sets the working tree of the current dataset to a previous state. The working trees of any subdatasets remain unchanged.

**Examples**

Re-execute the command from the previous commit:

```
% datalad rerun
```

Re-execute any commands in the last five commits:

```
% datalad rerun --since=HEAD~5
```

Do the same as above, but re-execute the commands on top of HEAD~5 in a detached state:

```
% datalad rerun --onto= --since=HEAD~5
```

Re-execute all previous commands and compare the old and new results:

```
% # on master branch
% datalad rerun --branch=verify --since=
% # now on verify branch
% datalad diff --revision=master..
% git log --oneline --left-right --cherry-pick master..
```

**Options**

**REVISION**

rerun command(s) in REVISION. By default, the command from this commit will be executed, but `--since` can be used to construct a revision range. The default value is like “HEAD” but resolves to the main branch when on an adjusted branch. Constraints: value must be a string
-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

--since SINCE

If SINCE is a commit-ish, the commands from all commits that are reachable from REVISION but not SINCE will be re-executed (in other words, the commands in git log SINCE..REVISION). If SINCE is an empty string, it is set to the parent of the first commit that contains a recorded command (i.e., all commands in git log REVISION will be re-executed). Constraints: value must be a string

-d DATASET, --dataset DATASET

specify the dataset from which to rerun a recorded command. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. If a dataset is given, the command will be executed in the root directory of this dataset. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

-b NAME, --branch NAME

create and checkout this branch before rerunning the commands. Constraints: value must be a string

-m MESSAGE, --message MESSAGE

use MESSAGE for the reran commit rather than the recorded commit message. In the case of a multi-commit rerun, all the reran commits will have this message. Constraints: value must be a string

--onto base

start point for rerunning the commands. If not specified, commands are executed at HEAD. This option can be used to specify an alternative start point, which will be checked out with the branch name specified by --branch or in a detached state otherwise. As a special case, an empty value for this option means the parent of the first run commit in the specified revision list. Constraints: value must be a string

--script FILE

extract the commands into FILE rather than rerunning. Use - to write to stdout instead. This option implies --report. Constraints: value must be a string

--report

Don’t actually re-execute anything, just display what would be done. Note: If you give this option, you most likely want to set --output-format to ‘json’ or ‘json_pp’.
--assume-ready {inputs|outputs|both}

Assume that inputs do not need to be retrieved and/or outputs do not need to be unlocked or removed before running the command. This option allows you to avoid the expense of these preparation steps if you know that they are unnecessary. Note that this option also affects any additional outputs that are automatically inferred based on inspecting changed files in the run commit. Constraints: value must be one of ('inputs', 'outputs', 'both')

--explicit

Consider the specification of inputs and outputs in the run record to be explicit. Don’t warn if the repository is dirty, and only save modifications to the outputs from the original record. Note that when several run commits are specified, this applies to every one. Care should also be taken when using --onto because checking out a new HEAD can easily fail when the working tree has modifications.

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad run-procedure

Synopsis


Description

Run prepared procedures (DataLad scripts) on a dataset

Concept

A “procedure” is an algorithm with the purpose to process a dataset in a particular way. Procedures can be useful in a wide range of scenarios, like adjusting dataset configuration in a uniform fashion, populating a dataset with particular content, or automating other routine tasks, such as synchronizing dataset content with certain siblings.

Implementations of some procedures are shipped together with DataLad, but additional procedures can be provided by 1) any DataLad extension, 2) any (sub-)dataset, 3) a local user, or 4) a local system administrator. DataLad will look for procedures in the following locations and order:

Directories identified by the configuration settings

- ‘datalad.locations.user-procedures’ (determined by appdirs.user_config_dir; defaults to ‘$HOME/.config/datalad/procedures’ on GNU/Linux systems)
- ‘datalad.locations.system-procedures’ (determined by appdirs.site_config_dir; defaults to ‘/etc/xdg/datalad/procedures’ on GNU/Linux systems)
- ‘datalad.locations.dataset-procedures’
and subsequently in the ‘resources/procedures’ directories of any installed extension, and, lastly, of the DataLad installation itself.

Please note that a dataset that defines ‘datalad.locations.dataset-procedures’ provides its procedures to any dataset it is a subdataset of. That way you can have a collection of such procedures in a dedicated dataset and install it as a subdataset into any dataset you want to use those procedures with. In case of a naming conflict with such a dataset hierarchy, the dataset you’re calling run-procedures on will take precedence over its subdatasets and so on.

Each configuration setting can occur multiple times to indicate multiple directories to be searched. If a procedure matching a given name is found (filename without a possible extension), the search is aborted and this implementation will be executed. This makes it possible for individual datasets, users, or machines to override externally provided procedures (enabling the implementation of customizable processing “hooks”).

Procedure implementation

A procedure can be any executable. Executables must have the appropriate permissions and, in the case of a script, must contain an appropriate “shebang” line. If a procedure is not executable, but its filename ends with ‘.py’, it is automatically executed by the ‘python’ interpreter (whichever version is available in the present environment). Likewise, procedure implementations ending on ‘.sh’ are executed via ‘bash’.

Procedures can implement any argument handling, but must be capable of taking at least one positional argument (the absolute path to the dataset they shall operate on).

For further customization there are two configuration settings per procedure available:

- ‘datalad.procedures.<NAME>.call-format’ fully customizable format string to determine how to execute procedure NAME (see also datalad-run). It currently requires to include the following placeholders:
  - ‘{script}’: will be replaced by the path to the procedure
  - ‘{ds}’: will be replaced by the absolute path to the dataset the procedure shall operate on
  - ‘{args}’: (not actually required) will be replaced by all additional arguments passed into run-procedure after NAME

  As an example the default format string for a call to a python script is: “python {script} {ds} {args}”

- ‘datalad.procedures.<NAME>.help’ will be shown on datalad run-procedure --help-proc NAME to provide a description and/or usage info for procedure NAME

Examples

Find out which procedures are available on the current system:

```
% datalad run-procedure --discover
```

Run the ‘yoda’ procedure in the current dataset:

```
% datalad run-procedure cfg_yoda
```

Options

**NAME [ARGS]**

Name and possibly additional arguments of the to-be-executed procedure. Note, that all options to run-procedure need to be put before NAME, since all ARGS get assigned to NAME.
-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-d PATH, --dataset PATH

specify the dataset to run the procedure on. An attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

--discover

if given, all configured paths are searched for procedures and one result record per discovered procedure is yielded, but no procedure is executed.

--help-proc

if given, get a help message for procedure NAME from config setting datalad.procedures.NAME.help.

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

Metadata handling

datalad search

Synopsis

datalad search [-h] [-d DATASET] [--reindex] [--max-nresults MAX_NRESULTS] [--mode {egrep, textblob, autofield}] [--full-record] [--show-keys {name, short, full}] [--show-query] [--version] [QUERY [QUERY ...

Description

Search dataset metadata

DataLad can search metadata extracted from a dataset and/or aggregated into a superdataset (see the AGGREGATE-METADATA command). This makes it possible to discover datasets, or individual files in a dataset even when they are not available locally.
Ultimately DataLad metadata are a graph of linked data structures. However, this command does not (yet) support queries that can exploit all information stored in the metadata. At the moment the following search modes are implemented that represent different trade-offs between the expressiveness of a query and the computational and storage resources required to execute a query.

- egrep (default)
- egrepcs [case-sensitive egrep]
- textblob
- autofield

An alternative default mode can be configured by tuning the configuration variable `datalad.search.default-mode`:

```
[datalad "search"]
default-mode = egrepcs
```

Each search mode has its own default configuration for what kind of documents to query. The respective default can be changed via configuration variables:

```
[datalad "search"]
index-<mode_name>-documenttype = (all|datasets|files)
```

**Mode: egrep/egrepcs**

These search modes are largely ignorant of the metadata structure, and simply perform matching of a search pattern against a flat string-representation of metadata. This is advantageous when the query is simple and the metadata structure is irrelevant, or precisely known. Moreover, it does not require a search index, hence results can be reported without an initial latency for building a search index when the underlying metadata has changed (e.g. due to a dataset update). By default, these search modes only consider datasets and do not investigate records for individual files for speed reasons. Search results are reported in the order in which they were discovered.

Queries can make use of Python regular expression syntax ([https://docs.python.org/3/library/re.html](https://docs.python.org/3/library/re.html)). In EGREP mode, matching is case-insensitive when the query does not contain upper case characters, but is case-sensitive when it does. In EGREPCS mode, matching is always case-sensitive. Expressions will match anywhere in a metadata string, not only at the start.

When multiple queries are given, all queries have to match for a search hit (AND behavior).

It is possible to search individual metadata key/value items by prefixing the query with a metadata key name, separated by a colon (`:`). The key name can also be a regular expression to match multiple keys. A query match happens when any value of an item with a matching key name matches the query (OR behavior). See examples for more information.

**Examples:**

Query for (what happens to be) an author:

```
% datalad search haxby
```

Queries are case-INsensitive when the query contains no upper case characters, and can be regular expressions. Use EGREPCS mode when it is desired to perform a case-sensitive lowercase match:

```
% datalad search --mode egrepcs halchenko.*haxby
```

This search mode performs NO analysis of the metadata content. Therefore queries can easily fail to match. For example, the above query implicitly assumes that authors are listed in alphabetical order. If that is the case (which may or may not be true), the following query would yield NO hits:

```
% datalad search Haxby.*Halchenko
```
The TEXTBLOB search mode represents an alternative that is more robust in such cases.

For more complex queries multiple query expressions can be provided that all have to match to be considered a hit (AND behavior). This query discovers all files (non-default behavior) that match `bids.type=T1w` AND `nifti1.qform_code=scanner`:

```
% datalad -c datalad.search.index-egrep-documenttype=all search bids.
˓
→ type:T1w nifti1.qform_code:scanner
```

Key name selectors can also be expressions, which can be used to select multiple keys or construct “fuzzy” queries. In such cases a query matches when any item with a matching key matches the query (OR behavior). However, multiple queries are always evaluated using an AND conjunction. The following query extends the example above to match any files that have either `nifti1.qform_code=scanner` or `nifti1.sform_code=scanner`:

```
% datalad -c datalad.search.index-egrep-documenttype=all search bids.
˓
→ type:T1w nifti1.(q|s)form_code:scanner
```

**Mode: textblob**

This search mode is very similar to the EGREP mode, but with a few key differences. A search index is built from the string-representation of metadata records. By default, only datasets are included in this index, hence the indexing is usually completed within a few seconds, even for hundreds of datasets. This mode uses its own query language (not regular expressions) that is similar to other search engines. It supports logical conjunctions and fuzzy search terms. More information on this is available from the Whoosh project (search engine implementation):

- Description of a number of query language customizations that are enabled in DataLad, such as, fuzzy term matching: [http://whoosh.readthedocs.io/en/latest/parsing.html#common-customizations](http://whoosh.readthedocs.io/en/latest/parsing.html#common-customizations)

Importantly, search hits are scored and reported in order of descending relevance, hence limiting the number of search results is more meaningful than in the ‘egrep’ mode and can also reduce the query duration.

Examples:

Search for (what happens to be) two authors, regardless of the order in which those names appear in the metadata:

```
% datalad search --mode textblob halchenko haxby
```

Fuzzy search when you only have an approximate idea what you are looking for or how it is spelled:

```
% datalad search --mode textblob haxbi~
```

Very fuzzy search, when you are basically only confident about the first two characters and how it sounds approximately (or more precisely: allow for three edits and require matching of the first two characters):

```
% datalad search --mode textblob haksbi~3/2
```

Combine fuzzy search with logical constructs:

```
% datalad search --mode textblob 'haxbi~ AND (hanke OR halchenko)'
```

**Mode: autofield**

This mode is similar to the ‘textblob’ mode, but builds a vastly more detailed search index that represents individual metadata variables as individual fields. By default, this search index includes records for datasets and individual fields, hence it can grow very quickly into a huge structure that can easily take an hour or more to build and require more
than a GB of storage. However, limiting it to documents on datasets (see above) retains the enhanced expressiveness of queries while dramatically reducing the resource demands.

Examples:

List names of search index fields (auto-discovered from the set of indexed datasets) which either have a field starting with “age” or “gender”:

```
% datalad search --mode autofield --show-keys name '.age' '.gender'
```

Fuzzy search for datasets with an author that is specified in a particular metadata field:

```
% datalad search --mode autofield bids.author:haxbi~ type:dataset
```

Search for individual files that carry a particular description prefix in their ‘nifti1’ metadata:

```
% datalad search --mode autofield nifti1.description:FSL* type:file
```

**Reporting**

Search hits are returned as standard DataLad results. On the command line the ‘–output-format’ (or ‘-f’) option can be used to tweak results for further processing.

Examples:

Format search hits as a JSON stream (one hit per line):

```
% datalad -f json search haxby
```

Custom formatting: which terms matched the query of particular results. Useful for investigating fuzzy search results:

```
$ datalad -f '{path}: {query_matched}' search --mode autofield bids.
    →author:haxbi~
```

**Options**

**QUERY**

query string, supported syntax and features depends on the selected search mode (see documentation).

-h, –help, –help-np

show this help message. –help-np forcefully disables the use of a pager for displaying the help message

-d DATASET, –dataset DATASET

specify the dataset to perform the query operation on. If no dataset is given, an attempt is made to identify the dataset based on the current working directory and/or the PATH given. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)
force rebuilding the search index, even if no change in the dataset’s state has been detected, for example, when the
index documenttype configuration has changed.

maxmimum number of search results to report. Setting this to 0 will report all search matches. Depending on the
mode this can search substantially slower. If not specified, a mode-specific default setting will be used. Constraints:
value must be convertible to type ‘int’

Mode of search index structure and content. See section SEARCH MODES for details.

If set, return the full metadata record for each search hit. Depending on the search mode this might require additional
queries. By default, only data that is available to the respective search modes is returned. This always includes
essential information, such as the path and the type.

if given, a list of known search keys is shown. If ‘name’ - only the name is printed one per line. If ‘short’ or ‘full’,
statistics (in how many datasets, and how many unique values) are printed. ‘short’ truncates the listing of unique
values. QUERY, if provided, is regular expressions any of which keys should contain. No other action is performed
(except for reindexing), even if other arguments are given. Each key is accompanied by a term definition in parenthesis
(TODO). In most cases a definition is given in the form of a URL. If an ontology definition for a term is known, this
URL can resolve to a webpage that provides a comprehensive definition of the term. However, for speed reasons
term resolution is solely done on information contained in a local dataset’s metadata, and definition URLs might be
outdated or point to no longer existing resources.

if given, the formal query that was generated from the given query string is shown, but not actually executed. This is
mostly useful for debugging purposes.

show the module and its version which provides the command

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.
**datalad metadata**

**Synopsis**

```
datalad metadata [-h] [-d DATASET] [--get-aggregates] [--reporton TYPE] [-r] [--version] [PATH [PATH ...]]
```

**Description**

Metadata reporting for files and entire datasets

Two types of metadata are supported:

1. metadata describing a dataset as a whole (dataset-global metadata), and
2. metadata for files in a dataset (content metadata).

Both types can be accessed with this command.

**Examples:**

Report the metadata of a single file, as aggregated into the closest locally available dataset, containing the query path:

```
% datalad metadata somedir/subdir/thisfile.dat
```

Sometimes it is helpful to get metadata records formatted in a more accessible form, here as pretty-printed JSON:

```
% datalad -f json_pp metadata somedir/subdir/thisfile.dat
```

Same query as above, but specify which dataset to query (must be containing the query path):

```
% datalad metadata -d . somedir/subdir/thisfile.dat
```

Report any metadata record of any dataset known to the queried dataset:

```
% datalad metadata --recursive --reporton datasets
```

Get a JSON-formatted report of aggregated metadata in a dataset, incl. information on enabled metadata extractors, dataset versions, dataset IDs, and dataset paths:

```
% datalad -f json metadata --get-aggregates
```

**Options**

**PATH**

path(s) to query metadata for. Constraints: value must be a string

**-h, --help, --help-np**

show this help message. --help-np forcefully disables the use of a pager for displaying the help message
-d DATASET, --dataset DATASET

dataset to query. If given, metadata will be reported as stored in this dataset. Otherwise, the closest available dataset containing a query path will be consulted. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

--get-aggregates

if set, yields all (sub)datasets for which aggregate metadata are available in the dataset. No other action is performed, even if other arguments are given. The reported results contain a datasets’s ID, the commit hash at which metadata aggregation was performed, and the location of the object file(s) containing the aggregated metadata.

--reporton TYPE

choose on what type result to report on: ‘datasets’, ‘files’, ‘all’ (both datasets and files), or ‘none’ (no report). Constraints: value must be one of (‘all’, ‘datasets’, ‘files’, ‘none’) [Default: ‘all’]

-r, --recursive

if set, recurse into potential subdataset.

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad aggregate-metadata

Synopsis

datalad aggregate-metadata [-h] [-d DATASET] [-r] [-R LEVELS] [--update-mode \n→{all|target}] \n→{all|target}] [--incremental] [--force-extraction] [--nosave] [--version] \n[PATH [PATH ...]]

Description

Aggregate metadata of one or more datasets for later query.

Metadata aggregation refers to a procedure that extracts metadata present in a dataset into a portable representation that is stored a single standardized format. Moreover, metadata aggregation can also extract metadata in this format from one dataset and store it in another (super)dataset. Based on such collections of aggregated metadata it is possible
to discover particular datasets and specific parts of their content, without having to obtain the target datasets first (see the DataLad ‘search’ command).

To enable aggregation of metadata that are contained in files of a dataset, one has to enable one or more metadata extractor for a dataset. DataLad supports a number of common metadata standards, such as the Exchangeable Image File Format (EXIF), Adobe’s Extensible Metadata Platform (XMP), and various audio file metadata systems like ID3. DataLad extension packages can provide metadata data extractors for additional metadata sources. For example, the neuroimaging extension provides extractors for scientific (meta)data standards like BIDS, DICOM, and NIfTI1. Some metadata extractors depend on particular 3rd-party software. The list of metadata extractors available to a particular DataLad installation is reported by the ‘wtf’ command (‘datalad wtf’).

Enabling a metadata extractor for a dataset is done by adding its name to the ‘datalad.metadata.nativetype’ configuration variable – typically in the dataset’s configuration file (.datalad/config), e.g.:

```
[datalad "metadata"]
nativetype = exif
nativetype = xmp
```

If an enabled metadata extractor is not available in a particular DataLad installation, metadata extraction will not succeed in order to avoid inconsistent aggregation results.

Enabling multiple extractors is supported. In this case, metadata are extracted by each extractor individually, and stored alongside each other. Metadata aggregation will also extract DataLad’s own metadata (extractors ‘datalad_core’, and ‘annex’).

Metadata aggregation can be performed recursively, in order to aggregate all metadata across all subdatasets, for example, to be able to search across any content in any dataset of a collection. Aggregation can also be performed for subdatasets that are not available locally. In this case, pre-aggregated metadata from the closest available superdataset will be considered instead.

Depending on the versatility of the present metadata and the number of dataset or files, aggregated metadata can grow prohibitively large. A number of configuration switches are provided to mitigate such issues.

**datalad.metadata.aggregate-content-<extractor-name>** If set to false, content metadata aggregation will not be performed for the named metadata extractor (a potential underscore ‘_’ in the extractor name must be replaced by a dash ‘-’). This can substantially reduce the runtime for metadata extraction, and also reduce the size of the generated metadata aggregate. Note, however, that some extractors may not produce any metadata when this is disabled, because their metadata might come from individual file headers only. ‘datalad.metadata.store-aggregate-content’ might be a more appropriate setting in such cases.

**datalad.metadata.aggregate-ignore-fields** Any metadata key matching any regular expression in this configuration setting is removed prior to generating the dataset-level metadata summary (keys and their unique values across all dataset content), and from the dataset metadata itself. This switch can also be used to filter out sensitive information prior aggregation.

**datalad.metadata.generate-unique-<extractor-name>** If set to false, DataLad will not auto-generate a summary of unique content metadata values for a particular extractor as part of the dataset-global metadata (a potential underscore ‘_’ in the extractor name must be replaced by a dash ‘-’). This can be useful if such a summary is bloated due to minor uninformative (e.g. numerical) differences, or when a particular extractor already provides a carefully designed content metadata summary.

**datalad.metadata.maxfieldsize** Any metadata value that exceeds the size threshold given by this configuration setting (in bytes/characters) is removed.

**datalad.metadata.store-aggregate-content** If set, extracted content metadata are still used to generate a dataset-level summary of present metadata (all keys and their unique values across all files in a dataset are determined and stored as part of the dataset-level metadata aggregate, see datalad.metadata.generate-unique-<extractor-name>), but metadata on individual files are not stored. This switch can be used to avoid prohibitively large metadata files. Discovery of datasets containing content matching particular metadata properties will still be possible,
but such datasets would have to be obtained first in order to discover which particular files in them match these properties.

**Options**

**PATH**

path to datasets that shall be aggregated. When a given path is pointing into a dataset, the metadata of the containing dataset will be aggregated. If no paths given, current dataset metadata is aggregated. Constraints: value must be a string

**-h, --help, --help-np**

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

**-d DATASET, --dataset DATASET**

topmost dataset metadata will be aggregated into. All dataset between this dataset and any given path will receive updated aggregated metadata from all given paths. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

**-r, --recursive**

if set, recurse into potential subdataset.

**-R LEVELS, --recursion-limit LEVELS**

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

**--update-mode {all|target}**

which datasets to update with newly aggregated metadata: all datasets from any leaf dataset to the top-level target dataset including all intermediate datasets (all), or just the top-level target dataset (target). Constraints: value must be one of (‘all’, ‘target’) [Default: ‘target’]

**--incremental**

If set, all information on metadata records of subdatasets that have not been (re-)aggregated in this run will be kept unchanged. This is useful when (re-)aggregation only a subset of a dataset hierarchy, for example, because not all subdatasets are locally available.

**--force-extraction**

If set, all enabled extractors will be engaged regardless of whether change detection indicates that metadata has already been extracted for a given dataset state.
--nosave

by default all modifications to a dataset are immediately saved. Giving this option will disable this behavior.

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad extract-metadata

Synopsis

datalad extract-metadata [-h] --type NAME [-d DATASET] [--version] [FILE [FILE ...]]

Description

Run one or more of DataLad’s metadata extractors on a dataset or file.
The result(s) are structured like the metadata DataLad would extract during metadata aggregation. There is one result per dataset/file.
Examples:

Extract metadata with two extractors from a dataset in the current directory and also from all its files:

$ datalad extract-metadata -d . --type frictionless_datapackage --type datalad_core

Extract XMP metadata from a single PDF that is not part of any dataset:

$ datalad extract-metadata --type xmp Downloads/freshfromtheweb.pdf

Options

FILE

Path of a file to extract metadata from. Constraints: value must be a string

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message
Name of a metadata extractor to be executed. This option can be given more than once.

-d DATASET, --dataset DATASET

“Dataset to extract metadata from. If no FILE is given, metadata is extracted from all files of the dataset. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

Helpers and support utilities

datalad add-archive-content

Synopsis

datalad add-archive-content [-h] [--annex ANNEX] [--add-archive-leading-dir]
    [--strip-leading-dirs] [--leading-dirs-depth LEADING_DIRS_DEPTH]
    [--leading-dirs-consider LEADING_DIRS_CONSIDER]
    [--existing {fail, overwrite, archive-suffix, numeric-suffix}] [-o

Description

Add content of an archive under git annex control.

This results in the files within archive (which must be already under annex control itself) added under annex referencing original archive via custom special remotes mechanism

Example:

    annex-repo$ datalad add-archive-content my_big_tarball.tar.gz

Options

archive

archive file or a key (if –key specified). Constraints: value must be a string
-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

--annex ANNEX

annex instance to use.

--add-archive-leading-dir

flag to place extracted content under a directory which would correspond to archive name with suffix stripped. E.g. for archive EXAMPLE.ZIP its content will be extracted under a directory EXAMPLE/.

--strip-leading-dirs

flag to move all files directories up, from how they were stored in an archive, if that one contained a number (possibly more than 1 down) single leading directories.

--leading-dirs-depth LEADING_DIRS_DEPTH

maximal depth to strip leading directories to. If not specified (None), no limit.

--leading-dirs-consider LEADING_DIRS_CONSIDER

regular expression(s) for directories to consider to strip away. Constraints: value must be a string

--use-current-dir

flag to extract archive under the current directory, not the directory where archive is located. Note that it will be of no effect if --key is given.

-d, --delete

flag to delete original archive from the filesystem/git in current tree. Note that it will be of no effect if --key is given.

--key

flag to signal if provided archive is not actually a filename on its own but an annex key.

-e EXCLUDE, --exclude EXCLUDE

regular expressions for filenames which to exclude from being added to annex. Applied after --rename if that one is specified. For exact matching, use anchoring. Constraints: value must be a string
-r RENAME, –rename RENAME
regular expressions to rename files before being added under git. First letter defines how to split provided string into
two parts: Python regular expression (with groups), and replacement string. Constraints: value must be a string

–existing {fail,overwrite,archive-suffix,numerical-suffix}
what operation to perform a file from archive tries to overwrite an existing file with the same name. ‘fail’ (default)
leads to RuntimeError exception. ‘overwrite’ silently replaces existing file. ‘archive-suffix’ instructs to add a suffix
(prefixed with a ‘-’ ) matching archive name from which file gets extracted, and if that one present, ‘numeric-suffix’ is
in effect in addition, when incremental numeric suffix (prefixes with a ‘.’) is added until no name collision is longer
detected. [Default: ‘fail’]

-o ANNEX_OPTIONS, –annex-options ANNEX_OPTIONS
additional options to pass to git-annex. Constraints: value must be a string

–copy
flag to copy the content of the archive instead of moving.

–no-commit
flag to not commit upon completion.

–allow-dirty
flag that operating on a dirty repository (uncommitted or untracked content) is ok.

–stats STATS
ActivityStats instance for global tracking.

–drop-after
drop extracted files after adding to annex.

–delete-after
extract under a temporary directory, git-annex add, and delete after. To be used to “index” files within annex without
actually creating corresponding files under git. Note that annex dropunused would later remove that load.

–version
show the module and its version which provides the command
Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad annotate-paths

Synopsis

datalad annotate-paths [-h] [-d DATASET] [-r] [-R LEVELS] [-a action LABEL]
                 [--unavailable-path-status LABEL] [--unavailable-path-msg
message] [-n nondataset-path-status LABEL]
                 [--no-parentds-discovery] [--no-subds-discovery]
                 [--revision-change-discovery] [--no-untracked-discovery]
                 [--modified MODIFIED]] [--version] [PATH [PATH ...]]

Description

Analyze and act upon input paths

Given paths (or more generally location requests) are inspected and annotated with a number of properties. A list of
recognized properties is provided below.

Recognized path properties

“action” label of the action that triggered the path annotation

“annexkey” annex key for the content of a file

“logger” logger for reporting a message

“message” message (plus possible tsring expansion arguments)

“orig_request” original input by which a path was determined

“parentds” path of dataset containing the annotated path (superdataset for subdatasets)

“path” absolute path that is annotated

“process_content” flag that content underneath the path is to be processed

“process_updated_only” flag that only known dataset components are to be processed

“raw_input” flag whether this path was given as raw (non-annotated) input

“refs” path of a reference/base dataset the annotated path is part of

“registered_subds” flag whether a dataset is known to be a true subdataset of PARENTDS

“revision” the recorded commit for a subdataset in a superdataset

“revision_descr” a human-readable description of REVISION

“source_url” URL a dataset was installed from

“staged” flag whether a path is known to be “staged” in its containing dataset

“state” state indicator for a path in its containing dataset (clean, modified, absent (also for files), conflict)

“status” action result status (ok, notneeded, impossible, error)

“type” nature of the path (file, directory, dataset)
“url” registered URL for a subdataset in a superdataset

In the case of enabled modification detection the results may contain additional properties regarding the nature of the modification. See the documentation of the DIFF command for details.

Options

PATH

path to be annotated. Constraints: value must be a string

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-d DATASET, --dataset DATASET

an optional reference/base dataset for the paths. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

-r, --recursive

if set, recurse into potential subdataset.

-R LEVELS, --recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

--action LABEL

an “action” property value to include in the path annotation. Constraints: value must be a string

--unavailable-path-status LABEL

a “status” property value to include in the annotation for paths that are underneath a dataset, but do not exist on the filesystem. Constraints: value must be a string [Default: ‘’]

--unavailable-path-msg message

a “message” property value to include in the annotation for paths that are underneath a dataset, but do not exist on the filesystem. Constraints: value must be a string

--nondataset-path-status LABEL

a “status” property value to include in the annotation for paths that are not underneath any dataset. Constraints: value must be a string [Default: ‘error’]
–no-parentds-discovery

Flag to disable reports of parent dataset information for any path, in particular dataset root paths. Disabling saves on command run time, if this information is not needed.

–no-subds-discovery

Flag to disable reporting type='dataset' for subdatasets, even when they are not installed, or their mount point directory doesn’t exist. Disabling saves on command run time, if this information is not needed.

–revision-change-discovery

Flag to disable discovery of changes which were not yet committed. Disabling saves on command run time, if this information is not needed.

–no-untracked-discovery

Flag to disable discovery of untracked changes. Disabling saves on command run time, if this information is not needed.

–modified [MODIFIED]

comparison reference specification for modification detection. This can be (mostly) anything that git diff understands (commit, treeish, tag, etc). See the documentation of datalad diff –revision for details. Unmodified paths will not be annotated. If a requested path was not modified but some content underneath it was, then the request is replaced by the modified paths and those are annotated instead. This option can be used without an argument to test against changes that have been made, but have not yet been staged for a commit. Constraints: value must be a string, or value must be convertible to type bool

–version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad clean

Synopsis

datalad clean [-h] [-d DATASET] [--what
    [{cached-archives,annex-tmp,annex-transfer,search-index} [
Description

Clean up after DataLad (possible temporary files etc.)
Removes temporary files and directories left behind by DataLad and git-annex in a dataset.

Examples

Clean all known temporary locations of a dataset:

% datalad clean

Report on all existing temporary locations of a dataset:

% datalad clean --dry-run

Clean all known temporary locations of a dataset and all its subdatasets:

% datalad clean -r

Clean only the archive extraction caches of a dataset and all its subdatasets:

% datalad clean --what cached-archives -r

Report on existing annex transfer files of a dataset and all its subdatasets:

% datalad clean --what annex-transfer -r --dry-run

Options

-h, –help, –help-np

show this help message. –help-np forcefully disables the use of a pager for displaying the help message

-d DATASET, –dataset DATASET

specify the dataset to perform the clean operation on. If no dataset is given, an attempt is made to identify the dataset in current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

--what {{cached-archives,annex-tmp,annex-transfer,search-index} ...}

What to clean. If none specified – all known targets are considered.

--dry-run

Report on cleanable locations - not actually cleaning up anything.

-r, –recursive

if set, recurse into potential subdataset.
-R LEVELS, –recursion-limit LEVELS

limit recursion into subdataset to the given number of levels. Constraints: value must be convertible to type ‘int’

–version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad check-dates

Synopsis

```
datalad check-dates [-h] [-D DATE] [--rev REVISION] [--annex {all|tree|none}] [--no-‐tags]
   [--older] [--version] [PATH [PATH ...]]
```

Description

Find repository dates that are more recent than a reference date.

The main purpose of this tool is to find “leaked” real dates in repositories that are configured to use fake dates. It checks dates from three sources: (1) commit timestamps (author and committer dates), (2) timestamps within files of the “git-annex” branch, and (3) the timestamps of annotated tags.

Options

PATH

Root directory in which to search for Git repositories. The current working directory will be used by default. Constraints: value must be a string

-h, –help, –help-np

show this help message. –help-np forcefully disables the use of a pager for displaying the help message

-D DATE, –reference-date DATE

Compare dates to this date. If dateutil is installed, this value can be any format that its parser recognizes. Otherwise, it should be a unix timestamp that starts with a “@”. The default value corresponds to 01 Jan, 2018 00:00:00 -0000. Constraints: value must be a string [Default: ‘@1514764800’]
--rev REVISION

Search timestamps from commits that are reachable from REVISION. Any revision specification supported by git log, including flags like --all and --tags, can be used. This option can be given multiple times.

--annex {all|tree|none}

Mode for "git-annex" branch search. If ‘all’, all blobs within the branch are searched. ‘tree’ limits the search to blobs that are referenced by the tree at the tip of the branch. ‘none’ disables search of “git-annex” blobs. Constraints: value must be one of (‘all’, ‘tree’, ‘none’) [Default: ‘all’]

--no-tags

Don’t check the dates of annotated tags.

--older

Find dates which are older than the reference date rather than newer.

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad create-test-dataset

Synopsis

datalad create-test-dataset [-h] [--spec SPEC] [--seed SEED] [--version] path

Description

Create test (meta-)dataset.

Options

path

path/name where to create (if specified, must not exist). Constraints: value must be a string
-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

--spec SPEC

spec for hierarchy, defined as a min-max (min could be omitted to assume 0) defining how many (random number from min to max) of sub-datasets to generate at any given level of the hierarchy. Each level separated from each other with /. Example: 1-3/-2 would generate from 1 to 3 subdatasets at the top level, and up to two within those at the 2nd level. Constraints: value must be a string

--seed SEED

seed for rng. Constraints: value must be convertible to type ‘int’

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad download-url

Synopsis


Description

Download content

It allows for a uniform download interface to various supported URL schemes (see command help for details), re-using or asking for authentication details maintained by datalad.

Examples

Download files from an http and S3 URL:

```
% datalad download-url http://example.com/file.dat s3://bucket/file2.dat
```

Download a file to a path and provide a commit message:

```
% datalad download-url -m 'added a file' -O myfile.dat \   s3://bucket/file2.dat
```

Append a trailing slash to the target path to download into a specified directory:
 Leave off the trailing slash to download into a regular file:

```
% datalad download-url --path=data http://example.com/file.dat
```

### Options

**url**


**-h, --help, --help-np**

show this help message. –help-np forcefully disables the use of a pager for displaying the help message

**-d PATH, --dataset PATH**

specify the dataset to add files to. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. Use –nosave to prevent adding files to the dataset. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

**-O PATH, --path PATH**

target for download. If the path has a trailing separator, it is treated as a directory, and each specified URL is downloaded under that directory to a base name taken from the URL. Without a trailing separator, the value specifies the name of the downloaded file (file name extensions inferred from the URL may be added to it, if they are not yet present) and only a single URL should be given. In both cases, leading directories will be created if needed. This argument defaults to the current directory. Constraints: value must be a string

**-o, --overwrite**

flag to overwrite it if target file exists.

**--archive**

pass the downloaded files to datalad add-archive-content –delete.

**--nosave**

by default all modifications to a dataset are immediately saved. Giving this option will disable this behavior.

**-m MESSAGE, --message MESSAGE**

a description of the state or the changes made to a dataset. Constraints: value must be a string
--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad sshrun

Synopsis


Description

Run command on remote machines via SSH.
This is a replacement for a small part of the functionality of SSH. In addition to SSH alone, this command can make use of datalad’s SSH connection management. Its primary use case is to be used with Git as 'core.sshCommand’ or via “GIT_SSH_COMMAND”.
Configure DATALAD.SSH.IDENTITYFILE to pass a file to the ssh’s -i option.

Options

login

[user@]hostname.

cmd

command for remote execution.

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-p PORT, --port PORT

port to connect to on the remote host.

-4

use IPv4 addresses only.
-6

use IPv6 addresses only.

-o OPTION

configuration option passed to SSH.

-n

Do not connect stdin to the process.

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad shell-completion

Synopsis

datalad shell-completion [-h] [--version]

Description

Display shell script for enabling shell completion for DataLad.
Output of this command should be “sourced” by the bash or zsh to enable shell completions provided by argcomplete.
Example:

$ source <(datalad shell-completion) $ datalad --PRESS TAB to display available option

Options

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

--version

show the module and its version which provides the command
Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad test

Synopsis

datalad test [-h] [-v] [-s] [--pdb] [-x] [--version] [module [module ...]]

Description

Run internal DataLad (unit)tests.
This can be used to verify correct operation on the system. It is just a thin wrapper around a call to nose, so number of exposed options is minimal

Options

module

test name(s), by default all tests of DataLad core and any installed extensions are executed.

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-v, --verbose

be verbose - list test names.

-s, --nocapture

do not capture stdout.

--pdb

drop into debugger on failures or errors.

-x, --stop

stop running tests after the first error or failure.
--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

datalad wtf

Synopsis

datalad wtf [-h] [-d DATASET] [-s {some|all}] [-S SECTION] [--flavor {full|short}] [-D DECOR] [-c] [--version]

Description

Generate a report about the DataLad installation and configuration

IMPORTANT: Sharing this report with untrusted parties (e.g. on the web) should be done with care, as it may include identifying information, and/or credentials or access tokens.

Options

-h, --help, --help-np

show this help message. --help-np forcefully disables the use of a pager for displaying the help message

-d DATASET, --dataset DATASET

“specify the dataset to report on. no dataset is given, an attempt is made to identify the dataset based on the current working directory. Constraints: Value must be a Dataset or a valid identifier of a Dataset (e.g. a path)

-s {some|all}, --sensitive {some|all}

if set to ‘some’ or ‘all’, it will display sections such as config and metadata which could potentially contain sensitive information (credentials, names, etc.). If ‘some’, the fields which are known to be sensitive will still be masked out. Constraints: value must be one of (‘some’, ‘all’)

-S SECTION, --section SECTION

section to include. If not set - depends on flavor. ‘*’ could be used to force all sections. This option can be given multiple times. Constraints: value must be one of (‘configuration’, ‘credentials’, ‘datalad’, ‘dataset’, ‘dependencies’, ‘environment’, ‘extensions’, ‘git-annex’, ‘location’, ‘metadata_extractors’, ‘metadata_indexers’, ‘python’, ‘system’, ‘*’)
--flavor {full|short}

Flavor of WTF. ‘full’ would produce markdown with exhaustive list of sections. ‘short’ will provide a condensed summary only of datalad and dependencies by default. Use --section to list other sections. Constraints: value must be one of (‘full’, ‘short’) [Default: ‘full’]

-D DECOR, --decor DECOR

decoration around the rendering to facilitate embedding into issues etc. e.g. use ‘html_details’ for posting collapsible entry to GitHub issues. Constraints: value must be one of (‘html_details’,)

-c, --clipboard

if set, do not print but copy to clipboard (requires pyperclip module).

--version

show the module and its version which provides the command

Authors

datalad is developed by The DataLad Team and Contributors <team@datalad.org>.

1.5.2 Python module reference

This module reference extends the manual with a comprehensive overview of the available functionality built into datalad. Each module in the package is documented by a general summary of its purpose and the list of classes and functions it provides.

High-level user interface

Dataset operations

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<td>Representation of a DataLad dataset/repository</td>
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<tr>
<td>api.create([path, initopts, force, ...])</td>
<td>Create a new dataset from scratch.</td>
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<tr>
<td>api.create_sibling(sshurl[, name, ...])</td>
<td>Create a dataset sibling on a UNIX-like Shell (local or SSH)-accessible machine</td>
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<tr>
<td>api.create_sibling_github(reponame[, ...])</td>
<td>Create dataset sibling on GitHub.</td>
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<tr>
<td>api.create_sibling_gitlab([path, site, ...])</td>
<td>Create dataset sibling at a GitLab site</td>
</tr>
<tr>
<td>api.drop([path, dataset, recursive, ...])</td>
<td>Drop file content from datasets</td>
</tr>
<tr>
<td>api.get([path, source, dataset, recursive, ...])</td>
<td>Get any dataset content (files/directories/subdatasets).</td>
</tr>
<tr>
<td>api.install([path, source, dataset, ...])</td>
<td>Install a dataset from a (remote) source.</td>
</tr>
<tr>
<td>api.push([path, dataset, to, since, data, ...])</td>
<td>Push a dataset to a known sibling.</td>
</tr>
<tr>
<td>api.remove([path, dataset, recursive, ...])</td>
<td>Remove components from datasets</td>
</tr>
<tr>
<td>api.save([path, message, dataset, ...])</td>
<td>Save the current state of a dataset</td>
</tr>
<tr>
<td>api.update([path, sibling, merge, how, ...])</td>
<td>Update a dataset from a sibling.</td>
</tr>
</tbody>
</table>

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<table>
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<th>Function</th>
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<td><code>api.uninstall</code></td>
<td>Uninstall subdatasets</td>
</tr>
<tr>
<td><code>api.unlock</code></td>
<td>Unlock file(s) of a dataset</td>
</tr>
</tbody>
</table>

**datalad.api.Dataset**

**class** `datalad.api.Dataset(path)`

Representation of a DataLad dataset/repository

This is the core data type of DataLad: a representation of a dataset. At its core, datasets are (git-annex enabled) Git repositories. This class provides all operations that can be performed on a dataset.

Creating a dataset instance is cheap, all actual operations are delayed until they are actually needed. Creating multiple `Dataset` class instances for the same Dataset location will automatically yield references to the same object.

A dataset instance comprises of two major components: a `repo` attribute, and a `config` attribute. The former offers access to low-level functionality of the Git or git-annex repository. The latter gives access to a dataset’s configuration manager.

Most functionality is available via methods of this class, but also as stand-alone functions with the same name in `datalad.api`.

**__init__**(path)

**Parameters**

- `path` *(str or Path)* – Path to the dataset location. This location may or may not exist yet.

**Methods**

**__init__**(path)

**param** `path` Path to the dataset location.

This location may or may not exist

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>add_readme</code></td>
<td>Add basic information about DataLad datasets to a README file</td>
</tr>
<tr>
<td><code>addurls</code></td>
<td>Create and update a dataset from a list of URLs.</td>
</tr>
<tr>
<td><code>aggregate_metadata</code></td>
<td>Aggregate metadata of one or more datasets for later query.</td>
</tr>
<tr>
<td><code>annotate_paths</code></td>
<td>Analyze and act upon input paths</td>
</tr>
<tr>
<td><code>clean</code></td>
<td>Clean up after DataLad (possible temporary files etc.)</td>
</tr>
<tr>
<td><code>clone</code></td>
<td>Obtain a dataset (copy) from a URL or local directory</td>
</tr>
<tr>
<td><code>close</code></td>
<td>Perform operations which would close any possible process using this Dataset</td>
</tr>
<tr>
<td><code>copy_file</code></td>
<td>Copy files and their availability metadata from one dataset to another.</td>
</tr>
<tr>
<td><code>create</code></td>
<td>Create a new dataset from scratch.</td>
</tr>
<tr>
<td><code>create_sibling</code></td>
<td>Create a dataset sibling on a UNIX-like Shell (local or SSH)-accessible machine</td>
</tr>
<tr>
<td><code>create_sibling_github</code></td>
<td>Create dataset sibling on GitHub.</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td><code>create_sibling_gitlab([site, project, ...])</code></td>
<td>Create dataset sibling at a GitLab site</td>
</tr>
<tr>
<td><code>create_sibling_ria(name[, dataset, ...])</code></td>
<td>Creates a sibling to a dataset in a RIA store</td>
</tr>
<tr>
<td><code>diff([for, to, dataset, annex, untracked, ...])</code></td>
<td>Report differences between two states of a dataset (hierarchy)</td>
</tr>
<tr>
<td><code>download_url([dataset, path, overwrite, ...])</code></td>
<td>Download content</td>
</tr>
<tr>
<td><code>drop([dataset, recursive, recursion_limit, ...])</code></td>
<td>Drop file content from datasets</td>
</tr>
<tr>
<td><code>export_archive([filename, archivetype, ...])</code></td>
<td>Export the content of a dataset as a TAR/ZIP archive.</td>
</tr>
<tr>
<td><code>export_archive_ora([opts, dataset])</code></td>
<td>Export an archive of a local annex object store for the ORA remote.</td>
</tr>
<tr>
<td><code>export_to_figshare([filename, ...])</code></td>
<td>Export the content of a dataset as a ZIP archive to figshare</td>
</tr>
<tr>
<td><code>extract_metadata([files, dataset])</code></td>
<td>Run one or more of DataLad’s metadata extractors on a dataset or file.</td>
</tr>
<tr>
<td><code>get([source, dataset, recursive, ...])</code></td>
<td>Get any dataset content (files/directories/subdatasets).</td>
</tr>
<tr>
<td><code>get_superdataset([datalad_only, topmost, ...])</code></td>
<td>Get the dataset’s superdataset</td>
</tr>
<tr>
<td><code>install([source, dataset, get_data, ...])</code></td>
<td>Install a dataset from a (remote) source.</td>
</tr>
<tr>
<td><code>is_installed()</code></td>
<td>Returns whether a dataset is installed.</td>
</tr>
<tr>
<td><code>metadata([dataset, get_aggregates, ...])</code></td>
<td>Metadata reporting for files and entire datasets</td>
</tr>
<tr>
<td><code>no_annex(pattern[, ref_dir, makedirs])</code></td>
<td>Configure a dataset to never put some content into the dataset’s annex</td>
</tr>
<tr>
<td><code>push([dataset, to, since, data, force, ...])</code></td>
<td>Push a dataset to a known sibling.</td>
</tr>
<tr>
<td><code>recall_state(whereto)</code></td>
<td>Something that can be used to checkout a particular state (tag, commit) to “undo” a change or switch to a otherwise desired previous state.</td>
</tr>
<tr>
<td><code>remove([dataset, recursive, check, save, ...])</code></td>
<td>Remove components from datasets</td>
</tr>
<tr>
<td><code>rerun([since, dataset, branch, message, ...])</code></td>
<td>Re-execute previous datalad run commands.</td>
</tr>
<tr>
<td><code>run([dataset, inputs, outputs, expand, ...])</code></td>
<td>Run an arbitrary shell command and record its impact on a dataset.</td>
</tr>
<tr>
<td><code>run_procedure([dataset, discover, help_proc])</code></td>
<td>Run prepared procedures (DataLad scripts) on a dataset</td>
</tr>
<tr>
<td><code>save([message, dataset, version_tag, ...])</code></td>
<td>Save the current state of a dataset</td>
</tr>
<tr>
<td><code>search([dataset, force_reindex, ...])</code></td>
<td>Search dataset metadata</td>
</tr>
<tr>
<td><code>siblings([dataset, name, url, pushurl, ...])</code></td>
<td>Manage sibling configuration</td>
</tr>
<tr>
<td><code>status([dataset, annex, untracked, ...])</code></td>
<td>Report on the state of dataset content.</td>
</tr>
<tr>
<td><code>subdatasets([dataset, fulfilled, recursive, ...])</code></td>
<td>Report subdatasets and their properties.</td>
</tr>
<tr>
<td><code>uninstall([dataset, recursive, check, if_dirty])</code></td>
<td>Uninstall subdatasets</td>
</tr>
<tr>
<td><code>unlock([dataset, recursive, recursion_limit])</code></td>
<td>Unlock file(s) of a dataset</td>
</tr>
<tr>
<td><code>update([sibling, merge, how, how_subds, ...])</code></td>
<td>Update a dataset from a sibling.</td>
</tr>
<tr>
<td><code>wtf([sensitive, sections, flavor, decor, ...])</code></td>
<td>Generate a report about the DataLad installation and configuration</td>
</tr>
</tbody>
</table>

Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>config</td>
<td>Get an instance of the parser for the persistent dataset configuration.</td>
</tr>
<tr>
<td>id</td>
<td>Identifier of the dataset.</td>
</tr>
<tr>
<td>path</td>
<td>path to the dataset</td>
</tr>
<tr>
<td>pathobj</td>
<td>pathobj for the dataset</td>
</tr>
</tbody>
</table>
Table 3 – continued from previous page

| repo | Get an instance of the version control system/repo for this dataset, or None if there is none yet (or none anymore). |

**datalad.api.create**

```python
def create(path=None, initopts=None, force=False, description=None, dataset=None, annex=True, fake_dates=False, cfg_proc=None)
```

Create a new dataset from scratch.

This command initializes a new dataset at a given location, or the current directory. The new dataset can optionally be registered in an existing superdataset (the new dataset’s path needs to be located within the superdataset for that, and the superdataset needs to be given explicitly via `dataset`). It is recommended to provide a brief description to label the dataset’s nature and location, e.g. “Michael’s music on black laptop”. This helps humans to identify data locations in distributed scenarios. By default an identifier comprised of user and machine name, plus path will be generated.

This command only creates a new dataset, it does not add existing content to it, even if the target directory already contains additional files or directories.

Plain Git repositories can be created via `annex=False`. However, the result will not be a full dataset, and, consequently, not all features are supported (e.g. a description).

To create a local version of a remote dataset use the `~datalad.api.install` command instead.

**Note:** Power-user info: This command uses `git init` and `git annex init` to prepare the new dataset. Registering to a superdataset is performed via a `git submodule add` operation in the discovered superdataset.

### Examples

Create a dataset ‘mydataset’ in the current directory:

```bash
> create(path='mydataset')
```

Apply the text2git procedure upon creation of a dataset:

```bash
> create(path='mydataset', cfg_proc='text2git')
```

Create a subdataset in the root of an existing dataset:

```bash
> create(dataset='.', path='mysubdataset')
```

Create a dataset in an existing, non-empty directory:

```bash
> create(force=True)
```

Create a plain Git repository:

```bash
> create(path='mydataset', annex=False)
```

**Parameters**
• **path** *(str or Dataset or None, optional)* – path where the dataset shall be created, directories will be created as necessary. If no location is provided, a dataset will be created in the location specified by `dataset` (if given) or the current working directory. Either way the command will error if the target directory is not empty. Use `force` to create a dataset in a non-empty directory. [Default: None]

• **initopts** – options to pass to `git init`. Options can be given as a list of command line arguments or as a GitPython-style option dictionary. Note that not all options will lead to viable results. For example ‘`--bare`’ will not yield a repository where DataLad can adjust files in its working tree. [Default: None]

• **force** *(bool, optional)* – enforce creation of a dataset in a non-empty directory. [Default: False]

• **description** *(str or None, optional)* – short description to use for a dataset location. Its primary purpose is to help humans to identify a dataset copy (e.g., “Mike’s dataset on lab server”). Note that when a dataset is published, this information becomes available on the remote side. [Default: None]

• **dataset** *(Dataset or None, optional)* – specify the dataset to perform the create operation on. If a dataset is given along with `path`, a new subdataset will be created in it at the `path` provided to the create command. If a dataset is given but `path` is unspecified, a new dataset will be created at the location specified by this option. [Default: None]

• **annex** *(bool, optional)* – if disabled, a plain Git repository will be created without any annex. [Default: True]

• **fake_dates** *(bool, optional)* – Configure the repository to use fake dates. The date for a new commit will be set to one second later than the latest commit in the repository. This can be used to anonymize dates. [Default: False]

• **cfg_proc** – Run `cfg_PROC` procedure(s) (can be specified multiple times) on the created dataset. Use `run_procedure(discover=True)` to get a list of available procedures, such as `cfg_text2git`. [Default: None]

• **on_failure** *({'ignore', 'continue', 'stop'}, optional)* – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an `IncompleteResultsError` that carries the result dictionaries of the failures in its `failed` attribute. [Default: ‘continue’]

• **result_filter** *(callable or None, optional)* – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: constraint:(action:{create} and status:{ok, notneeded})]

• **result_renderer** *({'default', 'json', 'json_pp', 'tailored'} or None, optional)* – format of return value rendering on stdout. [Default: None]

• **result_xfm** *(('datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata') or callable or None, optional)* – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from `result_filter`, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: ‘datasets’]
• **return_type** ('generator', 'list', 'item-or-list'), optional – return value behavior switch. If 'item-or-list' a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘item-or-list’]

**datalad.api.create_sibling**

**datalad.api.create_sibling**(sshurl, name=None, target_dir=None, target_url=None, target_pushurl=None, dataset=None, recursive=False, recursion_limit=None, existing='error', shared=None, group=None, ui=False, as_common_datasrc=None, publish_by_default=None, publish_depends=None, annex_wanted=None, annex_groupwanted=None, inherit=False, since=None)

Create a dataset sibling on a UNIX-like Shell (local or SSH)-accessible machine

Given a local dataset, and a path or SSH login information this command creates a remote dataset repository and configures it as a dataset sibling to be used as a publication target (see publish command).

Various properties of the remote sibling can be configured (e.g. name location on the server, read and write access URLs, and access permissions.

Optionally, a basic web-viewer for DataLad datasets can be installed at the remote location.

This command supports recursive processing of dataset hierarchies, creating a remote sibling for each dataset in the hierarchy. By default, remote siblings are created in hierarchical structure that reflects the organization on the local file system. However, a simple templating mechanism is provided to produce a flat list of datasets (see –target-dir).

**Parameters**

- **sshurl** (str) – Login information for the target server. This can be given as a URL (ssh://host/path), SSH-style (user@host:path) or just a local path. Unless overridden, this also serves the future dataset’s access URL and path on the server.

- **name** (str or None, optional) – sibling name to create for this publication target. If recursive is set, the same name will be used to label all the subdatasets’ siblings. When creating a target dataset fails, no sibling is added. [Default: None]

- **target_dir** (str or None, optional) – path to the directory on the server where the dataset shall be created. By default this is set to the URL (or local path) specified via sshurl. If a relative path is provided here, it is interpreted as being relative to the user’s home directory on the server (or relative to sshurl, when that is a local path). Additional features are relevant for recursive processing of datasets with subdatasets. By default, the local dataset structure is replicated on the server. However, it is possible to provide a template for generating different target directory names for all (sub)datasets. Templates can contain certain placeholder that are substituted for each (sub)dataset. For example: “/my-directory/dataset%%RELNAME”. Supported placeholders: %%RELNAME - the name of the datasets, with any slashes replaced by dashes. [Default: None]

- **target_url** (str or None, optional) – “public” access URL of the to-be-created target dataset(s) (default: sshurl). Accessibility of this URL determines the access permissions of potential consumers of the dataset. As with target_dir, templates (same set of placeholders) are supported. Also, if specified, it is provided as the annex description. [Default: None]

- **target_pushurl** (str or None, optional) – In case the target_url cannot be used to publish to the dataset, this option specifies an alternative URL for this purpose. As with target_url, templates (same set of placeholders) are supported. [Default: None]
- **dataset** *(Dataset or None, optional)* – specify the dataset to create the publication target for. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. [Default: None]

- **recursive** *(bool, optional)* – if set, recurse into potential subdataset. [Default: False]

- **recursion_limit** *(int or None, optional)* – limit recursion into subdataset to the given number of levels. [Default: None]

- **existing** *(('skip', 'error', 'reconfigure', 'replace'), optional)* – action to perform, if a sibling is already configured under the given name and/or a target (non-empty) directory already exists. In this case, a dataset can be skipped ('skip'), the sibling configuration be updated ('reconfigure'), or process interrupts with error ('error'). DANGER ZONE: If ‘replace’ is used, an existing target directory will be forcefully removed, re-initialized, and the sibling (re-)configured (thus implies ‘reconfigure’). replace could lead to data loss, so use with care. To minimize possibility of data loss, in interactive mode Datalad will ask for confirmation, but it would raise an exception in non-interactive mode. [Default: ‘error’]

- **shared** *(str or bool or None, optional)* – if given, configures the access permissions on the server for multi-users (this could include access by a webserver!). Possible values for this option are identical to those of git init –shared and are described in its documentation. [Default: None]

- **group** *(str or None, optional)* – Filesystem group for the repository. Specifying the group is particularly important when shared="group". [Default: None]

- **ui** *(bool or str, optional)* – publish a web interface for the dataset with an optional user-specified name for the html at publication target. defaults to index.html at dataset root. [Default: False]

- **as_common_datasrc** – configure the created sibling as a common data source of the dataset that can be automatically used by all consumers of the dataset (technical: git-annex auto-enabled special remote). [Default: None]

- **publish_by_default** *(list of str or None, optional)* – add a refspec to be published to this sibling by default if nothing specified. [Default: None]

- **publish_depends** *(list of str or None, optional)* – add a dependency such that the given existing sibling is always published prior to the new sibling. This equals setting a configuration item ‘remote.SIBLINGNAME.datalad-publish-depends’. Multiple dependencies can be given as a list of sibling names. [Default: None]

- **annex_wanted** *(str or None, optional)* – expression to specify ‘wanted’ content for the repository/sibling. See https://git-annex.branchable.com/git-annex-wanted/ for more information. [Default: None]

- **annex_group** *(str or None, optional)* – expression to specify a group for the repository. See https://git-annex.branchable.com/git-annex-group/ for more information. [Default: None]

- **annex_groupwanted** *(str or None, optional)* – expression for the group-wanted. Makes sense only if annex_wanted="groupwanted" and annex-group is given too. See https://git-annex.branchable.com/git-annex-groupwanted/ for more information. [Default: None]

- **inherit** *(bool, optional)* – if sibling is missing, inherit settings (git config, git annex wanted/group/groupwanted) from its super-dataset. [Default: False]
• **since** *(str or None, optional)* – limit processing to subdatasets that have been changed since a given state (by tag, branch, commit, etc). This can be used to create siblings for recently added subdatasets. [Default: None]

• **on_failure** *(('ignore', 'continue', 'stop'), optional)* – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its *failed* attribute. [Default: ‘continue’]

• **result_filter** *(callable or None, optional)* – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

• **result_renderer** *(('default', 'json', 'json_pp', 'tailored') or None, optional)* – format of return value rendering on stdout. [Default: None]

• **result_xfm** *(('datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata') or callable or None, optional)* – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• **return_type** *(('generator', 'list', 'item-or-list'), optional)* – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. *None* is return in case of an empty list. [Default: ‘list’]

**datalad.api.create_sibling_github**

datalad.api.create_sibling_github*(reponame, dataset=None, recursive=False, recursion_limit=None, name='github', existing='error', github_login=None, github_organization=None, access_protocol='https', publish_depends=None, private=False, dryrun=False, dry_run=False)*

Create dataset sibling on GitHub.

An existing GitHub project, or a project created via the GitHub website can be configured as a sibling with the siblings command. Alternatively, this command can create a repository under a user’s GitHub account, or any organization a user is a member of (given appropriate permissions). This is particularly helpful for recursive sibling creation for subdatasets. In such a case, a dataset hierarchy is represented as a flat list of GitHub repositories.

GitHub cannot host dataset content (but LFS special remote could be used, [http://handbook.datalad.org/r.html?LFS](http://handbook.datalad.org/r.html?LFS)). However, in combination with other data sources (and siblings), publishing a dataset to GitHub can facilitate distribution and exchange, while still allowing any dataset consumer to obtain actual data content from alternative sources.

For GitHub authentication a personal access token is needed. Such a token can be generated by visiting [https://github.com/settings/tokens](https://github.com/settings/tokens) or navigating via GitHub Web UI through: Settings -> Developer settings -> Personal
access tokens. We will first consult Git configuration `hub.oauthtoken` for tokens possibly available there, and
then from the system credential store.

If you provide `github_login`, we will consider only tokens associated with that GitHub login from `hub.oauthtoken`, and store/check the token in credential store as associated with that specific login name.

**Parameters**

- `reponame (str)` – GitHub repository name. When operating recursively, a suffix will be appended to this name for each subdataset.
- `dataset (Dataset or None, optional)` – specify the dataset to create the publication target for. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. [Default: None]
- `recursive (bool, optional)` – if set, recurse into potential subdataset. [Default: False]
- `recursion_limit (int or None, optional)` – limit recursion into subdataset to the given number of levels. [Default: None]
- `name (str, optional)` – name to represent the GitHub repository in the local dataset installation. [Default: 'github']
- `existing (('skip', 'error', 'reconfigure', 'replace'), optional)` – desired behavior when already existing or configured siblings are discovered. In this case, a dataset can be skipped ('skip'), the sibling configuration be updated ('reconfigure'), or process interrupts with error ('error'). DANGER ZONE: If 'replace' is used, an existing github repository will be irreversibly removed, re-initialized, and the sibling (re-)configured (thus implies 'reconfigure'). replace could lead to data loss, so use with care. To minimize possibility of data loss, in interactive mode DataLad will ask for confirmation, but it would raise an exception in non-interactive mode. [Default: 'error']
- `github_login (str or None, optional)` – GitHub user name or access token. [Default: None]
- `github_organization (str or None, optional)` – If provided, the repository will be created under this GitHub organization. The respective GitHub user needs appropriate permissions. [Default: None]
- `access_protocol (('https', 'ssh'), optional)` – Which access protocol/URL to configure for the sibling. [Default: 'https']
- `publish_depends (list of str or None, optional)` – add a dependency such that the given existing sibling is always published prior to the new sibling. This equals setting a configuration item 'remote.SIBLINGNAME.datalad-publish-depends'. Multiple dependencies can be given as a list of sibling names. [Default: None]
- `private (bool, optional)` – If this flag is set, the repository created on github will be marked as private and only visible to those granted access or by membership of a team/organization/etc. [Default: None]
- `dryrun (bool, optional)` – Deprecated. Use the renamed `dry_run` parameter. [Default: False]
- `dry_run (bool, optional)` – If this flag is set, no repositories will be created. Instead tests for name collisions with existing projects will be performed, and would-be repository names are reported for all relevant datasets. [Default: False]
- `on_failure (('ignore', 'continue', 'stop'), optional)` – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions
will continue for as long as possible; `stop`: processing will stop on first failure and an ex-
ception is raised. A failure is any result with status `impossible` or `error`. Raised exception
is an IncompleteResultsError that carries the result dictionaries of the failures in its `failed`
attribute. [Default: `continue`]

- **result_filter** *(callable or None, optional)* – if given, each to-be-returned
status dictionary is passed to this callable, and is only returned if the callable’s return value
does not evaluate to False or a ValueError exception is raised. If the given callable supports
**kwargs it will additionally be passed the keyword arguments of the original API call.
[Default: None]

- **result_renderer** *(default, json, json_pp, tailored) or None, optional)* – format of return value rendering on stdout. [Default: None]

- **result_xfm** *(datasets, successdatasets-or-none, paths, relpaths, metadata) or callable or None, optional)* – if given,
each to-be-returned result status dictionary is passed to this callable, and its return value
becomes the result instead. This is different from result_filter, as it can perform arbitrary
transformation of the result value. This is mostly useful for top- level command invocations
that need to provide the results in a particular format. Instead of a callable, a label for a
pre-crafted result transformation can be given. [Default: None]

- **return_type** *(generator, list, item-or-list), optional)* – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item
return value list, or a list in case of multiple return values. None is return in case of an empty
list. [Default: `list`]

datalad.api.create_sibling_gitlab

**datalad.api.create_sibling_gitlab**(path=None, site=None, project=None, layout=None,
dataset=None, recursive=False, recursion_limit=None, name=None, existing='error', access=None, publish_depends=None, description=None, dryrun=False)

Create dataset sibling at a GitLab site

An existing GitLab project, or a project created via the GitLab web interface can be configured as a sibling
with the siblings command. Alternatively, this command can create a GitLab project at any location/path
given user has appropriate permissions for. This is particularly helpful for recursive sibling creation for
subdatasets. API access and authentication are implemented via python-gitlab, and all its features are sup-
ported. A particular GitLab site must be configured in a named section of a python-gitlab.cfg file (see
https://python-gitlab.readthedocs.io/en/stable/cli.html#configuration for details), such as:

```python
[mygit]
url = https://git.example.com
api_version = 4
private_token = abcdefghijklmnopqrstuvwxyz
```

Subsequently, this site is identified by its name (`mygit` in the example above).

(Recursive) sibling creation for all, or a selected subset of subdatasets is supported with three different project
layouts (see –layout):

- **hierarchy** Each dataset is placed into its own group, and the actual GitLab project for a dataset is put in a
project named “_repo_” inside this group. Using this layout, arbitrarily deep hierarchies of nested datasets
can be represented, while the hierarchical structure is reflected in the project path. This is the default
layout, if no project path is specified.
“flat” All datasets are placed in the same group. The name of a project is its relative path within the root dataset, with all path separator characters replaced by ‘–’.

“collection” This is a hybrid layout, where the root dataset is placed in a “_repo_” project inside a group, and all nested subdatasets are represented inside the group using a “flat” layout.

GitLab cannot host dataset content. However, in combination with other data sources (and siblings), publishing a dataset to GitLab can facilitate distribution and exchange, while still allowing any dataset consumer to obtain actual data content from alternative sources.

Configuration

All configuration switches and options for GitLab sibling creation can be provided arguments to the command. However, it is also possible to specify a particular setup in a dataset’s configuration. This is particularly important when managing large collections of datasets. Configuration options are:

“datalad.gitlab-default-site” Name of the default GitLab site (see –site)

“datalad.gitlab-SITENAME-siblingname” Name of the sibling configured for the local dataset that points to the GitLab instance SITENAME (see –name)

“datalad.gitlab-SITENAME-layout” Project layout used at the GitLab instance SITENAME (see –layout)

“datalad.gitlab-SITENAME-access” Access method used for the GitLab instance SITENAME (see –access)

“datalad.gitlab-SITENAME-project” Project location/path used for a datasets at GitLab instance SITENAME (see –project). Configuring this is useful for deriving project paths for subdatasets, relative to superdataset.

Parameters

- **path** – selectively create siblings for any datasets underneath a given path. By default only the root dataset is considered. [Default: None]
- **site** *(None or str, optional)* – name of the GitLab site to create a sibling at. Must match an existing python-gitlab configuration section with location and authentication settings (see https://python-gitlab.readthedocs.io/en/stable/cli.html#configuration). By default the dataset configuration is consulted. [Default: None]
- **project** *(None or str, optional)* – project name/location at the GitLab site. If a subdataset of the reference dataset is processed, its project path is automatically determined by the **layout** configuration, by default. [Default: None]
- **layout** *((None, 'hierarchy', 'collection', 'flat'), optional)* – layout of projects at the GitLab site, if a collection, or a hierarchy of datasets and subdatasets is to be created. By default the dataset configuration is consulted. [Default: None]
- **dataset** *(Dataset or None, optional)* – reference or root dataset. If no path constraints are given, a sibling for this dataset will be created. In this and all other cases, the reference dataset is also consulted for the GitLab configuration, and desired project layout. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. [Default: None]
- **recursive** *(bool, optional)* – if set, recurse into potential subdataset. [Default: False]
- **recursion_limit** *(int or None, optional)* – limit recursion into subdataset to the given number of levels. [Default: None]
- **name** *(str or None, optional)* – name to represent the GitLab sibling remote in the local dataset installation. If not specified a name is looked up in the dataset configuration, or defaults to the **site** name. [Default: None]
- `existing` ("skip", "error", "reconfigure", optional) – desired behavior when already existing or configured siblings are discovered. ‘skip’: ignore; ‘error’: fail, if access URLs differ; ‘reconfigure’: use the existing repository and reconfigure the local dataset to use it as a sibling. [Default: ‘error’]

- `access` ({None, 'http', 'ssh', 'ssh+http'}, optional) – access method used for data transfer to and from the sibling. ‘ssh’: read and write access used the SSH protocol; ‘http’: read and write access use HTTP requests; ‘ssh+http’: read access is done via HTTP and write access performed with SSH. Dataset configuration is consulted for a default, ‘http’ is used otherwise. [Default: None]

- `publish_depends` (list of str or None, optional) – add a dependency such that the given existing sibling is always published prior to the new sibling. This equals setting a configuration item ‘remote.SIBLINGNAME.datalad-publish-depends’. Multiple dependencies can be given as a list of sibling names. [Default: None]

- `description` (str or None, optional) – brief description for the GitLab project (displayed on the site). [Default: None]

- `dryrun` (bool, optional) – If this flag is set, no communication with GitLab is performed, and no repositories will be created. Instead would-be repository names and configurations are reported for all relevant datasets. [Default: False]

- `on_failure` ("ignore", "continue", "stop", optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its `failed` attribute. [Default: ‘continue’]

- `result_filter` (callable or None, optional) – if given, each to-bereturned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

- `result_renderer` ("default", "json", "json_pp", "tailored") or None, optional) – format of return value rendering on stdout. [Default: None]

- `result_xfm` ("datasets", 'successdatasets-or-none', 'paths', 'relpaths', 'metadata') or callable or None, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from `result_filter`, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

- `return_type` ("generator", 'list', 'item-or-list'), optional) – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. `None` is return in case of an empty list. [Default: ‘list’]

```python
import datalad.api

datalad.api.drop(path=None, dataset=None, recursive=False, recursion_limit=None, check=True, if_dirty='save-before')
```

Drop file content from datasets
This command takes any number of paths of files and/or directories. If a common (super)dataset is given explicitly, the given paths are interpreted relative to this dataset.

Recursion into subdatasets needs to be explicitly enabled, while recursion into subdirectories within a dataset is done automatically. An optional recursion limit is applied relative to each given input path.

By default, the availability of at least one remote copy is verified before file content is dropped. As these checks could lead to slow operation (network latencies, etc), they can be disabled.

**Examples**

Drop single file content:

```shell
> drop('path/to/file')
```

Drop all file content in the current dataset:

```shell
> drop('.')
```

Drop all file content in a dataset and all its subdatasets:

```shell
> drop(dataset='.', recursive=True)
```

Disable check to ensure the configured minimum number of remote sources for dropped data:

```shell
> drop(path='path/to/content', check=False)
```

**Parameters**

- **path** *(sequence of str or None, optional)* – path/name of the component to be dropped. [Default: None]
- **dataset** *(Dataset or None, optional)* – specify the dataset to perform the operation on. If no dataset is given, an attempt is made to identify a dataset based on the path given. [Default: None]
- **recursive** *(bool, optional)* – if set, recurse into potential subdataset. [Default: False]
- **recursion_limit** *(int or None, optional)* – limit recursion into subdataset to the given number of levels. [Default: None]
- **check** *(bool, optional)* – whether to perform checks to assure the configured minimum number (remote) source for data. [Default: True]
- **if_dirty** – desired behavior if a dataset with unsaved changes is discovered: ‘fail’ will trigger an error and further processing is aborted; ‘save-before’ will save all changes prior any further action; ‘ignore’ let’s datalad proceed as if the dataset would not have unsaved changes. [Default: ‘save-before’]
- **on_failure** *({'ignore', 'continue', 'stop'}, optional)* – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its `failed` attribute. [Default: ‘continue’]
• **result_filter** *(callable or None, optional)* – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

• **result_renderer** *({'default', 'json', 'json_pp', 'tailored'} or None, optional)* – format of return value rendering on stdout. [Default: None]

• **result_xfm** *({'datasets', 'successdatasets-or-none', 'paths', 'reipaths', 'metadata'} or callable or None, optional)* – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from **result_filter**, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• **return_type** *({'generator', 'list', 'item-or-list'}, optional)* – return value behavior switch. If 'item-or-list' a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: 'list']

datalad.api.get

datalad.api.get *(path=None, source=None, dataset=None, recursive=False, recursion_limit=None, get_data=True, description=None, reckless=None, jobs='auto')*

Get any dataset content (files/directories/subdatasets).

This command only operates on dataset content. To obtain a new independent dataset from some source use the clone command.

By default this command operates recursively within a dataset, but not across potential subdatasets, i.e. if a directory is provided, all files in the directory are obtained. Recursion into subdatasets is supported too. If enabled, relevant subdatasets are detected and installed in order to fulfill a request.

Known data locations for each requested file are evaluated and data are obtained from some available location (according to git-annex configuration and possibly assigned remote priorities), unless a specific source is specified.

*Getting subdatasets*

Just as DataLad supports getting file content from more than one location, the same is supported for subdatasets, including a ranking of individual sources for prioritization.

The following location candidates are considered. For each candidate a cost is given in parenthesis, higher values indicate higher cost, and thus lower priority:

• URL of any configured superdataset remote that is known to have the desired submodule commit, with the submodule path appended to it. There can be more than one candidate (cost 500).

• In case .gitmodules contains a relative path instead of a URL, the URL of any configured superdataset remote that is known to have the desired submodule commit, with this relative path appended to it. There can be more than one candidate (cost 500).

• A URL or absolute path recorded in .gitmodules (cost 600).

• In case .gitmodules contains a relative path as a URL, the absolute path of the superdataset, appended with this relative path (cost 900).
Additional candidate URLs can be generated based on templates specified as configuration variables with the pattern

```
datalad.get.subdataset-source-candidate-<name>
```

where `name` is an arbitrary identifier. If `name` starts with three digits (e.g. ‘400myserver’) these will be interpreted as a cost, and the respective candidate will be sorted into the generated candidate list according to this cost. If no cost is given, a default of 700 is used.

A template string assigned to such a variable can utilize the Python format mini language and may reference a number of properties that are inferred from the parent dataset’s knowledge about the target subdataset. Properties include any submodule property specified in the respective `.gitmodules` record. For convenience, an existing `datalad-id` record is made available under the shortened name `id`.

Additionally, the URL of any configured remote that contains the respective submodule commit is available as `remote-<name>` properties, where `name` is the configured remote name.

Lastly, all candidates are sorted according to their cost (lower values first), and duplicate URLs are stripped, while preserving the first item in the candidate list.

**Note:** Power-user info: This command uses git annex get to fulfill file handles.

### Examples

Get a single file:

```bash
> get('path/to/file')
```

Get contents of a directory:

```bash
> get('path/to/dir/')
```

Get all contents of the current dataset and its subdatasets:

```bash
> get(dataset='.', recursive=True)
```

Get (clone) a registered subdataset, but don’t retrieve data:

```bash
> get('path/to/subds', get_data=False)
```

### Parameters

- **path** *(sequence of str or None, optional)* – path/name of the requested dataset component. The component must already be known to a dataset. To add new components to a dataset use the `add` command. [Default: None]

- **source** *(str or None, optional)* – label of the data source to be used to fulfill requests. This can be the name of a dataset sibling or another known source. [Default: None]

- **dataset** *(Dataset or None, optional)* – specify the dataset to perform the add operation on, in which case `path` arguments are interpreted as being relative to this dataset. If no dataset is given, an attempt is made to identify a dataset for each input `path`. [Default: None]

- **recursive** *(bool, optional)* – if set, recurse into potential subdataset. [Default: False]
• **recursion_limit** *(int or {'existing'}) or None, optional)* – limit recursion into subdataset to the given number of levels. Alternatively, ‘existing’ will limit recursion to subdatasets that already existed on the filesystem at the start of processing, and prevent new subdatasets from being obtained recursively. [Default: None]

• **get_data**(bool, optional) – whether to obtain data for all file handles. If disabled, get operations are limited to dataset handles. [Default: True]

• **description**(str or None, optional) – short description to use for a dataset location. Its primary purpose is to help humans to identify a dataset copy (e.g., “mike’s dataset on lab server”). Note that when a dataset is published, this information becomes available on the remote side. [Default: None]

• **reckless** *(None, True, False, 'auto', 'ephemeral') or shared-..., optional) – Obtain a dataset or subdataset and set it up in a potentially unsafe way for performance, or access reasons. Use with care, any dataset is marked as ‘untrusted’. The reckless mode is stored in a dataset’s local configuration under ‘datalad.clone.reckless’, and will be inherited to any of its subdatasets. Supported modes are: ['auto']: hard-link files between local clones. In-place modification in any clone will alter original annex content. ['ephemeral']: symlink annex to origin’s annex and discard local availability info via git-annex-dead ‘here’. Shares an annex between origin and clone w/o git-annex being aware of it. In case of a change in origin you need to update the clone before you’re able to save new content on your end. Alternative to ‘auto’ when hardlinks are not an option, or number of consumed inodes needs to be minimized. Note that this mode can only be used with clones from non-bare repositories or a RIA store! Otherwise two different annex object tree structures (dirhashmixed vs dirhashlower) will be used simultaneously, and annex keys using the respective other structure will be inaccessible. ['shared-<mode>']: set up repository and annex permission to enable multi-user access. This disables the standard write protection of annex’ed files. <mode> can be any value support by ‘git init --shared’, such as ‘group’, or ‘all’. [Default: None]

• **jobs**(int or None or {'auto'}, optional) – how many parallel jobs (where possible) to use. “auto” corresponds to the number defined by ‘datalad.runtime.max-annex-jobs’ configuration item. [Default: ‘auto’]

• **on_failure** *({'ignore', 'continue', 'stop'}, optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an **IncompleteResultsError** that carries the result dictionaries of the failures in its **failed** attribute. [Default: ‘continue’]

• **result_filter**(callable or None, optional) – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

• **result_renderer** *({'default', 'json', 'json_pp', 'tailored'} or None, optional) – format of return value rendering on stdout. [Default: None]

• **result_xfm** *({'datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata'} or callable or None, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from **result_filter**, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations
that need to provide the results in a particular format. Instead of a callable, a label for a
pre-crafted result transformation can be given. [Default: None]

• **return_type** ("generator", 'list', 'item-or-list'), optional) –
  return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item
  return value list, or a list in case of multiple return values. None is return in case of an empty
  list. [Default: ‘list’]

datalad.api.install
datalad.api.install(path=None, source=None, dataset=None, get_data=False, description=None,
recursive=False, recursion_limit=None, reckless=None, jobs='auto')
Install a dataset from a (remote) source.

This command creates a local sibling of an existing dataset from a (remote) location identified via a URL or
path. Optional recursion into potential subdatasets, and download of all referenced data is supported. The new
dataset can be optionally registered in an existing superdataset by identifying it via the dataset argument (the
new dataset’s path needs to be located within the superdataset for that).

It is recommended to provide a brief description to label the dataset’s nature and location, e.g. “Michael’s music
on black laptop”. This helps humans to identify data locations in distributed scenarios. By default an identifier
comprised of user and machine name, plus path will be generated.

When only partial dataset content shall be obtained, it is recommended to use this command without the get-data
flag, followed by a ~datalad.api.get operation to obtain the desired data.

**Note:** Power-user info: This command uses git clone, and git annex init to prepare the dataset. Registering to
a superdataset is performed via a git submodule add operation in the discovered superdataset.

**Examples**

Install a dataset from Github into the current directory:

```
> install(source='https://github.com/datalad-datasets/longnow-podcasts.git')
```

Install a dataset as a subdataset into the current dataset:

```
> install(dataset='.',
         source='https://github.com/datalad-datasets/longnow-podcasts.git')
```

Install a dataset, and get all content right away:

```
> install(source='https://github.com/datalad-datasets/longnow-podcasts.git',
         get_data=True)
```

Install a dataset with all its subdatasets:

```
> install(source='https://github.com/datalad-datasets/longnow-podcasts.git',
         recursive=True)
```

**Parameters**

• **path** – path/name of the installation target. If no path is provided a destination path will
  be derived from a source URL similar to git clone. [Default: None]
• source (str or None, optional) – URL or local path of the installation source. [Default: None]

• dataset (Dataset or None, optional) – specify the dataset to perform the install operation on. If no dataset is given, an attempt is made to identify the dataset in a parent directory of the current working directory and/or the path given. [Default: None]

• get_data (bool, optional) – if given, obtain all data content too. [Default: False]

• description (str or None, optional) – short description to use for a dataset location. Its primary purpose is to help humans to identify a dataset copy (e.g., “mike’s dataset on lab server”). Note that when a dataset is published, this information becomes available on the remote side. [Default: None]

• recursive (bool, optional) – if set, recurse into potential subdataset. [Default: False]

• recursion_limit (int or None, optional) – limit recursion into subdataset to the given number of levels. [Default: None]

• reckless ((None, True, False, 'auto', 'ephemeral') or shared-..., optional) – Obtain a dataset or subdataset and set it up in a potentially unsafe way for performance, or access reasons. Use with care, any dataset is marked as ‘untrusted’. The reckless mode is stored in a dataset’s local configuration under ‘datalad.clone.reckless’, and will be inherited to any of its subdatasets. Supported modes are: ['auto']: hard-link files between local clones. In-place modification in any clone will alter original annex content. ['ephemeral']: symlink annex to origin’s annex and discard local availability info via git-annex-dead ‘here’. Shares an annex between origin and clone w/o git-annex being aware of it. In case of a change in origin you need to update the clone before you’re able to save new content on your end. Alternative to ‘auto’ when hardlinks are not an option, or number of consumed inodes needs to be minimized. Note that this mode can only be used with clones from non-bare repositories or a RIA store! Otherwise two different annex object tree structures (dirhashmixed vs dirhashlower) will be used simultaneously, and annex keys using the respective other structure will be inaccessible. ['shared-<mode>']: set up repository and annex permission to enable multi-user access. This disables the standard write protection of annex’ed files. <mode> can be any value support by ‘git init --shared=', such as ‘group’, or ‘all’. [Default: None]

• jobs (int or None or {'auto'}, optional) – how many parallel jobs (where possible) to use. “auto” corresponds to the number defined by ‘datalad.runtime.max-annex-jobs’ configuration item. [Default: ‘auto’]

• on_failure (['ignore', 'continue', 'stop'], optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]

• result_filter (callable or None, optional) – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: <function is_result_matching_pathsource_argument at 0x7fc68186e8c0>]

• result_renderer (['default', 'json', 'json_pp', 'tailored'] or None, optional) – format of return value rendering on stdout. [Default: None]
**result_xfm**

(('datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata') or callable or None, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: ‘successdatasets-or-none’]

**return_type**

(('generator', 'list', 'item-or-list'), optional) – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘item-or-list’]

datalad.api.push

datalad.api.push(path=None, dataset=None, to=None, since=None, data=’auto-if-wanted’, force=None, recursive=False, recursion_limit=None, jobs=None)

Push a dataset to a known sibling.

This makes a saved state of a dataset available to a sibling or special remote data store of a dataset. Any target sibling must already exist and be known to the dataset.

By default, all files tracked in the last saved state (of the current branch) will be copied to the target location. Optionally, it is possible to limit a push to changes relative to a particular point in the version history of a dataset (e.g. a release tag) using the since option in conjunction with the specification of a reference dataset. In recursive mode subdatasets will also be evaluated, and only those subdatasets are pushed where a change was recorded that is reflected in the current state of the top-level reference dataset.

**Note:** Power-user info: This command uses git push, and git annex copy to push a dataset. Publication targets are either configured remote Git repositories, or git-annex special remotes (if they support data upload).

**Parameters**

- **path** (sequence of str or None, optional) – path to constrain a push to. If given, only data or changes for those paths are considered for a push. [Default: None]

- **dataset** (Dataset or None, optional) – specify the dataset to push. [Default: None]

- **to** (str or None, optional) – name of the target sibling. If no name is given an attempt is made to identify the target based on the dataset’s configuration (i.e. a configured tracking branch, or a single sibling that is configured for push). [Default: None]

- **since** (str or None, optional) – specifies commit-ish (tag, shasum, etc.) from which to look for changes to decide whether pushing is necessary. If ‘^’ is given, the last state of the current branch at the sibling is taken as a starting point. [Default: None]

- **data**

  (('anything', 'nothing', 'auto', 'auto-if-wanted'), optional) – what to do with (annex’ed) data. ‘anything’ would cause transfer of all annexed content, ‘nothing’ would avoid call to git annex copy altogether. ‘auto’ would use ‘git annex copy’ with ‘--auto’ thus transferring only data which would satisfy “wanted” or “numcopies” settings for the remote (thus “nothing” otherwise). ‘auto-if-wanted’ would enable ‘--auto’ mode only if there is a “wanted” setting for the remote, and transfer ‘anything’ otherwise. [Default: ‘auto-if-wanted’]
• **force** ('all', 'gitpush', 'checkdatapresent', None, optional) – force particular operations, possibly overruling safety protections or optimizations: use –force with git-push ('gitpush'); do not use –fast with git-annex copy ('checkdatapresent'); combine all force modes ('all'). [Default: None]

• **recursive** (bool, optional) – if set, recurse into potential subdataset. [Default: False]

• **recursion_limit** (int or None, optional) – limit recursion into subdataset to the given number of levels. [Default: None]

• **jobs** (int or None or {'auto'}, optional) – how many parallel jobs (where possible) to use. “auto” corresponds to the number defined by 'datalad.runtime.max-annex-jobs' configuration item. [Default: None]

• **on_failure** ('ignore', 'continue', 'stop', optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]

• **result_filter** (callable or None, optional) – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

• **result_renderer** (def 'default', 'json', 'json_pp', 'tailored') or None, optional) – format of return value rendering on stdout. [Default: None]

• **result_xfm** (def 'datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata') or callable or None, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• **return_type** (def 'generator', 'list', 'item-or-list'), optional) – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘list’]

dataлад.api.remove

**datalad.api.remove** (*path=None, dataset=None, recursive=False, check=True, save=True, message=None, if_dirty='save-before'* )

Remove components from datasets

This command can remove subdatasets and paths, including non-empty directories, from datasets. Removing a component implies dropping present content and uninstalling associated subdatasets. Subsequently, the component is “unregistered” from the respective dataset. This means that the component is no longer present on the file system.

By default, the availability of at least one remote copy is verified before file content is dropped. As these checks could lead to slow operation (network latencies, etc), they can be disabled.
Examples

Permanently remove a subdataset from a dataset and wipe out the subdataset association too:

```shell
> remove(dataset='path/to/dataset', path='path/to/subds')
```

Permanently remove a dataset and all subdatasets:

```shell
> remove(dataset='path/to/dataset', recursive=True)
```

Permanently remove a dataset and all subdatasets even if there are fewer than the configured minimum number of (remote) sources for data:

```shell
> remove(dataset='path/to/dataset', recursive=True, check=False)
```

Parameters

- `path` *(sequence of str or None, optional)* – path/name of the component to be removed. [Default: None]
- `dataset` *(Dataset or None, optional)* – specify the dataset to perform the operation on. If no dataset is given, an attempt is made to identify a dataset based on the path given. [Default: None]
- `recursive` *(bool, optional)* – if set, recurse into potential subdataset. [Default: False]
- `check` *(bool, optional)* – whether to perform checks to assure the configured minimum number (remote) source for data. [Default: True]
- `save` *(bool, optional)* – by default all modifications to a dataset are immediately saved. Giving this option will disable this behavior. [Default: True]
- `message` *(str or None, optional)* – a description of the state or the changes made to a dataset. [Default: None]
- `if_dirty` – desired behavior if a dataset with unsaved changes is discovered: ‘fail’ will trigger an error and further processing is aborted; ‘save-before’ will save all changes prior any further action; ‘ignore’ let’s datalad proceed as if the dataset would not have unsaved changes. [Default: ‘save-before’]
- `on_failure` *({'ignore', 'continue', 'stop'}, optional)* – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its `failed` attribute. [Default: ‘continue’]
- `result_filter` *(callable or None, optional)* – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]
- `result_renderer` *({'default', 'json', 'json_pp', 'tailored'} or None, optional)* – format of return value rendering on stdout. [Default: None]
- `result_xfm` *({'datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata'} or callable or None, optional)* – if given,
each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from `result_filter`, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

- `return_type` ("generator", "list", "item-or-list"), optional
  - return value behavior switch. If `item-or-list` a single value is returned instead of a one-item return value list, or a list in case of multiple return values. `None` is return in case of an empty list. [Default: ‘list’]

```python
datalad.api.save```

`datalad.api.save` (path=None, message=None, dataset=None, version_tag=None, recursive=False, recursion_limit=None, updated=False, message_file=None, to_git=None, jobs=None, amend=False)

Save the current state of a dataset

Saving the state of a dataset records changes that have been made to it. This change record is annotated with a user-provided description. Optionally, an additional tag, such as a version, can be assigned to the saved state. Such tag enables straightforward retrieval of past versions at a later point in time.

**Note:** Before Git v2.22, any Git repository without an initial commit located inside a Dataset is ignored, and content underneath it will be saved to the respective superdataset. DataLad datasets always have an initial commit, hence are not affected by this behavior.

**Examples**

Save any content underneath the current directory, without altering any potential subdataset:

```
> save(path='. ')
```

Save specific content in the dataset:

```
> save(path='myfile.txt')
```

Attach a commit message to save:

```
> save(path='myfile.txt', message='add file')
```

Save any content underneath the current directory, and recurse into any potential subdatasets:

```
> save(path='.', recursive=True)
```

Save any modification of known dataset content in the current directory, but leave untracked files (e.g. temporary files) untouched:

```
> save(path='.', updated=True)
```

Tag the most recent saved state of a dataset:

```
> save(version_tag='bestyet')
```

Save a specific change but integrate into last commit keeping the already recorded commit message:
Parameters

- **path** *(sequence of str or None, optional)* — path/name of the dataset component to save. If given, only changes made to those components are recorded in the new state. [Default: None]

- **message** *(str or None, optional)* — a description of the state or the changes made to a dataset. [Default: None]

- **dataset** *(Dataset or None, optional)* — “specify the dataset to save. [Default: None]

- **version_tag** *(str or None, optional)* — an additional marker for that state. Every dataset that is touched will receive the tag. [Default: None]

- **recursive** *(bool, optional)* — if set, recurse into potential subdataset. [Default: False]

- **recursion_limit** *(int or None, optional)* — limit recursion into subdataset to the given number of levels. [Default: None]

- **updated** *(bool, optional)* — if given, only saves previously tracked paths. [Default: False]

- **message_file** *(str or None, optional)* — take the commit message from this file. This flag is mutually exclusive with -m. [Default: None]

- **to_git** *(bool, optional)* — flag whether to add data directly to Git, instead of tracking data identity only. Use with caution, there is no guarantee that a file put directly into Git like this will not be annexed in a subsequent save operation. If not specified, it will be up to git-annex to decide how a file is tracked, based on a dataset’s configuration to track particular paths, file types, or file sizes with either Git or git-annex. (see https://git-annex.branchable.com/tips/largefiles). [Default: None]

- **jobs** *(int or None or {'auto'}, optional)* — how many parallel jobs (where possible) to use. “auto” corresponds to the number defined by ‘datalad.runtime.max-annex-jobs’ configuration item. [Default: None]

- **amend** *(bool, optional)* — if set, changes are not recorded in a new, separate commit, but are integrated with the changeset of the previous commit, and both together are recorded by replacing that previous commit. This is mutually exclusive with recursive operation. [Default: False]

- **on_failure** *({'ignore', 'continue', 'stop'}, optional)* — behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]

- **result_filter** *(callable or None, optional)* — if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]
• **result_renderer**  
  ```python
  ("default", "json", "json_pp", "tailored") or None, optional) -- format of return value rendering on stdout. [Default: None]
  ```

• **result_xfm**  
  ```python
  ("datasets", "successdatasets-or-none", "paths", 
  "repaths", "metadata") or callable or None, optional) -- if given, 
  each to-be-returned result status dictionary is passed to this callable, and its return value 
  becomes the result instead. This is different from result_filter, as it can perform arbitrary 
  transformation of the result value. This is mostly useful for top- level command invocations 
  that need to provide the results in a particular format. Instead of a callable, a label for a 
  pre-crafted result transformation can be given. [Default: None]
  ```

• **return_type**  
  ```python
  ("generator", "list", "item-or-list"), optional) -- 
  return value behavior switch. If 'item-or-list' a single value is returned instead of a one-item 
  return value list, or a list in case of multiple return values. None is return in case of an empty 
  list. [Default: 'list']
  ```

---

**datalad.api.update**

datalad.api.update(path=None, sibling=None, merge=False, how=None, how_subds=None, 
follow='sibling', dataset=None, recursive=False, recursion_limit=None, 
fetch_all=None, reobtain_data=False)

Update a dataset from a sibling.

### Examples

Update from a particular sibling:

```bash
> update(sibling='siblingname')
```

Update from a particular sibling and merge the changes from a configured or matching branch from the sibling 
(see follow for details):

```bash
> update(sibling='siblingname', how='merge')
```

Update from the sibling ‘origin’, traversing into subdatasets. For subdatasets, merge the revision registered in 
the parent dataset into the current branch:

```bash
> update(sibling='origin', how='merge', follow='parentds', recursive=True)
```

Fetch and merge the remote tracking branch into the current dataset. Then update each subdataset by resetting its 
current branch to the revision registered in the parent dataset, fetching only if the revision isn’t already present:

```bash
> update(how='merge', how_subds='reset', follow='parentds-lazy', recursive=True)
```

### Parameters

• **path** *(sequence of str or None, optional)* -- constrain to-be-updated sub-
  datasets to the given path for recursive operation. [Default: None]

• **sibling** *(str or None, optional)* -- name of the sibling to update from. When 
  unspecified, updates from all siblings are fetched. If there is more than one sibling and 
  changes will be brought into the working tree (as requested via merge, how, or how_subds), 
  a sibling will be chosen based on the configured remote for the current branch. [Default: 
  None]
• **merge** (bool or {'any', 'ff-only'}, optional) – merge obtained changes from the sibling. This is a subset of the functionality that can be achieved via the newer **how**. `merge=True` or `merge="any"` is equivalent to `how="merge"`. `merge="ff-only"` is equivalent to `how="ff-only"`. [Default: False]

• **how** ({'fetch', 'merge', 'ff-only', 'reset', 'checkout', None}, optional) – how to update the dataset. The default ("fetch") simply fetches the changes from the sibling but doesn’t incorporate them into the working tree. A value of “merge” or “ff-only” merges in changes, with the latter restricting the allowed merges to fast-forwards. “reset” incorporates the changes with `git reset –hard <target>`, staying on the current branch but discarding any changes that aren’t shared with the target. “checkout”, on the other hand, runs ‘git checkout <target>’, switching from the current branch to a detached state. When recursive=True is specified, this action will also apply to subdatasets unless overridden by **how_subds**. [Default: None]

• **how_subds** ({'fetch', 'merge', 'ff-only', 'reset', 'checkout', None}, optional) – Override the behavior of **how** in subdatasets. [Default: None]

• **follow** ({'sibling', 'parentds', 'parentds-lazy'}, optional) – source of updates for subdatasets. For ‘sibling’, the update will be done by merging in a branch from the (specified or inferred) sibling. The branch brought in will either be the current branch’s configured branch, if it points to a branch that belongs to the sibling, or a sibling branch with a name that matches the current branch. For ‘parentds’, the revision registered in the parent dataset of the subdataset is merged in. ‘parentds-lazy’ is like ‘parentds’, but prevents fetching from a subdataset’s sibling if the registered revision is present in the subdataset. Note that the current dataset is always updated according to ‘sibling’). This option has no effect unless a merge is requested and recursive=True is specified. [Default: ‘sibling’]

• **dataset** (Dataset or None, optional) – specify the dataset to update. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. [Default: None]

• **recursive** (bool, optional) – if set, recurse into potential subdataset. [Default: False]

• **recursion_limit** (int or None, optional) – limit recursion into subdataset to the given number of levels. [Default: None]

• **fetch_all** (bool, optional) – this option has no effect and will be removed in a future version. When no siblings are given, an all-sibling update will be performed. [Default: None]

• **reobtain_data** (bool, optional) – if enabled, file content that was present before an update will be re-obtained in case a file was changed by the update. [Default: False]

• **on_failure** ({'ignore', 'continue', 'stop'}, optional) – behavior on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its **failed** attribute. [Default: ‘continue’]

• **result_filter** (callable or None, optional) – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call.  
[Default: None]
• **result_renderer** ("default", 'json', 'json_pp', 'tailored') or None, optional) – format of return value rendering on stdout. [Default: None]

• **result_xfm** ("datasets", 'successdatasets-or-none', 'paths', 'reipaths', 'metadata') or callable or None, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• **return_type** ("generator", 'list', 'item-or-list'), optional) – return value behavior switch. If 'item-or-list' a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: 'list']

datalad.api.uninstall

datalad.api.uninstall (path=None, dataset=None, recursive=False, check=True, if_dirty='save-before')

Uninstall subdatasets

This command can be used to uninstall any number of installed subdatasets. This command will error if individual files or non-dataset directories are given as input (use the drop or remove command depending on the desired goal), nor will it uninstall top-level datasets (i.e. datasets that are not a subdataset in another dataset; use the remove command for this purpose).

By default, the availability of at least one remote copy for each currently available file in any dataset is verified. As these checks could lead to slow operation (network latencies, etc), they can be disabled.

Any number of paths to process can be given as input. Recursion into subdatasets needs to be explicitly enabled, while recursion into subdirectories within a dataset is done automatically. An optional recursion limit is applied relative to each given input path.

**Examples**

Uninstall a subdataset (undo installation):

```bash
> uninstall(path='path/to/subds')
```

Uninstall a subdataset and all potential subdatasets:

```bash
> uninstall(path='path/to/subds', recursive=True)
```

Skip checks that ensure a minimal number of (remote) sources:

```bash
> uninstall(path='path/to/subds', check=False)
```

**Parameters**

• **path** (sequence of str or None, optional) – path/name of the component to be uninstalled. [Default: None]

• **dataset** (Dataset or None, optional) – specify the dataset to perform the operation on. If no dataset is given, an attempt is made to identify a dataset based on the path given. [Default: None]
• **recursive** (bool, optional) – if set, recurse into potential subdataset. [Default: False]

• **check** (bool, optional) – whether to perform checks to assure the configured minimum number (remote) source for data. [Default: True]

• **if_dirty** – desired behavior if a dataset with unsaved changes is discovered: ‘fail’ will trigger an error and further processing is aborted; ‘save-before’ will save all changes prior any further action; ‘ignore’ let’s datalad proceed as if the dataset would not have unsaved changes. [Default: ‘save-before’]

• **on_failure** ({'ignore', 'continue', 'stop'}, optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]

• **result_filter** (callable or None, optional) – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

• **result_renderer** (default, {'json', 'json_pp', 'tailored'} or None, optional) – format of return value rendering on stdout. [Default: None]

• **result_xfm** ({'datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata'} or callable or None, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• **return_type** ({'generator', 'list', 'item-or-list'}, optional) – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘list’]

datalad.api.unlock

datalad.api.unlock(path=None, dataset=None, recursive=False, recursion_limit=None)
Unlock file(s) of a dataset
Unlock files of a dataset in order to be able to edit the actual content

Examples
Unlock a single file:

```
> unlock(path='path/to/file')
```

Unlock all contents in the dataset:
Parameters

- **path** *(sequence of str or None, optional)* – file(s) to unlock. [Default: None]

- **dataset** *(Dataset or None, optional)* – specify the dataset to unlock files in. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. [Default: None]

- **recursive** *(bool, optional)* – if set, recurse into potential subdataset. [Default: False]

- **recursion_limit** *(int or None, optional)* – limit recursion into subdataset to the given number of levels. [Default: None]

- **on_failure** *(['ignore', 'continue', 'stop'], optional)* – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its *failed* attribute. [Default: ‘continue’]

- **result_filter** *(callable or None, optional)* – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

- **result_renderer** *({'default', 'json', 'json_pp', 'tailored'} or None, optional)* – format of return value rendering on stdout. [Default: None]

- **result_xfm** *({'datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata'} or callable or None, optional)* – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

- **return_type** *({'generator', 'list', 'item-or-list'}, optional)* – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘list’]

Metadata handling

| `api.search([query, dataset, force_reindex, ...])` | Search dataset metadata |
| `api.metadata([path, dataset, ...])` | Metadata reporting for files and entire datasets |
| `api.aggregate_metadata([path, dataset, ...])` | Aggregate metadata of one or more datasets for later query. |
| `api.extract_metadata(types[, files, dataset])` | Run one or more of DataLad’s metadata extractors on a dataset or file. |
**datalad.api.search**

```

datalad.api.search(query=None, dataset=None, force_reindex=False, max_nresults=None, mode=None, full_record=False, show_keys=None, show_query=False)
```

Search dataset metadata

DataLad can search metadata extracted from a dataset and/or aggregated into a superdataset (see the `aggregate-metadata` command). This makes it possible to discover datasets, or individual files in a dataset even when they are not available locally.

Ultimately DataLad metadata are a graph of linked data structures. However, this command does not (yet) support queries that can exploit all information stored in the metadata. At the moment the following search modes are implemented that represent different trade-offs between the expressiveness of a query and the computational and storage resources required to execute a query.

- **egrep** (default)
- **egrepcs** [case-sensitive egrep]
- **textblob**
- **autofield**

An alternative default mode can be configured by tuning the configuration variable ‘`datalad.search.default-mode`’:

```
[datalad "search"]
  default-mode = egrepcs
```

Each search mode has its own default configuration for what kind of documents to query. The respective default can be changed via configuration variables:

```
[datalad "search"]
  index-<mode_name>-documenttype = (all|datasets|files)
```

**Mode: egrep/egrepcs**

These search modes are largely ignorant of the metadata structure, and simply perform matching of a search pattern against a flat string-representation of metadata. This is advantageous when the query is simple and the metadata structure is irrelevant, or precisely known. Moreover, it does not require a search index, hence results can be reported without an initial latency for building a search index when the underlying metadata has changed (e.g. due to a dataset update). By default, these search modes only consider datasets and do not investigate records for individual files for speed reasons. Search results are reported in the order in which they were discovered.

Queries can make use of Python regular expression syntax ([https://docs.python.org/3/library/re.html](https://docs.python.org/3/library/re.html)). In egrep mode, matching is case-insensitive when the query does not contain upper case characters, but is case-sensitive when it does. In egrepcs mode, matching is always case-sensitive. Expressions will match anywhere in a metadata string, not only at the start.

When multiple queries are given, all queries have to match for a search hit (AND behavior).

It is possible to search individual metadata key/value items by prefixing the query with a metadata key name, separated by a colon (‘:`’). The key name can also be a regular expression to match multiple keys. A query match happens when any value of an item with a matching key name matches the query (OR behavior). See examples for more information.
Examples

Query for (what happens to be) an author:

```
% datalad search haxby
```

Queries are case-insensitive when the query contains no upper case characters, and can be regular expressions. Use `egrepcs` mode when it is desired to perform a case-sensitive lowercase match:

```
% datalad search --mode egrepcs halchenko.*haxby
```

This search mode performs NO analysis of the metadata content. Therefore queries can easily fail to match. For example, the above query implicitly assumes that authors are listed in alphabetical order. If that is the case (which may or may not be true), the following query would yield NO hits:

```
% datalad search Haxby.*Halchenko
```

The `textblob` search mode represents an alternative that is more robust in such cases.

For more complex queries multiple query expressions can be provided that all have to match to be considered a hit (AND behavior). This query discovers all files (non-default behavior) that match ‘bids.type=T1w’ AND ‘nifti1.qform_code=scanner’:

```
% datalad -c datalad.search.index-egrep-documenttype=all search bids.type:T1w → nifti1.qform_code:scanner
```

Key name selectors can also be expressions, which can be used to select multiple keys or construct “fuzzy” queries. In such cases a query matches when any item with a matching key matches the query (OR behavior). However, multiple queries are always evaluated using an AND conjunction. The following query extends the example above to match any files that have either ‘nifti1.qform_code=scanner’ or ‘nifti1.sform_code=scanner’:

```
% datalad -c datalad.search.index-egrep-documenttype=all search bids.type:T1w → nifti1.(q|s)form_code:scanner
```

Mode: textblob

This search mode is very similar to the `egrep` mode, but with a few key differences. A search index is built from the string-representation of metadata records. By default, only datasets are included in this index, hence the indexing is usually completed within a few seconds, even for hundreds of datasets. This mode uses its own query language (not regular expressions) that is similar to other search engines. It supports logical conjunctions and fuzzy search terms. More information on this is available from the Whoosh project (search engine implementation):

- Description of a number of query language customizations that are enabled in DataLad, such as, fuzzy term matching: [http://whoosh.readthedocs.io/en/latest/parsing.html#common-customizations](http://whoosh.readthedocs.io/en/latest/parsing.html#common-customizations)

Importantly, search hits are scored and reported in order of descending relevance, hence limiting the number of search results is more meaningful than in the ‘egrep’ mode and can also reduce the query duration.

Examples

Search for (what happens to be) two authors, regardless of the order in which those names appear in the metadata:

```
% datalad search --mode textblob halchenko haxby
```

Fuzzy search when you only have an approximate idea what you are looking for or how it is spelled:
Very fuzzy search, when you are basically only confident about the first two characters and how it sounds approximately (or more precisely: allow for three edits and require matching of the first two characters):

```
% datalad search --mode textblob haxbi~3/2
```

Combine fuzzy search with logical constructs:

```
% datalad search --mode textblob 'haxbi~ AND (hanke OR halchenko)'
```

**Mode: autofield**

This mode is similar to the `textblob` mode, but builds a vastly more detailed search index that represents individual metadata variables as individual fields. By default, this search index includes records for datasets and individual fields, hence it can grow very quickly into a huge structure that can easily take an hour or more to build and require more than a GB of storage. However, limiting it to documents on datasets (see above) retains the enhanced expressiveness of queries while dramatically reducing the resource demands.

**Examples**

List names of search index fields (auto-discovered from the set of indexed datasets) which either have a field starting with “age” or “gender”:

```
% datalad search --mode autofield --show-keys name '\.age' '\.gender'
```

Fuzzy search for datasets with an author that is specified in a particular metadata field:

```
% datalad search --mode autofield bids.author:haxbi~ type:dataset
```

Search for individual files that carry a particular description prefix in their ‘nifti1’ metadata:

```
% datalad search --mode autofield nifti1.description:FSL* type:file
```

**Reporting**

Search hits are returned as standard DataLad results. On the command line the ‘--output-format’ (or ‘-f’) option can be used to tweak results for further processing.

**Examples**

Format search hits as a JSON stream (one hit per line):

```
% datalad -f json search haxby
```

Custom formatting: which terms matched the query of particular results. Useful for investigating fuzzy search results:

```
$ datalad -f '{path}: {query_matched}' search --mode autofield bids.author:haxbi~
```

**Parameters**

- **query** – query string, supported syntax and features depends on the selected search mode (see documentation). [Default: None]
• **dataset** *(Dataset or None, optional)* – specify the dataset to perform the query operation on. If no dataset is given, an attempt is made to identify the dataset based on the current working directory and/or the path given. [Default: None]

• **force_reindex** *(bool, optional)* – force rebuilding the search index, even if no change in the dataset’s state has been detected, for example, when the index documenttype configuration has changed. [Default: False]

• **max_results** *(int or None, optional)* – maximum number of search results to report. Setting this to 0 will report all search matches. Depending on the mode this can search substantially slower. If not specified, a mode-specific default setting will be used. [Default: None]

• **mode** – Mode of search index structure and content. See section SEARCH MODES for details. [Default: None]

• **full_record** *(bool, optional)* – If set, return the full metadata record for each search hit. Depending on the search mode this might require additional queries. By default, only data that is available to the respective search modes is returned. This always includes essential information, such as the path and the type. [Default: False]

• **show_keys** – if given, a list of known search keys is shown. If ‘name’ - only the name is printed one per line. If ‘short’ or ‘full’, statistics (in how many datasets, and how many unique values) are printed. ‘short’ truncates the listing of unique values. QUERY, if provided, is regular expressions any of which keys should contain. No other action is performed (except for reindexing), even if other arguments are given. Each key is accompanied by a term definition in parenthesis (TODO). In most cases a definition is given in the form of a URL. If an ontology definition for a term is known, this URL can resolve to a webpage that provides a comprehensive definition of the term. However, for speed reasons term resolution is solely done on information contained in a local dataset’s metadata, and definition URLs might be outdated or point to no longer existing resources. [Default: None]

• **show_query** *(bool, optional)* – if given, the formal query that was generated from the given query string is shown, but not actually executed. This is mostly useful for debugging purposes. [Default: False]

• **on_failure** *({'ignore', 'continue', 'stop'}, optional)* – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]

• **result_filter** *(callable or None, optional)* – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

• **result_renderer** *({'default', 'json', 'json_pp', 'tailored'} or None, optional)* – format of return value rendering on stdout. [Default: None]

• **result_xfm** *({'datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata'} or callable or None, optional)* – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations.
that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

- `return_type`('generator', 'list', 'item-or-list'), optional – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. `None` is return in case of an empty list. [Default: ‘list’]

datalad.api.metadata
datalad.api.metadata(path=None, dataset=None, get_aggregates=False, reporton='all', recursive=False)

Metadata reporting for files and entire datasets

Two types of metadata are supported:

1. metadata describing a dataset as a whole (dataset-global metadata), and
2. metadata for files in a dataset (content metadata).

Both types can be accessed with this command.

Examples

Report the metadata of a single file, as aggregated into the closest locally available dataset, containing the query path:

```
% datalad metadata somedir/subdir/thisfile.dat
```

Sometimes it is helpful to get metadata records formatted in a more accessible form, here as pretty-printed JSON:

```
% datalad -f json_pp metadata somedir/subdir/thisfile.dat
```

Same query as above, but specify which dataset to query (must be containing the query path):

```
% datalad metadata -d . somedir/subdir/thisfile.dat
```

Report any metadata record of any dataset known to the queried dataset:

```
% datalad metadata --recursive --reporton datasets
```

Get a JSON-formatted report of aggregated metadata in a dataset, incl. information on enabled metadata extractors, dataset versions, dataset IDs, and dataset paths:

```
% datalad -f json metadata --get-aggregates
```

Parameters

- `path` (sequence of str or None, optional) – path(s) to query metadata for. [Default: None]
- `dataset` (Dataset or None, optional) – dataset to query. If given, metadata will be reported as stored in this dataset. Otherwise, the closest available dataset containing a query path will be consulted. [Default: None]
• **get_aggregates** (*bool*, optional) – if set, yields all (sub)datasets for which aggregate metadata are available in the dataset. No other action is performed, even if other arguments are given. The reported results contain a dataset’s ID, the commit hash at which metadata aggregation was performed, and the location of the object file(s) containing the aggregated metadata. [Default: False]

• **reporton** (['all', 'datasets', 'files', 'none'], optional) – choose on what type result to report on: ‘datasets’, ‘files’, ‘all’ (both datasets and files), or ‘none’ (no report). [Default: ‘all’]

• **recursive** (*bool*, optional) – if set, recurse into potential subdataset. [Default: False]

• **on_failure** (['ignore', 'continue', 'stop'], optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its `failed` attribute. [Default: ‘continue’]

• **result_filter** (*callable or None*, optional) – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

• **result_renderer** (['default', 'json', 'json_pp', 'tailored'] or *None*, optional) – format of return value rendering on stdout. [Default: ‘tailored’]

• **result_xfm** (['datasets', 'successdatasets-or-none', 'paths', 'reipaths', 'metadata'] or *callable or None*, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from `result_filter`, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• **return_type** ('generator', 'list', 'item-or-list'), optional) – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘list’]

---

**datalad.api.aggregate_metadata**

**datalad.api.aggregate_metadata** *(path=None, dataset=None, recursive=False, recursion_limit=None, update_mode='target', incremental=False, force_extraction=False, save=True)*

Aggregate metadata of one or more datasets for later query.

Metadata aggregation refers to a procedure that extracts metadata present in a dataset into a portable representation that is stored in a single standardized format. Moreover, metadata aggregation can also extract metadata in this format from one dataset and store it in another (super)dataset. Based on such collections of aggregated metadata it is possible to discover particular datasets and specific parts of their content, without having to obtain the target datasets first (see the DataLad ‘search’ command).
To enable aggregation of metadata that are contained in files of a dataset, one has to enable one or more metadata extractors for a dataset. DataLad supports a number of common metadata standards, such as the Exchangeable Image File Format (EXIF), Adobe’s Extensible Metadata Platform (XMP), and various audio file metadata systems like ID3. DataLad extension packages can provide metadata data extractors for additional metadata sources. For example, the neuroimaging extension provides extractors for scientific (meta)data standards like BIDS, DICOM, and NIfTI1. Some metadata extractors depend on particular 3rd-party software. The list of metadata extractors available to a particular DataLad installation is reported by the ‘wtf’ command (‘datalad wtf’).

Enabling a metadata extractor for a dataset is done by adding its name to the ‘datalad.metadata.nativetype’ configuration variable – typically in the dataset’s configuration file (.datalad/config), e.g.:

```
[datalad "metadata"]
  nativetype = exif
  nativetype = xmp
```

If an enabled metadata extractor is not available in a particular DataLad installation, metadata extraction will not succeed in order to avoid inconsistent aggregation results.

Enabling multiple extractors is supported. In this case, metadata are extracted by each extractor individually, and stored alongside each other. Metadata aggregation will also extract DataLad’s own metadata (extractors ‘datalad_core’, and ‘annex’).

Metadata aggregation can be performed recursively, in order to aggregate all metadata across all subdatasets, for example, to be able to search across any content in any dataset of a collection. Aggregation can also be performed for subdatasets that are not available locally. In this case, pre-aggregated metadata from the closest available superdataset will be considered instead.

Depending on the versatility of the present metadata and the number of dataset or files, aggregated metadata can grow prohibitively large. A number of configuration switches are provided to mitigate such issues.

**datalad.metadata.aggregate-content-<extractor-name>** If set to false, content metadata aggregation will not be performed for the named metadata extractor (a potential underscore ‘_’ in the extractor name must be replaced by a dash ‘-‘). This can substantially reduce the runtime for metadata extraction, and also reduce the size of the generated metadata aggregate. Note, however, that some extractors may not produce any metadata when this is disabled, because their metadata might come from individual file headers only. ‘datalad.metadata.store-aggregate-content’ might be a more appropriate setting in such cases.

**datalad.metadata.aggregate-ignore-fields** Any metadata key matching any regular expression in this configuration setting is removed prior to generating the dataset-level metadata summary (keys and their unique values across all dataset content), and from the dataset metadata itself. This switch can also be used to filter out sensitive information prior aggregation.

**datalad.metadata.generate-unique-<extractor-name>** If set to false, DataLad will not auto-generate a summary of unique content metadata values for a particular extractor as part of the dataset-global metadata (a potential underscore ‘_’ in the extractor name must be replaced by a dash ‘-‘). This can be useful if such a summary is bloated due to minor uninformative (e.g. numerical) differences, or when a particular extractor already provides a carefully designed content metadata summary.

**datalad.metadata.maxfieldsize** Any metadata value that exceeds the size threshold given by this configuration setting (in bytes/characters) is removed.

**datalad.metadata.store-aggregate-content** If set, extracted content metadata are still used to generate a dataset-level summary of present metadata (all keys and their unique values across all files in a dataset are determined and stored as part of the dataset-level metadata aggregate, see datalad.metadata.generate-unique-<extractor-name>), but metadata on individual files are not stored. This switch can be used to avoid prohibitively large metadata files. Discovery of datasets containing content matching particular metadata properties will still be possible, but such datasets would have to be obtained first in order to discover which particular files in them match these properties.
Parameters

- **path** *(sequence of str or None, optional)* – path to datasets that shall be aggregated. When a given path is pointing into a dataset, the metadata of the containing dataset will be aggregated. If no paths given, current dataset metadata is aggregated. [Default: None]

- **dataset** *(Dataset or None, optional)* – topmost dataset metadata will be aggregated into. All dataset between this dataset and any given path will receive updated aggregated metadata from all given paths. [Default: None]

- **recursive** *(bool, optional)* – if set, recurse into potential subdataset. [Default: False]

- **recursion_limit** *(int or None, optional)* – limit recursion into subdataset to the given number of levels. [Default: None]

- **update_mode** *({'all', 'target'}, optional)* – which datasets to update with newly aggregated metadata: all datasets from any leaf dataset to the top-level target dataset including all intermediate datasets (all), or just the top-level target dataset (target). [Default: ‘target’]

- **incremental** *(bool, optional)* – If set, all information on metadata records of subdatasets that have not been (re-)aggregated in this run will be kept unchanged. This is useful when (re-)aggregation only a subset of a dataset hierarchy, for example, because not all subdatasets are locally available. [Default: False]

- **force_extraction** *(bool, optional)* – If set, all enabled extractors will be engaged regardless of whether change detection indicates that metadata has already been extracted for a given dataset state. [Default: False]

- **save** *(bool, optional)* – by default all modifications to a dataset are immediately saved. Giving this option will disable this behavior. [Default: True]

- **on_failure** *({'ignore', 'continue', 'stop'}, optional)* – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]

- **result_filter** *(callable or None, optional)* – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

- **result_renderer** *({'default', 'json', 'json_pp', 'tailored'} or None, optional)* – format of return value rendering on stdout. [Default: None]

- **result_xfm** *({'datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata}' or callable or None, optional)* – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]
**return_type** ('generator', 'list', 'item-or-list', optional) – return value behavior switch. If 'item-or-list' a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘list’]

datalad.api.extract_metadata

datalad.api.extract_metadata (types, files=None, dataset=None)
Run one or more of DataLad’s metadata extractors on a dataset or file.

The result(s) are structured like the metadata DataLad would extract during metadata aggregation. There is one result per dataset/file.

**Examples**

Extract metadata with two extractors from a dataset in the current directory and also from all its files:

```bash
$ datalad extract-metadata -d . --type frictionless_datapackage --type datalad_core
```

Extract XMP metadata from a single PDF that is not part of any dataset:

```bash
$ datalad extract-metadata --type xmp Downloads/freshfromtheweb.pdf
```

**Parameters**

- **types** – Name of a metadata extractor to be executed.
- **files** (sequence of str or None, optional) – Path of a file to extract metadata from. [Default: None]
- **dataset** (Dataset or None, optional) – “Dataset to extract metadata from. If no file is given, metadata is extracted from all files of the dataset. [Default: None]
- **on_failure** ('ignore', 'continue', 'stop'), optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]
- **result_filter** (callable or None, optional) – if given, each to-be-returned status dictionary is passed to this callble, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]
- **result_renderer** (default', 'json', 'json_pp', 'tailored') or None, optional) – format of return value rendering on stdout. [Default: None]
- **result_xfm** (datasets, 'successdatasets-or-none', 'paths', 'relpaths', 'metadata') or callable or None, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations
that need to provide the results in a particular format. Instead of a callable, a label for a
pre-crafted result transformation can be given. [Default: None]

• return_type({'generator', 'list', 'item-or-list'}, optional) –
  return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item
  return value list, or a list in case of multiple return values. None is return in case of an empty
  list. [Default: ‘list’]

Reproducible execution

---

**api.run**([cmd, dataset, inputs, outputs, ...]) Run an arbitrary shell command and record its impact
on a dataset.

**api.rerun**(revision, since, dataset, ...) Re-execute previous datalad run commands.

**api.run_procedure**(spec, dataset, discover, ...) Run prepared procedures (DataLad scripts) on a dataset

**datalad.api.run**

```python
# Run an arbitrary shell command and record its impact on a dataset.

datalad_api.run(cmd=None, dataset=None, inputs=None, outputs=None, expand=None, assume_ready=None, explicit=False, message=None, sidecar=None, dry_run=None)
```

It is recommended to craft the command such that it can run in the root directory of the dataset that the command
will be recorded in. However, as long as the command is executed somewhere underneath the dataset root, the
exact location will be recorded relative to the dataset root.

If the executed command did not alter the dataset in any way, no record of the command execution is made.

If the given command errors, a CommandError exception with the same exit code will be raised, and no modi-
fications will be saved.

**Command format**

A few placeholders are supported in the command via Python format specification. “{pwd}” will be replaced
with the full path of the current working directory. “{dspath}” will be replaced with the full path of the dataset
that run is invoked on. “{tmpdir}” will be replaced with the full path of a temporary directory. “{inputs}” and
“{outputs}” represent the values specified by inputs and outputs. If multiple values are specified, the values
will be joined by a space. The order of the values will match that order from the command line, with any
globs expanded in alphabetical order (like bash). Individual values can be accessed with an integer index (e.g.,
“{inputs[0]}”).

Note that the representation of the inputs or outputs in the formatted command string depends on whether the
command is given as a list of arguments or as a string. The concatenated list of inputs or outputs will be
surrounded by quotes when the command is given as a list but not when it is given as a string. This means that
the string form is required if you need to pass each input as a separate argument to a preceding script (i.e., write
the command as “./script {inputs}”, quotes included). The string form should also be used if the input or output
paths contain spaces or other characters that need to be escaped.

To escape a brace character, double it (i.e., “{“ or “}”).

Custom placeholders can be added as configuration variables under “datalad.run.substitutions”. As an example:

Add a placeholder “name” with the value “joe”:

```
% git config --file=.datalad/config datalad.run.substitutions.name joe
% datalad save -m "Configure name placeholder" .datalad/config
```

Access the new placeholder in a command:
Examples

Run an executable script and record the impact on a dataset:

```
> run(message='run my script', cmd='code/script.sh')
```

Run a command and specify a directory as a dependency for the run. The contents of the dependency will be retrieved prior to running the script:

```
> run(cmd='code/script.sh', message='run my script',
     inputs=['data/*'])
```

Run an executable script and specify output files of the script to be unlocked prior to running the script:

```
> run(cmd='code/script.sh', message='run my script',
     inputs=['data/*'], outputs=['output_dir'])
```

Specify multiple inputs and outputs:

```
> run(cmd='code/script.sh',
     message='run my script',
     inputs=['data/*', 'datafile.txt'],
     outputs=['output_dir', 'outfile.txt'])
```

Parameters

- **cmd** – command for execution. A leading ‘–’ can be used to disambiguate this command from the preceding options to Datalad. [Default: None]

- **dataset** *(Dataset or None, optional)* – specify the dataset to record the command results in. An attempt is made to identify the dataset based on the current working directory. If a dataset is given, the command will be executed in the root directory of this dataset. [Default: None]

- **inputs** – A dependency for the run. Before running the command, the content for this relative path will be retrieved. A value of “.” means “run datalad get.”. The value can also be a glob. [Default: None]

- **outputs** – Prepare this relative path to be an output file of the command. A value of “.” means “run datalad unlock.” (and will fail if some content isn’t present). For any other value, if the content of this file is present, unlock the file. Otherwise, remove it. The value can also be a glob. [Default: None]

- **expand** *(None, 'inputs', 'outputs', 'both', optional)* – Expand globs when storing inputs and/or outputs in the commit message. [Default: None]

- **assume_ready** *(None, 'inputs', 'outputs', 'both', optional)* – Assume that inputs do not need to be retrieved and/or outputs do not need to unlocked or removed before running the command. This option allows you to avoid the expense of these preparation steps if you know that they are unnecessary. [Default: None]

- **explicit** *(bool, optional)* – Consider the specification of inputs and outputs to be explicit. Don’t warn if the repository is dirty, and only save modifications to the listed outputs. [Default: False]
**message** *(str or None, optional)* – a description of the state or the changes made to a dataset. [Default: None]

**sidecar** *(None or bool, optional)* – By default, the configuration variable ‘datalad.run.record-sidecar’ determines whether a record with information on a command’s execution is placed into a separate record file instead of the commit message (default: off). This option can be used to override the configured behavior on a case-by-case basis. Sidecar files are placed into the dataset’s `.datalad/runinfo` directory (customizable via the ‘datalad.run.record-directory’ configuration variable). [Default: None]

**dry_run** *(None, 'basic', 'command'), optional)* – Do not run the command; just display details about the command execution. A value of “basic” reports a few important details about the execution, including the expanded command and expanded inputs and outputs. “command” displays the expanded command only. Note that input and output globs underneath an uninstalled dataset will be left unexpanded because no subdatasets will be installed for a dry run. [Default: None]

**on_failure** *(('ignore', 'continue', 'stop'), optional)* – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its `failed` attribute. [Default: ‘continue’]

**result_filter** *(callable or None, optional)* – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

**result_renderer** *(str, 'json', 'json_pp', 'tailored') or None, optional)* – format of return value rendering on stdout. [Default: ‘tailored’]

**result_xfm** *(datasets, successdatasets-or-none, paths, relpaths, metadata) or callable or None, optional)* – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

**return_type** *(generator, 'list', 'item-or-list'), optional)* – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. *None* is return in case of an empty list. [Default: ‘list’]

datalad.api.rerun

datalad.api.rerun(revision=None, since=None, dataset=None, branch=None, message=None, onto=None, script=None, report=False, assume_ready=None, explicit=False)

Re-execute previous `datalad run` commands.

This will unlock any dataset content that is on record to have been modified by the command in the specified revision. It will then re-execute the command in the recorded path (if it was inside the dataset). Afterwards, all modifications will be saved.
Report mode

When called with report=True, this command reports information about what would be re-executed as a series of records. There will be a record for each revision in the specified revision range. Each of these will have one of the following “rerun_action” values:

- run: the revision has a recorded command that would be re-executed
- skip-or-pick: the revision does not have a recorded command and would be either skipped or cherry picked
- merge: the revision is a merge commit and a corresponding merge would be made

The decision to skip rather than cherry pick a revision is based on whether the revision would be reachable from HEAD at the time of execution.

In addition, when a starting point other than HEAD is specified, there is a rerun_action value “checkout”, in which case the record includes information about the revision the would be checked out before rerunning any commands.

Note: Currently the “onto” feature only sets the working tree of the current dataset to a previous state. The working trees of any subdatasets remain unchanged.

Examples

Re-execute the command from the previous commit:

```plaintext
> rerun()
```

Re-execute any commands in the last five commits:

```plaintext
> rerun(since='HEAD~5')
```

Do the same as above, but re-execute the commands on top of HEAD~5 in a detached state:

```plaintext
> rerun(onto='', since='HEAD~5')
```

Parameters

- `revision` (str or None, optional) – rerun command(s) in revision. By default, the command from this commit will be executed, but `since` can be used to construct a revision range. The default value is like “HEAD” but resolves to the main branch when on an adjusted branch. [Default: None]

- `since` (str or None, optional) – If since is a commit-ish, the commands from all commits that are reachable from `revision` but not `since` will be re-executed (in other words, the commands in git log SINCE..REVISION). If SINCE is an empty string, it is set to the parent of the first commit that contains a recorded command (i.e., all commands in git log REVISION will be re-executed). [Default: None]

- `dataset` (Dataset or None, optional) – specify the dataset from which to rerun a recorded command. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. If a dataset is given, the command will be executed in the root directory of this dataset. [Default: None]

- `branch` (str or None, optional) – create and checkout this branch before rerunning the commands. [Default: None]
• **message (str or None, optional)** – use MESSAGE for the reran commit rather than the recorded commit message. In the case of a multi-commit rerun, all the reran commits will have this message. [Default: None]

• **onto (str or None, optional)** – start point for rerunning the commands. If not specified, commands are executed at HEAD. This option can be used to specify an alternative start point, which will be checked out with the branch name specified by `branch` or in a detached state otherwise. As a special case, an empty value for this option means the parent of the first run commit in the specified revision list. [Default: None]

• **script (str or None, optional)** – extract the commands into this file rather than rerunning. Use - to write to stdout instead. [Default: None]

• **report (bool, optional)** – Don’t actually re-execute anything, just display what would be done. [Default: False]

• **assume_ready ([None, 'inputs', 'outputs', 'both'], optional)** – Assume that inputs do not need to be retrieved and/or outputs do not need to unlocked or removed before running the command. This option allows you to avoid the expense of these preparation steps if you know that they are unnecessary. Note that this option also affects any additional outputs that are automatically inferred based on inspecting changed files in the run commit. [Default: None]

• **explicit (bool, optional)** – Consider the specification of inputs and outputs in the run record to be explicit. Don’t warn if the repository is dirty, and only save modifications to the outputs from the original record. Note that when several run commits are specified, this applies to every one. Care should also be taken when using `onto` because checking out a new HEAD can easily fail when the working tree has modifications. [Default: False]

• **on_failure (['ignore', 'continue', 'stop'], optional)** – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its `failed` attribute. [Default: ‘continue’]

• **result_filter (callable or None, optional)** – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports `**kwargs` it will additionally be passed the keyword arguments of the original API call. [Default: None]

• **result_renderer ("default", 'json', 'json_pp', 'tailored') or None, optional)** – format of return value rendering on stdout. [Default: None]

• **result_xfm ("datasets", 'successdatasets-or-none', 'paths', 'relpaths', 'metadata') or callable or None, optional)** – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from `result_filter`, as it can perform arbitrary transformation of the result value. This is mostly useful for top- level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• **return_type ("generator", 'list', 'item-or-list')**, optional) – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. `None` is return in case of an empty list. [Default: ‘list’]
A “procedure” is an algorithm with the purpose to process a dataset in a particular way. Procedures can be useful in a wide range of scenarios, like adjusting dataset configuration in a uniform fashion, populating a dataset with particular content, or automating other routine tasks, such as synchronizing dataset content with certain siblings.

Implementations of some procedures are shipped together with DataLad, but additional procedures can be provided by 1) any DataLad extension, 2) any (sub-)dataset, 3) a local user, or 4) a local system administrator. DataLad will look for procedures in the following locations and order:

Directories identified by the configuration settings
- ‘datalad.locations.user-procedures’ (determined by appdirs.user_config_dir; defaults to ‘$HOME/.config/datalad/procedures’ on GNU/Linux systems)
- ‘datalad.locations.system-procedures’ (determined by appdirs.site_config_dir; defaults to ‘/etc/xdg/datalad/procedures’ on GNU/Linux systems)
- ‘datalad.locations.dataset-procedures’

and subsequently in the ‘resources/procedures/’ directories of any installed extension, and, lastly, of the DataLad installation itself.

Please note that a dataset that defines ‘datalad.locations.dataset-procedures’ provides its procedures to any dataset it is a subdataset of. That way you can have a collection of such procedures in a dedicated dataset and install it as a subdataset into any dataset you want to use those procedures with. In case of a naming conflict with such a dataset hierarchy, the dataset you’re calling run-procedures on will take precedence over its subdatasets and so on.

Each configuration setting can occur multiple times to indicate multiple directories to be searched. If a procedure matching a given name is found (filename without a possible extension), the search is aborted and this implementation will be executed. This makes it possible for individual datasets, users, or machines to override externally provided procedures (enabling the implementation of customizable processing “hooks”).

Procedure implementation

A procedure can be any executable. Executables must have the appropriate permissions and, in the case of a script, must contain an appropriate “shebang” line. If a procedure is not executable, but its filename ends with ‘.py’, it is automatically executed by the ‘python’ interpreter (whichever version is available in the present environment). Likewise, procedure implementations ending on ‘.sh’ are executed via ‘bash’.

Procedures can implement any argument handling, but must be capable of taking at least one positional argument (the absolute path to the dataset they shall operate on).

For further customization there are two configuration settings per procedure available:
- ‘datalad.procedures.<NAME>.call-format’ fully customizable format string to determine how to execute procedure NAME (see also datalad-run). It currently requires to include the following placeholders:
  - ‘{script}’: will be replaced by the path to the procedure
  - ‘{ds}’: will be replaced by the absolute path to the dataset the procedure shall operate on
  - ‘{args}’: (not actually required) will be replaced by
    all but the first element of spec if spec is a list or tuple As an example the default format string for a call to a python script is: “python {script} {ds} {args}”
• ‘datalad.procedures.<NAME>.help’ will be shown on `datalad run-procedure --help-proc NAME` to provide a description and/or usage info for procedure NAME

Examples

Find out which procedures are available on the current system:

```bash
> run_procedure(discover=True)
```

Run the ‘yoda’ procedure in the current dataset:

```bash
> run_procedure(spec='cfg_yoda', recursive=True)
```

Parameters

- **spec** – Name and possibly additional arguments of the to-be-executed procedure. [Default: None]
- **dataset** *(Dataset or None, optional)* – specify the dataset to run the procedure on. An attempt is made to identify the dataset based on the current working directory. [Default: None]
- **discover** *(bool, optional)* – if given, all configured paths are searched for procedures and one result record per discovered procedure is yielded, but no procedure is executed. [Default: False]
- **help_proc** *(bool, optional)* – if given, get a help message for procedure NAME from config setting `datalad.procedures.NAME.help`. [Default: False]
- **on_failure** *({'ignore', 'continue', 'stop'}, optional)* – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its `failed` attribute. [Default: ‘continue’]
- **result_filter** *(callable or None, optional)* – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports `**kwargs` it will additionally be passed the keyword arguments of the original API call. [Default: None]
- **result_renderer** *({'default', 'json', 'json_pp', 'tailored'} or None, optional)* – format of return value rendering on stdout. [Default: ‘tailored’]
- **result_xfm** *({'datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata'} or callable or None, optional)* – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from `result_filter`, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]
- **return_type** *({'generator', 'list', 'item-or-list'}, optional)* – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item
return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘list’]

**Plumbing commands**

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**datalad.api.annotate_paths**

`datalad.api.annotate_paths(path=None, dataset=None, recursive=False, recursion_limit=None, action=None, unavailable_path_status=", unavailable_path_msg=None, nondataset_path_status='error', force_parentds_discovery=True, force_subds_discovery=True, force_no_revision_change_discovery=True, force_untracked_discovery=True, modified=None)`

Analyze and act upon input paths

Given paths (or more generally location requests) are inspected and annotated with a number of properties. A list of recognized properties is provided below.

Input *paths* for this command can either be un-annotated (raw) path strings, or already (partially) annotated paths. In the latter case, further annotation is limited to yet-unknown properties, and is potentially faster than initial annotation.

**Recognized path properties**

- **“action”** label of the action that triggered the path annotation
- **“annexkey”** annex key for the content of a file
- **“logger”** logger for reporting a message
- **“message”** message (plus possible tsring expansion arguments)
- **“orig_request”** original input by which a path was determined
- **“parentds”** path of dataset containing the annotated path (superdataset for subdatasets)
- **“path”** absolute path that is annotated
- **“process_content”** flag that content underneath the path is to be processed
- **“process_updated_only”** flag that only known dataset components are to be processed
- **“raw_input”** flag whether this path was given as raw (non-annotated) input
- **“refsds”** path of a reference/base dataset the annotated path is part of
“registered_subds” flag whether a dataset is known to be a true subdataset of parentds

“revision” the recorded commit for a subdataset in a superdataset

“revision_descr” a human-readable description of revision

“source_url” URL a dataset was installed from

“staged” flag whether a path is known to be “staged” in its containing dataset

“state” state indicator for a path in its containing dataset (clean, modified, absent (also for files), conflict)

“status” action result status (ok, notneeded, impossible, error)

“type” nature of the path (file, directory, dataset)

“url” registered URL for a subdataset in a superdataset

In the case of enabled modification detection the results may contain additional properties regarding the nature of the modification. See the documentation of the `diff` command for details.

Parameters

- **path** *(sequence of str or None, optional)* – path to be annotated. [Default: None]
- **dataset** *(Dataset or None, optional)* – an optional reference/base dataset for the paths. [Default: None]
- **recursive** *(bool, optional)* – if set, recurse into potential subdataset. [Default: False]
- **recursion_limit** *(int or None, optional)* – limit recursion into subdataset to the given number of levels. [Default: None]
- **action** *(str or None, optional)* – an “action” property value to include in the path annotation. [Default: None]
- **unavailable_path_status** *(str or None, optional)* – a “status” property value to include in the annotation for paths that are underneath a dataset, but do not exist on the filesystem. [Default: ‘’]
- **unavailable_path_msg** *(str or None, optional)* – a “message” property value to include in the annotation for paths that are underneath a dataset, but do not exist on the filesystem. [Default: None]
- **nondataset_path_status** *(str or None, optional)* – a “status” property value to include in the annotation for paths that are not underneath any dataset. [Default: ‘error’]
- **force_parentds_discovery** *(bool, optional)* – Flag to disable reports of parent dataset information for any path, in particular dataset root paths. Disabling saves on command run time, if this information is not needed. [Default: True]
- **force_subds_discovery** *(bool, optional)* – Flag to disable reporting type=’dataset’ for subdatasets, even when they are not installed, or their mount point directory doesn’t exist. Disabling saves on command run time, if this information is not needed. [Default: True]
- **force_no_revision_change_discovery** *(bool, optional)* – Flag to disable discovery of changes which were not yet committed. Disabling saves on command run time, if this information is not needed. [Default: True]
• **force_untracked_discovery** *(bool, optional)* – Flag to disable discovery of untracked changes. Disabling saves on command run time, if this information is not needed. [Default: True]

• **modified** *(str or bool or None, optional)* – comparison reference specification for modification detection. This can be (mostly) anything that `git diff` understands (commit, treeish, tag, etc). See the documentation of `datalad diff --revision` for details. Unmodified paths will not be annotated. If a requested path was not modified but some content underneath it was, then the request is replaced by the modified paths and those are annotated instead. This option can be used with `True` as an argument to test against changes that have been made, but have not yet been staged for a commit. [Default: None]

• **on_failure** *(('ignore', 'continue', 'stop'), optional)* – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its `failed` attribute. [Default: ‘continue’]

• **result_filter** *(callable or None, optional)* – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

• **result_renderer** *((‘default’, ‘json’, ‘json_pp’, ‘tailored’) or None, optional)* – format of return value rendering on stdout. [Default: None]

• **result_xfm** *((‘datasets’, ‘successdatasets-or-none’, ‘paths’, ‘relpaths’, ‘metadata’) or callable or None, optional)* – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from `result_filter`, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• **return_type** *((‘generator’, ‘list’, ‘item-or-list’), optional)* – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. `None` is return in case of an empty list. [Default: ‘list’]

datalad.api.clean

datalad.api.clean*(dataset=None, what=None, dry_run=False, recursive=False, recursion_limit=None)*

Clean up after DataLad (possible temporary files etc.)

Removes temporary files and directories left behind by DataLad and git-annex in a dataset.

**Examples**

Clean all known temporary locations of a dataset:

```
> clean()
```
Report on all existing temporary locations of a dataset:

```
> clean(dry_run=True)
```

Clean all known temporary locations of a dataset and all its subdatasets:

```
> clean(recursive=True)
```

Clean only the archive extraction caches of a dataset and all its subdatasets:

```
> clean(what='cached-archives', recursive=True)
```

Report on existing annex transfer files of a dataset and all its subdatasets:

```
> clean(what='annex-transfer', recursive=True, dry_run=True)
```

**Parameters**

- **dataset** *(Dataset or None, optional)* — specify the dataset to perform the clean operation on. If no dataset is given, an attempt is made to identify the dataset in current working directory. [Default: None]
- **what** — What to clean. If none specified – all known targets are considered. [Default: None]
- **dry_run** *(bool, optional)* — Report on cleanable locations - not actually cleaning up anything. [Default: False]
- **recursive** *(bool, optional)* — if set, recurse into potential subdataset. [Default: False]
- **recursion_limit** *(int or None, optional)* — limit recursion into subdataset to the given number of levels. [Default: None]
- **on_failure** *(('ignore', 'continue', 'stop'), optional)* — behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]
- **result_filter** *(callable or None, optional)* — if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]
- **result_renderer** *(('default', 'json', 'json_pp', 'tailored') or None, optional)* — format of return value rendering on stdout. [Default: ‘tailored’]
- **result_xfm** *(('datasets', 'successdatasets-or-none', 'paths', 'relnpaths', 'metadata') or callable or None, optional)* — if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top- level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]
• return_type ("generator", 'list', 'item-or-list'), optional –
  return value behavior switch. If 'item-or-list' a single value is returned instead of a one-item
  return value list, or a list in case of multiple return values. None is return in case of an empty
  list. [Default: 'list']

datalad.api.clone

datalad.api.clone(source, path=None, dataset=None, description=None, reckless=None)

Obtain a dataset (copy) from a URL or local directory

The purpose of this command is to obtain a new clone (copy) of a dataset and place it into a not-yet-existing
or empty directory. As such clone provides a strict subset of the functionality offered by install. Only a single
dataset can be obtained, and immediate recursive installation of subdatasets is not supported. However, once a (super)dataset is installed via clone, any content, including subdatasets can be obtained by a subsequent get
command.

Primary differences over a direct git clone call are 1) the automatic initialization of a dataset annex (pure Git
repositories are equally supported); 2) automatic registration of the newly obtained dataset as a subdataset
(submodule), if a parent dataset is specified; 3) support for additional resource identifiers (DataLad resource
identifiers as used on datasets.datalad.org, and RIA store URLs as used for store.datalad.org - optionally in
specific versions as identified by a branch or a tag; see examples); and 4) automatic configurable generation of
alternative access URL for common cases (such as appending '.git' to the URL in case the accessing the base
URL failed).

In case the clone is registered as a subdataset, the original URL passed to clone is recorded in .gitmodules of
the parent dataset in addition to the resolved URL used internally for git-clone. This allows to preserve datalad
specific URLs like ria+ssh://… for subsequent calls to get if the subdataset was locally removed later on.

By default, the command returns a single Dataset instance for an installed dataset, regardless of whether it was
newly installed ('ok' result), or found already installed from the specified source ('notneeded' result).

URL mapping configuration

'clone' supports the transformation of URLs via (multi-part) substitution specifications. A substitution specifi-
cation is defined as a configuration setting 'datalad.clone.url-substitution.<seriesID>' with a string containing a
match and substitution expression, each following Python’s regular expression syntax. Both expressions are con-
catenated to a single string with an arbitrary delimiter character. The delimiter is defined by prefixing the string
with the delimiter. Prefix and delimiter are stripped from the expressions (Example: ".*http://(.*)$",https://1").
This setting can be defined multiple times, using the same '<seriesID>'. Substitutions in a series will be applied
incrementally, in order of their definition. The first substitution in such a series must match, otherwise no further
substitutions in a series will be considered. However, following the first match all further substitutions in a series
are processed, regardless whether intermediate expressions match or not. Substitution series themselves have
no particular order, each matching series will result in a candidate clone URL. Consequently, the initial match
specification in a series should be as precise as possible to prevent inflation of candidate URLs.

See also:

handbook:3-001 (http://handbook.datalad.org/symbols) More information on Remote Indexed Archive
(RIA) stores

Examples

Install a dataset from Github into the current directory:

```bash
> clone(source='https://github.com/datalad-datasets/longnow-podcasts.git')
```
Install a dataset into a specific directory:

```bash
> clone(source='https://github.com/datalad-datasets/longnow-podcasts.git',
    path='myfavpodcasts')
```

Install a dataset as a subdataset into the current dataset:

```bash
> clone(dataset='.',
    source='https://github.com/datalad-datasets/longnow-podcasts.git')
```

Install the main superdataset from datasets.datalad.org:

```bash
> clone(source='///')
```

Install a dataset identified by a literal alias from store.datalad.org:

```bash
> clone(source='ria+http://store.datalad.org#~hcp-openaccess')
```

Install a dataset in a specific version as identified by a branch or tag name from store.datalad.org:

```bash
> clone(source='ria+http://store.datalad.org#76b6ca66-36b1-11ea-a2e6-f0d5bf7b5561@myidentifier')
```

Install a dataset with group-write access permissions:

```bash
> clone(source='http://example.com/dataset', reckless='shared-group')
```

### Parameters

- **source** *(str or None)* – URL, DataLad resource identifier, local path or instance of dataset to be cloned.

- **path** – path to clone into. If no path is provided a destination path will be derived from a source URL similar to git clone. [Default: None]

- **dataset** *(Dataset or None, optional)* – (parent) dataset to clone into. If given, the newly cloned dataset is registered as a subdataset of the parent. Also, if given, relative paths are interpreted as being relative to the parent dataset, and not relative to the working directory. [Default: None]

- **description** *(str or None, optional)* – short description to use for a dataset location. Its primary purpose is to help humans to identify a dataset copy (e.g., “mike’s dataset on lab server”). Note that when a dataset is published, this information becomes available on the remote side. [Default: None]

- **reckless** *(None, True, False, 'auto', 'ephemeral') or shared-..., optional* – Obtain a dataset or subdataset and set it up in a potentially unsafe way for performance, or access reasons. Use with care, any dataset is marked as ‘untrusted’. The reckless mode is stored in a dataset’s local configuration under ‘datalad.clone.reckless’, and will be inherited to any of its subdatasets. Supported modes are: ['auto']: hard-link files between local clones. In-place modification in any clone will alter original annex content. ['ephemeral']: symlink annex to origin’s annex and discard local availability info via git-annex-dead ‘here’. Shares an annex between origin and clone w/o git-annex being aware of it. In case of a change in origin you need to update the clone before you’re able to save new content on your end. Alternative to ‘auto’ when hardlinks are not an option, or number of consumed inodes needs to be minimized. Note that this mode can only be used with clones from non-bare repositories or a RIA store! Otherwise two different annex object tree structures (dirhashmixed vs dirhashlower) will be used.
simultaneously, and annex keys using the respective other structure will be inaccessible.

['shared-<mode>'] : set up repository and annex permission to enable multi-user access. This
disables the standard write protection of annex’ed files. <mode> can be any value
support by ‘git init --shared=’, such as ‘group’, or ‘all’. [Default: None]

• **on_failure** : behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘con-
tinue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an ex-
ception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception
is an IncompleteResultsError that carries the result dictionaries of the failures in its failed
attribute. [Default: ‘continue’]

• **result_filter** : if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value
does not evaluate to False or a ValueError exception is raised. If the given callable supports
**kwargs it will additionally be passed the keyword arguments of the original API call.
[Default: constraint:action:{install}]

• **result_renderer** : format of return value rendering on stdout. [Default: None]

• **result_xfm** : if given, each to-be-returned status dictionary is passed to this callable, and its return value
becomes the result instead. This is different from result_filter, as it can perform arbitrary
transformation of the result value. This is mostly useful for top-level command invocations
that need to provide the results in a particular format. Instead of a callable, a label for a
pre-crafted result transformation can be given. [Default: ‘successdatasets-or- none’]

• **return_type** : return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item
return value list, or a list in case of multiple return values. None is return in case of an empty
list. [Default: ‘item-or-list’]

**datalad.api.copy_file**

**datalad.api.copy_file** *(path=None, dataset=None, recursive=False, target_dir=None, specs_from=None, message=None)*

Copy files and their availability metadata from one dataset to another.

The difference to a system copy command is that here additional content availability information, such as reg-
istered URLs, is also copied to the target dataset. Moreover, potentially required git-annex special remote
configurations are detected in a source dataset and are applied to a target dataset in an analogous fashion. It is
possible to copy a file for which no content is available locally, by just copying the required metadata on content
identity and availability.

**Note:** At the moment, only URLs for the special remotes ‘web’ (git-annex built-in) and ‘datalad’ are recognized
and transferred.

The interface is modeled after the POSIX ‘cp’ command, but with one additional way to specify what to copy
where: specs_from allows the caller to flexibly input source-destination path pairs.

This command can copy files out of and into a hierarchy of nested datasets. Unlike with other DataLad com-
mand, the recursive switch does not enable recursion into subdatasets, but is analogous to the POSIX ‘cp’
command switch and enables subdirectory recursion, regardless of dataset boundaries. It is not necessary to enable recursion in order to save changes made to nested target subdatasets.

Examples

Copy a file into a dataset ‘myds’ using a path and a target directory specification, and save its addition to ‘myds’:

```python
> copy_file('path/to/myfile', dataset='path/to/myds')
```

Copy a file to a dataset ‘myds’ and save it under a new name by providing two paths:

```python
> copy_file(path=[['path/to/myfile', 'path/to/myds/newname']], dataset='path/to/myds')
```

Copy a file into a dataset without saving it:

```python
> copy_file('path/to/myfile', target_dir='path/to/myds/')
```

Copy a directory and its subdirectories into a dataset ‘myds’ and save the addition in ‘myds’:

```python
> copy_file('path/to/dir/', recursive=True, dataset='path/to/myds')
```

Copy files using a path and optionally target specification from a file:

```python
> copy_file(dataset='path/to/myds', specs_from='path/to/specfile')
```

Parameters

- **path** (sequence of str or None, optional) – paths to copy (and possibly a target path to copy to). [Default: None]
- **dataset** (Dataset or None, optional) – root dataset to save after copy operations are completed. All destination paths must be within this dataset, or its subdatasets. If no dataset is given, dataset modifications will be left unsaved. [Default: None]
- **recursive** (bool, optional) – copy directories recursively. [Default: False]
- **target_dir** (str or None, optional) – copy all source files into this DIRECTORY. This value is overridden by any explicit destination path provided via ‘specs_from’.
- **specs_from** – read list of source (and destination) path names from a given file, or stdin (with '-'). Each line defines either a source path, or a source/destination path pair (separated by a null byte character). Alternatively, a list of 2-tuples with source/destination pairs can be given. [Default: None]
- **message** (str or None, optional) – a description of the state or the changes made to a dataset. [Default: None]
- **on_failure** (['ignore', 'continue', 'stop'], optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]
• `result_filter`(callable or None, optional) – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

• `result_renderer` (default, 'json', 'json_pp', 'tailored') or None, optional) – format of return value rendering on stdout. [Default: None]

• `result_xfm` ('datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata') or callable or None, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from `result_filter`, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• `return_type` ('generator', 'list', 'item-or-list'), optional) – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘list’]

datalad.api.create_test_dataset

datalad.api.create_test_dataset(path=None, spec=None, seed=None)

Create test (meta-)dataset.

Parameters

• `path` (str or None, optional) – path/name where to create (if specified, must not exist). [Default: None]

• `spec` (str or None, optional) – spec for hierarchy, defined as a min-max (min could be omitted to assume 0) defining how many (random number from min to max) of sub-datasets to generate at any given level of the hierarchy. Each level separated from each other with I. Example: 1-3/2 would generate from 1 to 3 subdatasets at the top level, and up to two within those at the 2nd level. [Default: None]

• `seed` (int or None, optional) – seed for rng. [Default: None]

datalad.api.diff

datalad.api.diff(path=None, fr=’HEAD’, to=None, dataset=None, annex=None, untracked=’normal’, recursive=False, recursion_limit=None)

Report differences between two states of a dataset (hierarchy)

The two to-be-compared states are given via the –from and –to options. These state identifiers are evaluated in the context of the (specified or detected) dataset. In the case of a recursive report on a dataset hierarchy, corresponding state pairs for any subdataset are determined from the subdataset record in the respective superdataset. Only changes recorded in a subdataset between these two states are reported, and so on.

Any paths given as additional arguments will be used to constrain the difference report. As with Git’s diff, it will not result in an error when a path is specified that does not exist on the filesystem.

Reports are very similar to those of the status command, with the distinguished content types and states being identical.
Examples

Show unsaved changes in a dataset:

```diff()
```

Compare a previous dataset state identified by shasum against current worktree:

```diff(fr='SHASUM')
```

Compare two branches against each other:

```diff(fr='branch1', to='branch2')
```

Show unsaved changes in the dataset and potential subdatasets:

```diff(recursive=True)
```

Show unsaved changes made to a particular file:

```diff(path='path/to/file')
```

Parameters

- **path** *(sequence of str or None, optional)* – path to constrain the report to. [Default: None]
- **fr** *(str, optional)* – original state to compare to, as given by any identifier that Git understands. [Default: ‘HEAD’]
- **to** *(str or None, optional)* – state to compare against the original state, as given by any identifier that Git understands. If none is specified, the state of the working tree will be compared. [Default: None]
- **dataset** *(Dataset or None, optional)* – specify the dataset to query. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. [Default: None]
- **annex** *(None, 'basic', 'availability', 'all', optional)* – Switch whether to include information on the annex content of individual files in the status report, such as recorded file size. By default no annex information is reported (faster). Three report modes are available: basic information like file size and key name (‘basic’); additionally test whether file content is present in the local annex (‘availability’); requires one or two additional file system stat calls, but does not call git-annex), this will add the result property ‘has_content’ (boolean flag) and ‘objloc’ (absolute path to an existing annex object file); or ‘all’ which will report all available information (presently identical to ‘availability’). [Default: None]
- **untracked** *("no", "normal", "all", optional)* – If and how untracked content is reported when comparing a revision to the state of the working tree. ‘no’: no untracked content is reported; ‘normal’: untracked files and entire untracked directories are reported as such; ‘all’: report individual files even in fully untracked directories. [Default: ‘normal’]
- **recursive** *(bool, optional)* – if set, recurse into potential subdataset. [Default: False]
- **recursion_limit** *(int or None, optional)* – limit recursion into subdataset to the given number of levels. [Default: None]
• **on_failure**({"ignore", 'continue', 'stop'}, optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]

• **result_filter**(callable or None, optional) – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

• **result_renderer** ({'default', 'json', 'json_pp', 'tailored'} or None, optional) – format of return value rendering on stdout. [Default: ‘tailored’]

• **result_xfm** ({'datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata'} or callable or None, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• **return_type**({'generator', 'list', 'item-or-list'}, optional) – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘list’]

datalad.api.download_url

datalad.api.download_url(urls, dataset=None, path=None, overwrite=False, archive=False, save=True, message=None)

Download content

It allows for a uniform download interface to various supported URL schemes (see command help for details), re-using or asking for authentication details maintained by datalad.

**Examples**

Download files from an http and S3 URL:

```python
> download_url(urls=['http://example.com/file.dat', 's3://bucket/file2.dat'])
```

Download a file to a path and provide a commit message:

```python
> download_url(urls='s3://bucket/file2.dat', message='added a file', path='myfile.dat')
```

Append a trailing slash to the target path to download into a specified directory:

```python
> download_url(['http://example.com/file.dat'], path='data/')
```

Leave off the trailing slash to download into a regular file:
download_url(['http://example.com/file.dat'], path='data')

Parameters

- **dataset** (Dataset or None, optional) – specify the dataset to add files to. If no dataset is given, an attempt is made to identify the dataset based on the current working directory. Use save=False to prevent adding files to the dataset. [Default: None]
- **path** (str or None, optional) – target for download. If the path has a trailing separator, it is treated as a directory, and each specified URL is downloaded under that directory to a base name taken from the URL. Without a trailing separator, the value specifies the name of the downloaded file (file name extensions inferred from the URL may be added to it, if they are not yet present) and only a single URL should be given. In both cases, leading directories will be created if needed. This argument defaults to the current directory. [Default: None]
- **overwrite** (bool, optional) – flag to overwrite it if target file exists. [Default: False]
- **archive** (bool, optional) – pass the downloaded files to add_archive_content(..., delete=True). [Default: False]
- **save** (bool, optional) – by default all modifications to a dataset are immediately saved. Giving this option will disable this behavior. [Default: True]
- **message** (str or None, optional) – a description of the state or the changes made to a dataset. [Default: None]
- **on_failure** (['ignore', 'continue', 'stop'], optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]
- **result_filter** (callable or None, optional) – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]
- **result_renderer** (def or None, optional) – format of return value rendering on stdout. [Default: None]
- **result_xfm** (def or None, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]
- **return_type** (generator, 'list', 'item-or-list', optional) – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item
return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘list’]

datalad.api.sshrun

datalad.api.sshrun (login, cmd, port=None, ipv4=False, ipv6=False, options=None, no_stdin=False)
Run command on remote machines via SSH.

This is a replacement for a small part of the functionality of SSH. In addition to SSH alone, this command can make use of datalad’s SSH connection management. Its primary use case is to be used with Git as ‘core.sshCommand’ or via “GIT_SSH_COMMAND”.

Configure datalad.ssh.identityfile to pass a file to the ssh’s -i option.

Parameters

• login – [user@]hostname.
• cmd – command for remote execution.
• port – port to connect to on the remote host. [Default: None]
• ipv4 (bool, optional) – use IPv4 addresses only. [Default: False]
• ipv6 (bool, optional) – use IPv6 addresses only. [Default: False]
• options – configuration option passed to SSH. [Default: None]
• no_stdin (bool, optional) – Do not connect stdin to the process. [Default: False]

datalad.api.siblings

datalad.api.siblings (action='query', dataset=None, name=None, url=None, pushurl=None, description=None, fetch=False, as_common_datasrc=None, publish_depending=None, publish_by_default=None, annex_wanted=None, annex_required=None, annex_group=None, annex_groupwanted=None, inherit=False, get_annex_info=True, recursive=False, recursion_limit=None)
Manage sibling configuration

This command offers four different actions: ‘query’, ‘add’, ‘remove’, ‘configure’, ‘enable’. ‘query’ is the default action and can be used to obtain information about (all) known siblings. ‘add’ and ‘configure’ are highly similar actions, the only difference being that adding a sibling with a name that is already registered will fail, whereas re-configuring a (different) sibling under a known name will not be considered an error. ‘enable’ can be used to complete access configuration for non-Git sibling (aka git-annex special remotes). Lastly, the ‘remove’ action allows for the removal (or de-configuration) of a registered sibling.

For each sibling (added, configured, or queried) all known sibling properties are reported. This includes:

“name” Name of the sibling
“path” Absolute path of the dataset
“url” For regular siblings at minimum a “fetch” URL, possibly also a “pushurl”

Additionally, any further configuration will also be reported using a key that matches that in the Git configuration.

By default, sibling information is rendered as one line per sibling following this scheme:

```
<dataset_path>: <sibling_name>(<+|->) [<access_specification]`
```
where the + and - labels indicate the presence or absence of a remote data annex at a particular remote, and `access_specification` contains either a URL and/or a type label for the sibling.

**Parameters**

- **action** (`{'query', 'add', 'remove', 'configure', 'enable'}`, optional) – command action selection (see general documentation). [Default: ‘query’]
- **dataset** (`Dataset or None, optional`) – specify the dataset to configure. If no dataset is given, an attempt is made to identify the dataset based on the input and/or the current working directory. [Default: None]
- **name** (`str or None, optional`) – name of the sibling. For addition with path “URLs” and sibling removal this option is mandatory, otherwise the hostname part of a given URL is used as a default. This option can be used to limit ‘query’ to a specific sibling. [Default: None]
- **url** (`str or None, optional`) – the URL of or path to the dataset sibling named by `name`. For recursive operation it is required that a template string for building subdataset sibling URLs is given. List of currently available placeholders: `%%NAME` the name of the dataset, where slashes are replaced by dashes. [Default: None]
- **pushurl** (`str or None, optional`) – in case the `url` cannot be used to publish to the dataset sibling, this option specifies a URL to be used instead. If no `url` is given, `pushurl` serves as `url` as well. [Default: None]
- **description** (`str or None, optional`) – short description to use for a dataset location. Its primary purpose is to help humans to identify a dataset copy (e.g., “mike’s dataset on lab server”). Note that when a dataset is published, this information becomes available on the remote side. [Default: None]
- **fetch** (`bool, optional`) – fetch the sibling after configuration. [Default: False]
- **as_common_datasrc** – configure a sibling as a common data source of the dataset that can be automatically used by all consumers of the dataset. The sibling must be a regular Git remote with a configured HTTP(S) URL. [Default: None]
- **publish_depends** (`list of str or None, optional`) – add a dependency such that the given existing sibling is always published prior to the new sibling. This equals setting a configuration item ‘remote.SIBLINGNAME.datalad-publish-depends’. Multiple dependencies can be given as a list of sibling names. [Default: None]
- **publish_by_default** (`list of str or None, optional`) – add a refspec to be published to this sibling by default if nothing specified. [Default: None]
- **annex_wanted** (`str or None, optional`) – expression to specify ‘wanted’ content for the repository/sibling. See https://git-annex.branchable.com/git-annex-wanted/ for more information. [Default: None]
- **annex_required** (`str or None, optional`) – expression to specify ‘required’ content for the repository/sibling. See https://git-annex.branchable.com/git-annex-required/ for more information. [Default: None]
- **annex_group** (`str or None, optional`) – expression to specify a group for the repository. See https://git-annex.branchable.com/git-annex-group/ for more information. [Default: None]
- **annex_groupwanted** (`str or None, optional`) – expression for the group-wanted. Makes sense only if annex_wanted="groupwanted" and annex-group is given too. See https://git-annex.branchable.com/git-annex-groupwanted/ for more information. [Default: None]
• `inherit` (bool, optional) – if sibling is missing, inherit settings (git config, git annex wanted/group/groupwanted) from its super-dataset. [Default: False]

• `get_annex_info` (bool, optional) – Whether to query all information about the annex configurations of siblings. Can be disabled if speed is a concern. [Default: True]

• `recursive` (bool, optional) – if set, recurse into potential subdataset. [Default: False]

• `recursion_limit` (int or None, optional) – limit recursion into subdataset to the given number of levels. [Default: None]

• `on_failure` ({'ignore', 'continue', 'stop'}, optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its `failed` attribute. [Default: ‘continue’]

• `result_filter` (callable or None, optional) – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports `**kwargs` it will additionally be passed the keyword arguments of the original API call. [Default: None]

• `result_renderer` ({'default', 'json', 'json_pp', 'tailored'} or None, optional) – format of return value rendering on stdout. [Default: ‘tailored’]

• `result_xfm` ({'datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata'} or callable or None, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from `result_filter`, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• `return_type` ({'generator', 'list', 'item-or-list'}, optional) – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. `None` is return in case of an empty list. [Default: ‘list’]

datalad.api.subdatasets

datalad.api.subdatasets(path=None, dataset=None, fulfilled=None, recursive=False, recursion_limit=None, contains=None, bottomup=False, set_property=None, delete_property=None)

Report subdatasets and their properties.

The following properties are reported (if possible) for each matching subdataset record.

“name” Name of the subdataset in the parent (often identical with the relative path in the parent dataset)

“path” Absolute path to the subdataset

“parentds” Absolute path to the parent dataset

“gitshasum” SHA1 of the subdataset commit recorded in the parent dataset
“state” Condition of the subdataset: ‘absent’, ‘present’

“gitmodule_url” URL of the subdataset recorded in the parent

“gitmodule_name” Name of the subdataset recorded in the parent

“gitmodule_<label>” Any additional configuration property on record.

Performance note: Property modification, requesting bottomup reporting order, or a particular numerical recursion_limit implies an internal switch to an alternative query implementation for recursive query that is more flexible, but also notably slower (performs one call to Git per dataset versus a single call for all combined).

The following properties for subdatasets are recognized by DataLad (without the ‘gitmodule_’ prefix that is used in the query results):

“datalad-recursiveinstall” If set to ‘skip’, the respective subdataset is skipped when DataLad is recursively installing its superdataset. However, the subdataset remains installable when explicitly requested, and no other features are impaired.

“datalad-url” If a subdataset was originally established by cloning, ‘datalad-url’ records the URL that was used to do so. This might be different from ‘url’ if the URL contains datalad specific pieces like any URL of the form “ria+<some protocol>…”.

Parameters

- **path** *(sequence of str or None, optional)* - path/name to query for subdatasets. Defaults to the current directory, or the entire dataset if called as a dataset method. [Default: None]

- **dataset** *(Dataset or None, optional)* - specify the dataset to query. If no dataset is given, an attempt is made to identify the dataset based on the input and/or the current working directory. [Default: None]

- **fulfilled** *(bool or None, optional)* - if given, must be a boolean flag indicating whether to report either only locally present or absent datasets. By default subdatasets are reported regardless of their status. [Default: None]

- **recursive** *(bool, optional)* - if set, recurse into potential subdataset. [Default: False]

- **recursion_limit** *(int or None, optional)* - limit recursion into subdataset to the given number of levels. [Default: None]

- **contains** *(list of str or None, optional)* - limit report to the subdatasets containing the given path. If a root path of a subdataset is given the last reported dataset will be the subdataset itself. Can be a list with multiple paths, in which case datasets will be reported that contain any of the given paths. [Default: None]

- **bottomup** *(bool, optional)* - whether to report subdatasets in bottom-up order along each branch in the dataset tree, and not top-down. [Default: False]

- **set_property** *(list of 2-item sequence of str or None, optional)* - Name and value of one or more subdataset properties to be set in the parent dataset’s .gitmodules file. The property name is case-insensitive, must start with a letter, and consist only of alphanumeric characters. The value can be a Python format() template string wrapped in ‘<>’ (e.g. ‘<gitmodule_name>’). Supported keywords are any item reported in the result properties of this command, plus ‘refsds_relpah’ and ‘refsds_relnam’: the relative path of a subdataset with respect to the base dataset of the command call, and, in the latter case, the same string with all directory separators replaced by dashes. [Default: None]
• **delete_property** (list of str or None, optional) – Name of one or more subdataset properties to be removed from the parent dataset’s .gitmodules file. [Default: None]

• **on_failure** (['ignore', 'continue', 'stop'], optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]

• **result_filter** (callable or None, optional) – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

• **result_renderer** (['default', 'json', 'json_pp', 'tailored'] or None, optional) – format of return value rendering on stdout. [Default: ‘tailored’]

• **result_xfm** (['datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata'] or callable or None, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• **return_type** (['generator', 'list', 'item-or-list'], optional) – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘list’]

### Miscellaneous commands

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1.5. Commands and API
Add content of an archive under git annex control.

This results in the files within archive (which must be already under annex control itself) added under annex referencing original archive via custom special remotes mechanism

**Example**

```bash
annex-repo$ datalad add-archive-content my_big_tarball.tar.gz
```

**Parameters**

- `archive` *(str)* – archive file or a key (if `key=True` specified).
- `annex` – annex instance to use. [Default: None]
- `add_archive_leading_dir` *(bool, optional)* – flag to place extracted content under a directory which would correspond to archive name with suffix stripped. E.g. for archive `example.zip` its content will be extracted under a directory `example/`. [Default: False]
- `strip_leading_dirs` *(bool, optional)* – flag to move all files directories up, from how they were stored in an archive, if that one contained a number (possibly more than 1 down) single leading directories. [Default: False]
- `leading_dirs_depth` – maximal depth to strip leading directories to. If not specified (None), no limit. [Default: None]
- `leading_dirs_consider` *(list of str or None, optional)* – regular expression(s) for directories to consider to strip away. [Default: None]
- `use_current_dir` *(bool, optional)* – flag to extract archive under the current directory, not the directory where archive is located. Note that it will be of no effect if `key=True` is given. [Default: False]
- `delete` *(bool, optional)* – flag to delete original archive from the filesystem/git in current tree. Note that it will be of no effect if `key=True` is given. [Default: False]
- `key` *(bool, optional)* – flag to signal if provided archive is not actually a filename on its own but an annex key. [Default: False]
- `exclude` *(list of str or None, optional)* – regular expressions for filenames which to exclude from being added to annex. Applied after –rename if that one is specified. For exact matching, use anchoring. [Default: None]
- `rename` *(list of str or None, optional)* – regular expressions to rename files before being added under git. First letter defines how to split provided string into two parts: Python regular expression (with groups), and replacement string. [Default: None]
- `existing` – what operation to perform a file from archive tries to overwrite an existing file with the same name. ‘fail’ (default) leads to RuntimeError exception. ‘overwrite’ silently replaces existing file. ‘archive-suffix’ instructs to add a suffix (prefixed with a ‘-’) matching archive name from which file gets extracted, and if that one present, ‘numeric-suffix’ is in
effect in addition, when incremental numeric suffix (prefixed with a ‘.’) is added until no
name collision is longer detected. [Default: ‘fail’]

- **annex_options** *(str or None, optional)* – additional options to pass to git-
  annex. [Default: None]

- **copy** *(bool, optional)* – flag to copy the content of the archive instead of moving.
  [Default: False]

- **commit** *(bool, optional)* – flag to not commit upon completion. [Default: True]

- **allow_dirty** *(bool, optional)* – flag that operating on a dirty repository (uncom-
  mitted or untracked content) is ok. [Default: False]

- **stats** – ActivityStats instance for global tracking. [Default: None]

- **drop_after** *(bool, optional)* – drop extracted files after adding to annex. [Default:
  False]

- **delete_after** *(bool, optional)* – extract under a temporary directory, git-annex
  add, and delete after. To be used to “index” files within annex without actually creating
  corresponding files under git. Note that annex dropunused would later remove that load.
  [Default: False]

Returns

**Return type** annex

---

**datalad.api.test**

**datalad.api.test** *(module=None, verbose=False, nocapture=False, pdb=False, stop=False)*

Run internal DataLad (unit)tests.

This can be used to verify correct operation on the system. It is just a thin wrapper around a call to nose, so
number of exposed options is minimal

**Parameters**

- **module** – test name(s), by default all tests of DataLad core and any installed extensions
  are executed. [Default: None]

- **verbose** *(bool, optional)* – be verbose - list test names. [Default: False]

- **nocapture** *(bool, optional)* – do not capture stdout. [Default: False]

- **pdb** *(bool, optional)* – drop into debugger on failures or errors. [Default: False]

- **stop** *(bool, optional)* – stop running tests after the first error or failure. [Default:
  False]

---

**datalad.api.add_readme**

**datalad.api.add_readme** *(dataset, filename='README.md', existing='skip’)*

Add basic information about DataLad datasets to a README file

The README file is added to the dataset and the addition is saved in the dataset. Note: Make sure that no
unsaved modifications to your dataset’s .gitattributes file exist.

**Parameters**
• **dataset** (*Dataset* or None) – Dataset to add information to. If no dataset is given, an attempt is made to identify the dataset based on the current working directory.

• **filename** *(str, optional)* – Path of the README file within the dataset. [Default: ‘README.md’]

• **existing** *({'skip', 'append', 'replace'}, optional)* – How to react if a file with the target name already exists: ‘skip’: do nothing; ‘append’: append information to the existing file; ‘replace’: replace the existing file with new content. [Default: ‘skip’]

• **on_failure** *({'ignore', 'continue', 'stop'}, optional)* – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]

• **result_filter** *(callable or None, optional)* – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

• **result_renderer** *(('default', 'json', 'json_pp', 'tailored') or None, optional)* – format of return value rendering on stdout. [Default: None]

• **result_xfm** *(('datasets', 'successdatasets-or-none', 'paths', 'reipaths', 'metadata') or callable or None, optional)* – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• **return_type** *(('generator', 'list', 'item-or-list'), optional)* – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. *None* is return in case of an empty list. [Default: ‘list’]

data lad.api.addurls

data lad.api.addurls(dataset, urlfile, urlformat, filenameformat, input_type='ext', exclude_autometa=None, meta=None, key=None, message=None, dry_run=False, fast=False, ifexists=None, missing_value=None, save=True, version_urls=False, cfg_proc=None, jobs=None, drop_after=False, on_collision='error')

Create and update a dataset from a list of URLs.

**Format specification**

Several arguments take format strings. These are similar to normal Python format strings where the names from **URL-FILE** (column names for a comma- or tab-separated file or properties for JSON) are available as placeholders. If **URL-FILE** is a CSV or TSV file, a positional index can also be used (i.e., “{0}” for the first column). Note that a placeholder cannot contain a ‘:’ or ‘!’.

In addition, the **FILENAME-FORMAT** arguments has a few special placeholders.

• **_repindex**
The constructed file names must be unique across all fields rows. To avoid collisions, the special placeholder “_repindex” can be added to the formatter. Its value will start at 0 and increment every time a file name repeats.

- `_url_hostname`, `_urlN`, `_url_basename`*

Various parts of the formatted URL are available. Take “http://datalad.org/asciicast/seamless_nested_repos.sh” as an example.

“datalad.org” is stored as “_url_hostname”. Components of the URL’s path can be referenced as “_urlN”. “_url0” and “_url1” would map to “asiiicast” and “seamless_nested_repos.sh”, respectively. The final part of the path is also available as “_url_basename”.

This name is broken down further. “_url_basename_root” and “_url_basename_ext” provide access to the root name and extension. These values are similar to the result of os.path.splitext, but, in the case of multiple periods, the extension is identified using the same length heuristic that git-annex uses. As a result, the extension of “file.tar.gz” would be “.tar.gz”, not “.gz”. In addition, the fields “_url_basename_root_py” and “_url_basename_ext_py” provide access to the result of os.path.splitext.

- `_url_filename`*

These are similar to `_url_basename`* fields, but they are obtained with a server request. This is useful if the file name is set in the Content-Disposition header.

**Examples**

Consider a file “avatars.csv” that contains:

<table>
<thead>
<tr>
<th>who, ext, link</th>
</tr>
</thead>
<tbody>
<tr>
<td>neurodebian, png, <a href="https://avatars3.githubusercontent.com/u/260793">https://avatars3.githubusercontent.com/u/260793</a></td>
</tr>
<tr>
<td>datalad, png, <a href="https://avatars1.githubusercontent.com/u/8927200">https://avatars1.githubusercontent.com/u/8927200</a></td>
</tr>
</tbody>
</table>

To download each link into a file name composed of the ‘who’ and ‘ext’ fields, we could run:

```bash
$ datalad addurls -d avatar_ds --fast avatars.csv '{link}' '{who}.{ext}'
```

The `-d avatar_ds` is used to create a new dataset in “$PWD/avatar_ds”.

If we were already in a dataset and wanted to create a new subdataset in an “avatars” subdirectory, we could use “/” in the FILENAME-FORMAT argument:

```bash
$ datalad addurls --fast avatars.csv '{link}' 'avatars//{who}.{ext}'
```

If the information is represented as JSON lines instead of comma separated values or a JSON array, you can use a utility like jq to transform the JSON lines into an array that addurls accepts:

```bash
$ ... | jq --slurp . | datalad addurls - '{link}' '{who}.{ext}'
```

**Note:** For users familiar with ‘git annex addurl’: A large part of this plugin’s functionality can be viewed as transforming data from URL-FILE into a “url filename” format that fed to ‘git annex addurl –batch –with-files’.

**Parameters**

- **dataset** *(Dataset or None)* – Add the URLs to this dataset (or possibly subdatasets of this dataset). An empty or non-existent directory is passed to create a new dataset. New subdatasets can be specified with FILENAME-FORMAT.

- **urlfile** – A file that contains URLs or information that can be used to construct URLs. Depending on the value of –input-type, this should be a comma- or tab-separated file (with
a header as the first row) or a JSON file (structured as a list of objects with string values). If ‘-’, read from standard input, taking the content as JSON when –input-type is at its default value of ‘ext’. Alternatively, an iterable of dicts can be given.

- **urlformat** – A format string that specifies the URL for each entry. See the ‘Format Specification’ section above.

- **filenameformat** – Like URL-FORMAT, but this format string specifies the file to which the URL’s content will be downloaded. The name should be a relative path and will be taken as relative to the top-level dataset, regardless of whether it is specified via dataset or inferred. The file name may contain directories. The separator “//” can be used to indicate that the left-side directory should be created as a new subdataset. See the ‘Format Specification’ section above.

- **input_type** ("ext", 'csv', 'tsv', 'json'; optional) – Whether URL-FILE should be considered a CSV file, TSV file, or JSON file. The default value, “ext”, means to consider URL-FILE as a JSON file if it ends with “.json” or a TSV file if it ends with “.tsv”. Otherwise, treat it as a CSV file. [Default: ‘ext’]

- **exclude_autometa** – By default, metadata field=value pairs are constructed with each column in URL-FILE, excluding any single column that is specified via URL-FORMAT. This argument can be used to exclude columns that match a regular expression. If set to ‘*’ or an empty string, automatic metadata extraction is disabled completely. This argument does not affect metadata set explicitly with –meta. [Default: None]

- **meta** – A format string that specifies metadata. It should be structured as "<field>=<value>". As an example, “location={3}” would mean that the value for the “location” metadata field should be set the value of the fourth column. This option can be given multiple times. [Default: None]

- **key** – A format string that specifies an annex key for the file content. In this case, the file is not downloaded; instead the key is used to create the file without content. The value should be structured as “[et:]<input backend>[<s<bytes>]>–<hash>”. The optional “et:” prefix, which requires git-annex 8.20201116 or later, signals to toggle extension state of the input backend (i.e., MD5 vs MD5E). As an example, ‘et:MD5-s[size]–{md5sum}’ would use the ‘md5sum’ and ‘size’ columns to construct the key, migrating the key from MD5 to MD5E, with an extension based on the file name. Note: If the input backend itself is an annex extension backend (i.e., a backend with a trailing “E”), the key’s extension will not be updated to match the extension of the corresponding file name. Thus, unless the input keys and file names are generated from git-annex, it is recommended to avoid using extension backends as input. If an extension is desired, use the plain variant as input and prepend “et:” so that git-annex will migrate from the plain backend to the extension variant. [Default: None]

- **message** (None or str, optional) – Use this message when committing the URL additions. [Default: None]

- **dry_run** (bool, optional) – Report which URLs would be downloaded to which files and then exit. [Default: False]

- **fast** (bool, optional) – If True, add the URLs, but don’t download their content. Underneath, this passes the –fast flag to git annex addurl. [Default: False]

- **ifexists** (None, 'overwrite', 'skip'; optional) – What to do if a constructed file name already exists. The default behavior is to proceed with the git annex addurl, which will fail if the file size has changed. If set to ‘overwrite’, remove the old file before adding the new one. If set to ‘skip’, do not add the new file. [Default: None]
- **missing_value** *(None or str, optional)* – When an empty string is encountered, use this value instead. [Default: None]

- **save** *(bool, optional)* – by default all modifications to a dataset are immediately saved. Giving this option will disable this behavior. [Default: True]

- **version_urls** *(bool, optional)* – Try to add a version ID to the URL. This currently only has an effect on HTTP URLs for AWS S3 buckets. s3:// URL versioning is not yet supported, but any URL that already contains a “versionId=” parameter will be used as is. [Default: False]

- **cfg_proc** – Pass this cfg_proc value when calling `create` to make datasets. [Default: None]

- **jobs** *(int or None or {'auto'}, optional)* – how many parallel jobs (where possible) to use. “auto” corresponds to the number defined by ‘datalad.runtime.max-annex-jobs’ configuration item. [Default: None]

- **drop_after** *(bool, optional)* – drop files after adding to annex. [Default: False]

- **on_collision** *({'error', 'error-if-different', 'take-first', 'take-last'}, optional)* – What to do when more than one row produces the same file name. By default an error is triggered. “error-if-different” suppresses that error if rows for a given file name collision have the same URL and metadata. “take-first” or “take-last” indicate to instead take the first row or last row from each set of colliding rows. [Default: ‘error’]

- **on_failure** *({'ignore', 'continue', 'stop'}, optional)* – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its `failed` attribute. [Default: ‘continue’]

- **result_filter** *(callable or None, optional)* – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports `**kwargs` it will additionally be passed the keyword arguments of the original API call. [Default: None]

- **result_renderer** *({'default', 'json', 'json_pp', 'tailored'} or None, optional)* – format of return value rendering on stdout. [Default: ‘tailored’]

- **result_xfm** *({'datasets', 'successdatasets-or-none', 'paths', 'replpaths', 'metadata'} or callable or None, optional)* – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from `result_filter`, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

- **return_type** *({'generator', 'list', 'item-or-list'}, optional)* – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. `None` is return in case of an empty list. [Default: ‘list’]
datalad.api.check_dates

Find repository dates that are more recent than a reference date. The main purpose of this tool is to find “leaked” real dates in repositories that are configured to use fake dates. It checks dates from three sources: (1) commit timestamps (author and committer dates), (2) timestamps within files of the “git-annex” branch, and (3) the timestamps of annotated tags.

Parameters

- **paths** (sequence of str or None) – Root directory in which to search for Git repositories. The current working directory will be used by default.

- **reference_date** (str, optional) – Compare dates to this date. If dateutil is installed, this value can be any format that its parser recognizes. Otherwise, it should be a unix timestamp that starts with a “@”. The default value corresponds to 01 Jan, 2018 00:00:00 -0000. [Default: '@1514764800']

- **revs** – Search timestamps from commits that are reachable from these revisions. Any revision specification supported by git log, including flags like –all and –tags, can be used. [Default: None]

- **annex** ({'all', 'tree', 'none'}, optional) – Mode for “git-annex” branch search. If ‘all’, all blobs within the branch are searched. ‘tree’ limits the search to blobs that are referenced by the tree at the tip of the branch. ‘none’ disables search of “git-annex” blobs. [Default: ‘all’]

- **no_tags** (bool, optional) – Don’t check the dates of annotated tags. [Default: False]

- **older** (bool, optional) – Find dates which are older than the reference date rather than newer. [Default: False]

- **on_failure** ({'ignore', 'continue', 'stop'}, optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]

- **result_filter** (callable or None, optional) – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

- **result_renderer** ({'default', 'json', 'json_pp', 'tailored'} or None, optional) – format of return value rendering on stdout. [Default: ‘tailored’]

- **result_xfm** ({'datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata'} or callable or None, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]
**return_type** (['generator', 'list', 'item-or-list'], optional) — return value behavior switch. If 'item-or-list' a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: 'list']

**datalad.api.export_archive**

```python
import datalad.api

datalad.api.export_archive(dataset, filename=None, archivetype='tar', compression='gz', missing_content='error')
```

Export the content of a dataset as a TAR/ZIP archive.

**Parameters**

- **dataset** (Dataset or None) — specify the dataset to export. If no dataset is given, an attempt is made to identify the dataset based on the current working directory.
- **filename** (str or None, optional) — File name of the generated TAR archive. If no file name is given the archive will be generated in the current directory and will be named: datalad_<dataset_uuid>.(<tar.*|zip>). To generate that file in a different directory, provide an existing directory as the file name. [Default: None]
- **archivetype** (['tar', 'zip'], optional) — Type of archive to generate. [Default: 'tar']
- **compression** (['gz', 'bz2', ''], optional) — Compression method to use. 'bz2' is not supported for ZIP archives. No compression is used when an empty string is given. [Default: 'gz']
- **missing_content** (['error', 'continue', 'ignore'], optional) — By default, any discovered file with missing content will result in an error and the export is aborted. Setting this to 'continue' will issue warnings instead of failing on error. The value 'ignore' will only inform about problem at the 'debug' log level. The latter two can be helpful when generating a TAR archive from a dataset where some file content is not available locally. [Default: 'error']
- **on_failure** (['ignore', 'continue', 'stop'], optional) — behavior to perform on failure: 'ignore' any failure is reported, but does not cause an exception; 'continue' if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; 'stop': processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: 'continue']
- **result_filter** (callable or None, optional) — if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]
- **result_renderer** (['default', 'json', 'json_pp', 'tailored'] or None, optional) — format of return value rendering on stdout. [Default: None]
- **result_xfm** (['datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata'] or callable or None, optional) — if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations.

1.5. Commands and API
that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• **return_type**({'generator', 'list', 'item-or-list'}, optional) – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘list’]

datalad.api.export_to_figshare

datalad.api.export_to_figshare(dataset, filename=None, missing_content='error', no_annex=False, article_id=None)

Export the content of a dataset as a ZIP archive to figshare

Very quick and dirty approach. Ideally figshare should be supported as a proper git annex special remote. Unfortunately, figshare does not support having directories, and can store only a flat list of files. That makes it impossible for any sensible publishing of complete datasets.

The only workaround is to publish dataset as a zip-ball, where the entire content is wrapped into a .zip archive for which figshare would provide a navigator.

**Parameters**

• **dataset** (Dataset or None) – “specify the dataset to export. If no dataset is given, an attempt is made to identify the dataset based on the current working directory.

• **filename** (str or None, optional) – File name of the generated ZIP archive. If no file name is given the archive will be generated in the top directory of the dataset and will be named: datalad_<dataset_uuid>.zip. [Default: None]

• **missing_content**({'error', 'continue', 'ignore'}, optional) – By default, any discovered file with missing content will result in an error and the plugin is aborted. Setting this to ‘continue’ will issue warnings instead of failing on error. The value ‘ignore’ will only inform about problem at the ‘debug’ log level. The latter two can be helpful when generating a TAR archive from a dataset where some file content is not available locally. [Default: ‘error’]

• **no_annex** (bool, optional) – By default the generated .zip file would be added to annex, and all files would get registered in git-annex to be available from such a tarball. Also upon upload we will register for that archive to be a possible source for it in annex. Setting this flag disables this behavior. [Default: False]

• **article_id** (int or None, optional) – Which article to publish to. [Default: None]

• **on_failure**({'ignore', 'continue', 'stop'}, optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]

• **result_filter** (callable or None, optional) – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]
• **result_renderer** ({'default', 'json', 'json_pp', 'tailored'} or None, optional) – format of return value rendering on stdout. [Default: None]

• **result_xfm** ({'datasets', 'successdatasets-or-none', 'paths', 'repaths', 'metadata'} or callable or None, optional) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from *result_filter*, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• **return_type** ({'generator', 'list', 'item-or-list'}, optional) – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. *None* is return in case of an empty list. [Default: ‘list’]

**datalad.api.no_annex**

**datalad.api.no_annex**(dataset, pattern, ref_dir='.', makedirs=False)

Configure a dataset to never put some content into the dataset’s annex

This can be useful in mixed datasets that also contain textual data, such as source code, which can be efficiently and more conveniently managed directly in Git.

Patterns generally look like this:

```python
code/`
```

which would match all file in the code directory. In order to match all files under `code/`, including all its subdirectories use such a pattern:

```python
code/**
```

Note that this command works incrementally, hence any existing configuration (e.g. from a previous plugin run) is amended, not replaced.

**Parameters**

• **dataset***(Dataset or None) – “specify the dataset to configure. If no dataset is given, an attempt is made to identify the dataset based on the current working directory.

• **pattern** – list of path patterns. Any content whose path is matching any pattern will not be annexed when added to a dataset, but instead will be tracked directly in Git. Path pattern have to be relative to the directory given by the *ref_dir* option. By default, patterns should be relative to the root of the dataset.

• **ref_dir** – Relative path (within the dataset) to the directory that is to be configured. All patterns are interpreted relative to this path, and configuration is written to a .gitattributes file in this directory. [Default: ‘.’]

• **makedirs***(bool, optional) – If set, any missing directories will be created in order to be able to place a file into --ref-dir. [Default: False]

• **on_failure**((‘ignore’, ‘continue’, ‘stop’), optional) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception
is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]

- **result_filter**(callable or None, optional)-- if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a ValueError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

- **result_renderer**({‘default’, ’json’, ’json_pp’, ’tailored’} or None, optional)-- format of return value rendering on stdout. [Default: None]

- **result_xfm**({'datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata'} or callable or None, optional)-- if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

- **return_type**({'generator', 'list', 'item-or-list'}, optional)-- return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘list’]

**datalad.api.wtf**

**datalad.api.wtf**(dataset=None, sensitive=None, sections=None, flavor=’full’, decor=None, clipboard=None)

Generate a report about the DataLad installation and configuration

IMPORTANT: Sharing this report with untrusted parties (e.g. on the web) should be done with care, as it may include identifying information, and/or credentials or access tokens.

Parameters

- **dataset**(Dataset or None, optional)-- “specify the dataset to report on. no dataset is given, an attempt is made to identify the dataset based on the current working directory. [Default: None]

- **sensitive**({None, ‘some’, ‘all’}, optional)-- if set to ‘some’ or ‘all’, it will display sections such as config and metadata which could potentially contain sensitive information (credentials, names, etc.). If ‘some’, the fields which are known to be sensitive will still be masked out. [Default: None]

- **sections**(list of {'configuration', 'credentials', 'datalad', 'dataset', 'dependencies', 'environment', 'extensions', 'git-annex', 'location', 'metadata_extractors', 'metadata_indexers', 'python', 'system', '*'} or None, optional)-- section to include. If not set - depends on flavor. ‘*’ could be used to force all sections. [Default: None]

- **flavor**({'full', 'short'}, optional)-- Flavor of WTF. ‘full’ would produce markdown with exhaustive list of sections. ‘short’ will provide a condensed summary only of datalad and dependencies by default. Use section to list other sections. [Default: ‘full’]

- **decor**({'html_details'} or None, optional)-- decoration around the rendering to facilitate embedding into issues etc, e.g. use ‘html_details’ for posting collapsible entry to GitHub issues. [Default: None]
• **clipboad**(bool, *optional*) – if set, do not print but copy to clipboard (requires pyperclip module). [Default: None]

• **on_failure**({'ignore', 'continue', 'stop'}, *optional*) – behavior to perform on failure: ‘ignore’ any failure is reported, but does not cause an exception; ‘continue’ if any failure occurs an exception will be raised at the end, but processing other actions will continue for as long as possible; ‘stop’: processing will stop on first failure and an exception is raised. A failure is any result with status ‘impossible’ or ‘error’. Raised exception is an IncompleteResultsError that carries the result dictionaries of the failures in its failed attribute. [Default: ‘continue’]

• **result_filter**(callable or None, *optional*) – if given, each to-be-returned status dictionary is passed to this callable, and is only returned if the callable’s return value does not evaluate to False or a TypeError exception is raised. If the given callable supports **kwargs it will additionally be passed the keyword arguments of the original API call. [Default: None]

• **result_renderer**({'default', 'json', 'json_pp', 'tailored'} or None, *optional*) – format of return value rendering on stdout. [Default: ‘tailored’]

• **result_xfm**({'datasets', 'successdatasets-or-none', 'paths', 'relpaths', 'metadata'} or callable or None, *optional*) – if given, each to-be-returned result status dictionary is passed to this callable, and its return value becomes the result instead. This is different from result_filter, as it can perform arbitrary transformation of the result value. This is mostly useful for top-level command invocations that need to provide the results in a particular format. Instead of a callable, a label for a pre-crafted result transformation can be given. [Default: None]

• **return_type**({'generator', 'list', 'item-or-list'}, *optional*) – return value behavior switch. If ‘item-or-list’ a single value is returned instead of a one-item return value list, or a list in case of multiple return values. None is return in case of an empty list. [Default: ‘list’]

### Support functionality

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cmd</td>
<td>Wrapper for command and function calls, allowing for dry runs and output handling</td>
</tr>
<tr>
<td>consts</td>
<td>constants for datalad</td>
</tr>
<tr>
<td>log</td>
<td></td>
</tr>
<tr>
<td>utils</td>
<td></td>
</tr>
<tr>
<td>version</td>
<td></td>
</tr>
<tr>
<td>support.gitrepo</td>
<td>Internal low-level interface to Git repositories</td>
</tr>
<tr>
<td>support.annexrepo</td>
<td>Interface to git-annex by Joey Hess.</td>
</tr>
<tr>
<td>support.archives</td>
<td>Various handlers/functionality for different types of files (e.g.</td>
</tr>
<tr>
<td>customremotes.main</td>
<td></td>
</tr>
<tr>
<td>customremotes.base</td>
<td>Base classes to custom git-annex remotes (e.g.</td>
</tr>
<tr>
<td>customremotes.archives</td>
<td>Custom remote to support getting the load from archives present under annex</td>
</tr>
</tbody>
</table>

**datalad.cmd**

Wrapper for command and function calls, allowing for dry runs and output handling

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class datalad.cmd.BatchedCommand(cmd, path=None, output_proc=None)
    Bases: datalad.cmd.SafeDelCloseMixin

    Container for a process which would allow for persistent communication

close(return_stderr=False)
    Close communication and wait for process to terminate

    Returns stderr output if return_stderr and stderr file was there. None otherwise

    Return type  str

proc1(arg)
    Same as __call__, but only takes a single command argument
    and returns a single result.

yield_(cmds)
    Same as __call__, but requires cmds to be an iterable
    and yields results for each item.

class datalad.cmd.SafeDelCloseMixin
    Bases: object

    A helper class to use where __del__ would call .close() which might fail if “too late in GC game”

datalad.cmd.readline_rstripped(stdout)

dataladconsts

class datalad.log.ColorFormatter(use_color=None, log_name=False, log_pid=False)
    Bases: logging.Formatter

    format(record)
        Format the specified record as text.

        The record’s attribute dictionary is used as the operand to a string formatting operation which yields the
        returned string. Before formatting the dictionary, a couple of preparatory steps are carried out. The mes-
        sage attribute of the record is computed using LogRecord.getMessage(). If the formatting string uses the
        time (as determined by a call to usesTime(), formatTime() is called to format the event time. If there is
        exception information, it is formatted using formatException() and appended to the message.

dataladutils

class datalad.utils.ArgSpecFake(args, varargs, keywords, defaults)
    Bases: tuple

    args
        Alias for field number 0

    defaults
        Alias for field number 3
class datalad.util.File

    Helper for a file entry in the create_tree/@with_tree

    It allows to define additional settings for entries

class datalad.util.SequenceFormatter

    string.Formatter subclass with special behavior for sequences.
    This class delegates formatting of individual elements to another formatter object. Non-list objects are formatted
    by calling the delegate formatter’s "format_field" method. List-like objects (list, tuple, set, frozenset) are for-
    matted by formatting each element of the list according to the specified format spec using the delegate formatter
    and then joining the resulting strings with a separator (space by default).

    format_element(elem, format_spec)

    Format a single element

    For sequences, this is called once for each element in a sequence. For anything else, it is called on the
    entire object. It is intended to be overridden in subclasses.

    format_field(value, format_spec)

datalad.util.all_same(items)

    Quick check if all items are the same.

    Identical to a check like len(set(items)) == 1 but should be more efficient while working on generators, since
    would return False as soon as any difference detected thus possibly avoiding unnecessary evaluations

datalad.util.any_re_search(regexes, value)

    Return if any of regexes (list or str) searches successfully for value

    For unicode it would return original value, for python2 str or python3 bytes it would use ensure_unicode, for
    None - an empty (unicode) string, and for any other type (see cast_types) - would apply the unicode constructor.
    If value is not an instance of cast_types, TypeError is thrown

    Parameters cast_types(type) – Which types to cast to unicode by providing to constructor

    datalad.util.assert_no_open_files(*args, **kwargs)
    Note: This function is deprecated. Use ensure Bool instead.

datalad.util.assure_bytes(s, encoding='utf-8')
    Note: This function is deprecated. Use ensure_bytes instead.

datalad.util.assure_dict_from_str(s, **kwargs)
    Note: This function is deprecated. Use ensure_dict_from_str instead.

datalad.util.assure_dir(*args)
    Note: This function is deprecated. Use ensure_dir instead.
datalad.utils.assure_iter(s, cls, copy=False, iterate=True)
Note: This function is deprecated. Use ensure_iter instead.

datalad.utils.assure_list(s, copy=False, iterate=True)
Note: This function is deprecated. Use ensure_list instead.

datalad.utils.assure_list_from_str(s, sep='\n')
Note: This function is deprecated. Use ensure_list_from_str instead.

datalad.utils.assure_tuple_or_list(obj)
Note: This function is deprecated. Use ensure_tuple_or_list instead.

datalad.utils.assure_unicode(s, encoding=None, confidence=None)
Note: This function is deprecated. Use ensure_unicode instead.

datalad.utils.auto_repr(cls)
Decorator for a class to assign it an automatic quick and dirty __repr__
It uses public class attributes to prepare repr of a class
Original idea: http://stackoverflow.com/a/27799004/1265472

datalad.utils.better_wraps(to_be_wrapped)
Decorator to replace functools.wraps
This is based on wrapt instead of functools and in opposition to wraps preserves the correct signature of the
decorated function. It is written with the intention to replace the use of wraps without any need to rewrite the
actual decorators.

datalad.utils.bytes2human(n, format='%(value).1f %(symbol)sB')
Convert n bytes into a human readable string based on format. symbols can be either “customary”, “custom-
ary_ext”, “iec” or “iec_ext”, see: http://goo.gl/kTQMs

>>> from datalad.utils import bytes2human
>>> bytes2human(1)
'1.0 B'
>>> bytes2human(1024)
'1.0 KB'
>>> bytes2human(1048576)
'1.0 MB'
>>> bytes2human(109951162776127398123789121)
'909.5 YB'

>>> bytes2human(10000, "%(value).1f %(symbol)sB")
'9.8 K/sec'

>>> bytes2human(10000, "%(value).5f %(symbol)sB")
'9.76562 K'

# precision can be adjusted by playing with %f operator

>>> bytes2human(10000, format="%(value).5f %(symbol)s")
'9.76562 K'

Taken from: http://goo.gl/kTQMs and subsequently simplified Original Author: Giampaolo Rodola’ <g.rodola
[AT] gmail [DOT] com> License: MIT

datalad.utils.check_symlink_capability(path, target)
helper similar to datalad.tests.utils.has_symlink_capability
However, for use in a datalad command context, we shouldn’t assume to be able to write to tmpfile and also not
import a whole lot from datalad’s test machinery. Finally, we want to know, whether we can create a symlink at a
specific location, not just somewhere. Therefore use arbitrary path to test-build a symlink and delete afterwards.
Suitable location can therefore be determined by high lever code.

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Parameters

• path (Path) –
• target (Path) –

Returns

Return type: bool

class datalad.utils.chpwd (path, mkdir=False, logsuffix="")
Bases: object

Wrapper around os.chdir which also adjusts environ['PWD']

The reason is that otherwise PWD is simply inherited from the shell and we have no ability to assess directory
path without dereferencing symlinks.

If used as a context manager it allows to temporarily change directory to the given path

datalad.utils.collect_method_callstats (func)

datalad.utils.create_tree (path, tree, archives_leading_dir=True, remove_existing=False)

Given a list of tuples (name, load) create such a tree

if load is a tuple itself – that would create either a subtree or an archive with that content and place it into the
tree if name ends with .tar.gz

datalad.utils.create_tree_archive (path, name, load, overwrite=False, archives_leading_dir=True)

Given an archive name, create under path with specified load tree

datalad.utils.decode_input (s)

Given input string/bytes, decode according to stdin codepage (or UTF-8) if not defined

If fails – issue warning and decode allowing for errors being replaced

datalad.utils.disable_logger (logger=None)

context manager to temporarily disable logging

This is to provide one of swallow_logs’ purposes without unnecessarily creating temp files (see gh-1865)

Parameters logger (Logger) – Logger whose handlers will be ordered to not log anything.

Default: datalad’s topmost Logger ('datalad')

datalad.utils.dlabspath (path, norm=False)

Symlinks-in-the-cwd aware abspath

os.path.abspath relies on os.getcwd() which would not know about symlinks in the path

TODO: we might want to norm=True by default to match behavior of os.path.abspath?

datalad.utils.encode_filename (filename)

Encode unicode filename

datalad.utils.ensure_bool (s)

Convert value into boolean following convention for strings
to recognize on, True, yes as True, off, False, no as False

datalad.utils.ensure_bytes (s, encoding='utf-8')

Convert/encode unicode string to bytes.

If s isn’t a string, return it as is.

Parameters encoding (str, optional) – Encoding to use. “utf-8” is the default

1.5. Commands and API
datalad documentation, release 0.15.5

**datalad.utils.ensure_dict_from_str(s, **kwargs)**
Given a multiline string with key=value items convert it to a dictionary

**Parameters**
- **s**(str or dict)-
- None if input s is empty (Returns)

datalad.utils.ensure_dir(*args)
Make sure directory exists.

Joins the list of arguments to an os-specific path to the desired directory and creates it, if it not exists yet.

datalad.utils.ensure_iter(s, cls, copy=False, iterate=True)
Given not a list, would place it into a list. If None - empty list is returned

**Parameters**
- **s**(list or anything)-
- cls(class)- Which iterable class to ensure
- copy(bool, optional)- If correct iterable is passed, it would generate its shallow copy
- iterate(bool, optional)- If it is not a list, but something iterable (but not a str) iterate over it.

datalad.utils.ensure_list(s, copy=False, iterate=True)
Given not a list, would place it into a list. If None - empty list is returned

**Parameters**
- **s**(list or anything)-
- copy(bool, optional)- If list is passed, it would generate a shallow copy of the list
- iterate(bool, optional)- If it is not a list, but something iterable (but not a str) iterate over it.

datalad.utils.ensure_list_from_str(s, sep='\n')
Given a multiline string convert it to a list of return None if empty

**Parameters**
- **s**(str or list)-

datalad.utils.ensure_tuple_or_list(obj)
Given an object, wrap into a tuple if not list or tuple

datalad.utils.ensure_unicode(s, encoding=None, confidence=None)
Convert/decode bytestring to unicode.

If s isn’t a bytestring, return it as is.

**Parameters**
- encoding(str, optional)- Encoding to use. If None, “utf-8” is tried, and then if not a valid UTF-8, encoding will be guessed
- confidence(float, optional)- A value between 0 and 1, so if guessing of encoding is of lower than specified confidence, ValueError is raised

datalad.utils.escape_filename(filename)
Surround filename in “” and escape ” in the filename
datalad.utils.expandpath(path, force_absolute=True)

Expand all variables and user handles in a path.
By default return an absolute path

datalad.utils.file_basename(name, return_ext=False)

Strips up to 2 extensions of length up to 4 characters and starting with alpha not a digit, so we could get rid of .tar.gz etc

datalad.utils.find_files(regex, topdir='.', exclude=None, exclude_vcs=True, exclude_datalad=False, dirs=False)

Generator to find files matching regex

Parameters

- regex (basestring) –
- exclude (basestring, optional) – Matches to exclude
- exclude_vcs – If True, excludes commonly known VCS subdirectories. If string, used as regex to exclude those files (regex: '/(?:(?:git|gitattributes|svn|bzr|hg)(?:/|$))')
- exclude_datalad – If True, excludes files known to be datalad meta-data files (e.g. under .datalad/ subdirectory) (regex: '/(?:(?:datalad)(?:/|$))')
- topdir (basestring, optional) – Directory where to search
- dirs (bool, optional) – Whether to match directories as well as files

datalad.utils.generate_chunks(container, size)

Given a container, generate chunks from it with size up to size

datalad.utils.generate_file_chunks(files, cmd=None)

Given a list of files, generate chunks of them to avoid exceeding cmdline length

Parameters

- files (list of str) –
- cmd (str or list of str, optional) – Command to account for as well

datalad.utils.get_dataset_root(path)

Return the root of an existent dataset containing a given path

The root path is returned in the same absolute or relative form as the input argument. If no associated dataset exists, or the input path doesn’t exist, None is returned.

If path is a symlink or something other than a directory, its the root dataset containing its parent directory will be reported. If none can be found, at a symlink at path itself will be reported as the root.

Parameters path (Path-like) –

Returns

Return type str or None

datalad.utils.get_encoding_info()

Return a dictionary with various encoding/locale information

datalad.utils.get_envvars_info()

datalad.utils.get_func_kwarg_doc(func)

Provides args for a function

Parameters func (str) – name of the function from which args are being requested
**Returns** of the args that a function takes in

**Return type** list

datalad.utils.get_home_envvars(new_home)

Return dict with env variables to be adjusted for a new HOME

Only variables found in current os.environ are adjusted.

**Parameters**

- **new_home** *(str)* - New home path, in native to OS “schema”

datalad.utils.get_ipython_shell()

Detect if running within IPython and returns its ip (shell) object

Returns None if not under ipython (no get_ipython function)

datalad.utils.get_linux_distribution

Compatibility wrapper for {platform,distro}.linux_distribution().

datalad.utils.get_logfilename(dspath, cmd='datalad')

Return a filename to use for logging under a dataset/repository
directory would be created if doesn’t exist, but dspath must exist and be a directory

datalad.utils.get_open_files(path, log_open=False)

Get open files under a path

Note: This function is very slow on Windows.

**Parameters**

- **path** *(str)* - File or directory to check for open files under
- **log_open** *(bool or int)* - If set - logger level to use

**Returns** path : pid

**Return type** dict

datalad.utils.get_path_prefix(path, pwd=None)

Get path prefix (for current directory)

Returns relative path to the topdir, if we are under topdir, and if not absolute path to topdir. If *pwd* is not specified - current directory assumed

datalad.utils.get_suggestions_msg(values, known, sep='\n ')

Return a formatted string with suggestions for values given the known ones

datalad.utils.get_tempfile_kwvars(tkwargs=None, prefix='', wrapped=None)

Updates kwargs to be passed to tempfile. calls depending on env vars

datalad.utils.get_timestamp_suffix(time_=None, prefix=': ')

Return a time stamp (full date and time up to second)

primarily to be used for generation of log files names

datalad.utils.get_trace(edges, start, end, trace=None)

Return the trace/path to reach a node in a tree.

**Parameters**

- **edges** *(sequence (2-tuple))* - The tree given by a sequence of edges (parent, child) tuples. The nodes can be identified by any value and data type that supports the ‘==’ operation.
- **start** - Identifier of the start node. Must be present as a value in the parent location of an edge tuple in order to be found.
• **end** – Identifier of the target/end node. Must be present as a value in the child location of an edge tuple in order to be found.

• **trace (list)** – Mostly useful for recursive calls, and used internally.

**Returns**
Returns a list with the trace to the target (the starts and the target are not included in the trace, hence if start and end are directly connected an empty list is returned), or None when no trace to the target can be found, or start and end are identical.

**Return type**
None or list

datalad.utils.get_wrapped_class(wrapped)
Determine the command class a wrapped __call__ belongs to

datalad.utils.getargspec(func)

datalad.utils.getpwd()
Try to return a CWD without dereferencing possible symlinks
This function will try to use PWD environment variable to provide a current working directory, possibly with some directories along the path being symlinks to other directories. Unfortunately, PWD is used/set only by the shell and such functions as os.chdir and os.getcwdb nohow use or modify it, thus os.getcwdb() returns path with links dereferenced.

While returning current working directory based on PWD env variable we verify that the directory is the same as os.getcwdb() after resolving all symlinks. If that verification fails, we fall back to always use os.getcwdb().

Initial decision to either use PWD env variable or os.getcwdb() is done upon the first call of this function.

datalad.utils.guard_for_format(arg)
Replace { and } with {{ and }}
To be used in cases if arg is not expected to have provided by user .format() placeholders, but ‘arg’ might become a part of a composite passed to .format(), e.g. via ‘Run’

datalad.utils.import_module_from_file(modpath, pkg=None, log=<bound method Logger.debug of <Logger datalad.utils (INFO)>>)
Import provided module given a path
TODO: - RF/make use of it in pipeline.py which has similar logic - join with import_modules above?

**Parameters**
- pkg (module, optional) – If provided, and modpath is under pkg.__path__, relative import will be used

datalad.utils.import_modules(modnames, pkg, msg='Failed to import {module}', log=<bound method Logger.debug of <Logger datalad.utils (INFO)>>)
Helper to import a list of modules without failing if N/A

**Parameters**
- modnames (list of str) – List of module names to import
- pkg (str) – Package under which to import
- msg (str, optional) – Message template for .format() to log at DEBUG level if import fails. Keys {module} and {package} will be provided and ‘: {exception}’ appended
- log (callable, optional) – Logger call to use for logging messages

datalad.utils.is_explicit_path(path)
Return whether a path explicitly points to a location
Any absolute path, or relative path starting with either ‘./’ or ‘.’ is assumed to indicate a location on the filesystem. Any other path format is not considered explicit.

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datalad.utils.is_interactive()

Return True if all in/outs are open and tty.

Note that in a somewhat abnormal case where e.g. stdin is explicitly closed, and any operation on it would raise a ValueError("I/O operation on closed file") exception, this function would just return False, since the session cannot be used interactively.

datalad.utils.join_cmdline(args)

Join command line args into a string using quote_cmdlinearg

datalad.utils.knows_annex(path)

Returns whether at a given path there is information about an annex

It is just a thin wrapper around GitRepo.is_with_annex() classmethod which also checks for path to exist first.

This includes actually present annexes, but also uninitialized ones, or even the presence of a remote annex branch.

datalad.utils.line_profile(func)

datalad.utils.lmtime(filepath, mtime)

Set mtime for files, while not de-referencing symlinks.

To overcome absence of os.lutime

Works only on Linux and OSX ATM

datalad.utils.make_tempfile(content=None, wrapped=None, **tkwargs)

Helper class to provide a temporary file name and remove it at the end (context manager)

Parameters

• mkdir (bool, optional (default: False)) – If True, temporary directory created using tempfile.mkdtemp()

• content (str or bytes, optional) – Content to be stored in the file created

• wrapped (function, optional) – If set, function name used to prefix temporary file name

• **tkwargs – All other arguments are passed into the call to tempfile.mk[,d]temp(), and resultant temporary filename is passed as the first argument into the function t. If no ‘prefix’ argument is provided, it will be constructed using module and function names (‘.’ replaced with ‘_’).

• change the used directory without providing keyword argument 'dir' set (To) –

• DATALAD_TESTS_TEMP_DIR.

Examples

```python
>>> from os.path import exists
>>> from datalad.utils import make_tempfile
>>> with make_tempfile() as fname:
...     k = open(fname, 'w').write('silly test')
>>> assert not exists(fname)  # was removed

>>> with make_tempfile(content="blah") as fname:
...     assert open(fname).read() == "blah"
```
datalad.utils.map_items(func, v)
A helper to apply func to all elements (keys and values) within dict.
No type checking of values passed to func is done, so func should be resilient to values which it should not handle.
Initial usecase - apply_recursive(url_fragment, ensure_unicode)

datalad.utils.md5sum(filename)
Compute an MD5 sum for the given file.

datalad.utils.never_fail(f)
Assure that function never fails – all exceptions are caught.
Returns None if function fails internally.

datalad.utils.not_supported_on_windows(msg=None)
A little helper to be invoked to consistently fail whenever functionality is not supported (yet) on Windows.

datalad.utils.nothing_cm()
Just a dummy cm to programmatically switch context managers.

datalad.utils.open_r_encdetect(fname, readahead=1000)
Return a file object in read mode with auto-detected encoding.
This is helpful when dealing with files of unknown encoding.
Parameters
readahead(int, optional) – How many bytes to read for guessing the encoding type. If negative - full file will be read.

datalad.utils.optional_args(decorator)
allows a decorator to take optional positional and keyword arguments. Assumes that taking a single, callable, positional argument means that it is decorating a function, i.e. something like this:

```python
@my_decorator
def function():
    pass
```
Calls decorator with decorator(f, *args, **kwargs)

datalad.utils.partition(items, predicate=<class 'bool'>)
Partition items by predicate.
Parameters
- items(iterable) –
- predicate(callable) – A function that will be mapped over each element in items.
The elements will partitioned based on whether the return value is false or true.

Returns
- A tuple with two generators, the first for 'false' items and the second for 'true' ones.

Notes
Taken from Peter Otten’s snippet posted at https://nedbatchelder.com/blog/201306/filter_a_list_into_two_parts.html.

datalad.utils.path_is_subpath(path, prefix)
Return True if path is a subpath of prefix.
It will return False if path == prefix.
Parameters

- `path (str)` -
- `prefix (str)` -

`datalad.utils.path_startswith (path, prefix)`

Return True if `path` starts with `prefix`

Parameters

- `path (str)` -
- `prefix (str)` -

`datalad.utilsposix_relnpath (path, start=None)`

Behave like `os.path.relpath`, but always return POSIX paths...

on any platform.

`datalad.utils.quote_cmdlinearg (arg)`

Perform platform-appropriate argument quoting

`datalad.utils.read_csv_lines (fname, dialect=None, readahead=16384, **kwargs)`

A generator of dict records from a CSV/TSV

Automatically guesses the encoding for each record to convert to UTF-8

Parameters

- `fname (str)` – Filename
- `dialect (str, optional)` – Dialect to specify to `csv.reader`. If not specified – guessed from the file, if fails to guess, “excel-tab” is assumed
- `readahead (int, optional)` – How many bytes to read from the file to guess the type
- `**kwargs` – Passed to `csv.reader`

`datalad.utils.read_file (fname, decode=True)`

A helper to read file passing content via ensure_unicode

Parameters `decode (bool, optional)` – if False, no ensure_unicode and file content returned as bytes

`datalad.utils.rmdir (path, *args, **kwargs)`

`os.rmdir` with our optional checking for open files

`datalad.utils.rmtemp (f, *args, **kwargs)`

Wrapper to centralize removing of temp files so we could keep them around

It will not remove the temporary file/directory if `DATALAD_TESTS_TEMP_KEEP` environment variable is defined

`datalad.utils.rmtree (path, chmod_files='auto', children_only=False, *args, **kwargs)`

To remove git-annex .git it is needed to make all files and directories writable again first

Parameters

- `chmod_files (string or bool, optional)` – Whether to make files writable also before removal. Usually it is just a matter of directories to have write permissions. If ‘auto’ it would chmod files on windows by default
- `children_only (bool, optional)` – If set, all files and subdirectories would be removed while the path itself (must be a directory) would be preserved
- `*args` –
**kwargs – Passed into shutil.rmtree call

datalad.utils.rotree(path, ro=True, chmod_files=True)

To make tree read-only or writable

**Parameters**

- **path** *(string)* – Path to the tree/directory to chmod
- **ro** *(bool, optional)* – Whether to make it R/O (default) or RW
- **chmod_files** *(bool, optional)* – Whether to operate also on files (not just directories)

datalad.utils.saved_generator(gen)

Given a generator returns two generators, where 2nd one just replays

So the first one would be going through the generated items and 2nd one would be yielding saved items

datalad.utils.setup_exceptionhook(ipython=False)

Overloads default sys.excepthook with our exceptionhook handler.

If interactive, our exceptionhook handler will invoke pdb.post_mortem; if not interactive, then invokes default handler.

datalad.utils.sorted_files(path)

Return a (sorted) list of files under path

datalad.utils.split_cmdline(s)

Perform platform-appropriate command line splitting.

Identical to shlex.split() on non-windows platforms.

Modified from [https://stackoverflow.com/a/35900070](https://stackoverflow.com/a/35900070)

datalad.utils.swallow_logs(new_level=None, file_=None, name='datalad')

Context manager to consume all logs.

datalad.utils.swallow_outputs()

Context manager to help consuming both stdout and stderr, and print()

stdout is available as cm.out and stderr as cm.err whenever cm is the yielded context manager. Internally uses temporary files to guarantee absent side-effects of swallowing into StringIO which lacks .fileno.

print mocking is necessary for some uses where sys.stdout was already bound to original sys.stdout, thus mocking it later had no effect. Overriding print function had desired effect

datalad.utils.try_multiple(ntrials, exception, base, f, *args, **kwargs)

Call f multiple times making exponentially growing delay between the calls

datalad.utils.try_multiple_dec(f, ntrials=None, duration=0.1, exceptions=None, increment_type=None, exceptions_filter=None, logger=None)

datalad.utils.unique(seq, key=None, reverse=False)

Given a sequence return a list only with unique elements while maintaining order

This is the fastest solution. See [https://www.peterbe.com/plog/uniqifiers-benchmark](https://www.peterbe.com/plog/uniqifiers-benchmark) and [http://stackoverflow.com/a/480227/1265472](http://stackoverflow.com/a/480227/1265472) for more information. Enhancement – added ability to compare for uniqueness using a key function
Parameters

- **seq** – Sequence to analyze
- **key** (*callable*, *optional*) – Function to call on each element so we could decide not on a full element, but on its member etc
- **reverse** (*bool*, *optional*) – If True, uniqueness checked in the reverse order, so that the later ones will take the order

datalad.utils.unlink(*f*)

`'Robust' unlink. Would try multiple times`

On windows boxes there is evidence for a latency of more than a second until a file is considered no longer “in-use”. WindowsError is not known on Linux, and if IOError or any other exception is thrown then if except statement has WindowsError in it – NameError also see gh-2533

datalad.utils.updated(*d*, *update*)

Return a copy of the input with the ‘update’

Primarily for updating dictionaries

datalad.utils.with_pathsep(*path*)

Little helper to guarantee that path ends with /

datalad.version

datalad.support.gitrepo

Internal low-level interface to Git repositories

class datalad.support.gitrepo.FetchInfo

Bases: dict

dict that carries results of a fetch operation of a single head

Reduced variant of GitPython’s RemoteProgress class

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ERROR = 128

FAST_FORWARD = 64

FORCED_UPDATE = 32

HEAD_UPTODATE = 4

NEW_HEAD = 2

NEW_TAG = 1

REJECTED = 16

TAG_UPDATE = 8

class datalad.support.gitrepo.GitProgress(*args*)

Bases: datalad.runner.protocol.WitlessProtocol

Reduced variant of GitPython’s RemoteProgress class

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BEGIN = 1
CHECKING_OUT = 256
COMPRESSING = 8
COUNTING = 4
DONE_TOKEN = 'done.'
END = 2
ENUMERATING = 512
FINDING_SOURCES = 128
OP_MASK = -4
RECEIVING = 32
RESOLVING = 64
STAGE_MASK = 3
TOKEN_SEPARATOR = ',', '
WRITING = 16

connection_made (transport)
Called when a connection is made.
The argument is the transport representing the pipe connection. To receive data, wait for data_received() calls. When the connection is closed, connection_lost() is called.

pipe_data_received (fd, byts)
Called when the subprocess writes data into stdout/stderr pipe.
fd is int file descriptor. data is bytes object.

proc_err = True

process_exited()
Called when subprocess has exited.

re_op_absolute = re.compile('remote: )?((\w\s+):\s+() (\d+) (.*)')
re_op_relative = re.compile('remote: )?((\w\s+):\s+(\d+) \((\d+)/(\d+)\) (.*)')

class datalad.support.gitrepo.GitRepo (path, runner=None, create=True, git_opts=None, repo=None, fake_dates=False, create_sanity_checks=True, **kwargs)
Bases: datalad.dataset.gitrepo.GitRepo
Representation of a git repository

GIT_MIN_VERSION = '2.19.1'

add (files, git=True, git_options=None, update=False)
Adds file(s) to the repository.

Parameters

- **files** ([list]) – list of paths to add
- **git**(bool) – somewhat ugly construction to be compatible with AnnexRepo.add(); has to be always true.
• **update** *(bool)*

--update option for git-add. From git's manpage: Update the index just where it already has an entry matching <pathspec>. This removes as well as modifies index entries to match the working tree, but adds no new files.

If no <pathspec> is given when --update option is used, all tracked files in the entire working tree are updated (old versions of Git used to limit the update to the current directory and its subdirectories).

**Returns** Of status dicts.

**Return type** list

```python
add_(files, git=True, git_options=None, update=False)
```

Like `add`, but returns a generator

```python
add_fake_dates(env)
```

```python
add_remote(name, url, options=None)
```

Register remote pointing to a url

```python
add_submodule(path, name=None, url=None, branch=None)
```

Add a new submodule to the repository.

This will alter the index as well as the .gitmodules file, but will not create a new commit. If the submodule already exists, no matter if the configuration differs from the one provided, the existing submodule is considered as already added and no further action is performed.

**NOTE:** This method does not work with submodules that use git-annex adjusted branches. Use `Repo.save()` instead.

**Parameters**

- **path** *(str)* – repository-relative path at which the submodule should be located, and which will be created as required during the repository initialization.

- **name** *(str or None)* – name/identifier for the submodule. If None, the path will be used as name.

- **url** *(str or None)* – git-clone compatible URL. If None, the repository is assumed to exist, and the url of the first remote is taken instead. This is useful if you want to make an existing repository a submodule of another one.

- **branch** *(str or None)* – name of branch to be checked out in the submodule. The given branch must exist in the remote repository, and will be checked out locally as a tracking branch. If None, remote HEAD will be checked out.

```python
bare
```

```python
checkout(name, options=None)
```

```python
cherry_pick(commit)
```

Cherry pick `commit` to the current branch.

**Parameters**

- **commit** *(str)* – A single commit.

```python
classmethod clone(url, path, *args, clone_options=None, **kwargs)
```

Clone url into path

Provides workarounds for known issues (e.g. https://github.com/datalad/datalad/issues/785)

**Parameters**
• **url** *(str)* –

• **path** *(str)* –

• **clone_options** *(dict)* – Key/value pairs of arbitrary options that will be passed on to the underlying call to *git-clone*.

• **expect_fail** *(bool)* – Whether expect that command might fail, so error should be logged then at DEBUG level instead of ERROR

• **kwargs** – Passed to the Repo class constructor.

**commit** *(msg=None, options=None, _datalad_msg=False, careless=True, files=None, date=None, index_file=None)*

Commit changes to git.

**Parameters**

• **msg** *(str, optional)* – commit-message

• **options** *(list of str, optional)* – cmdline options for *git-commit*

• **_datalad_msg** *(bool, optional)* – To signal that commit is automated commit by datalad, so it would carry the [DATALAD] prefix

• **careless** *(bool, optional)* – if False, raise when there’s nothing actually committed; if True, don’t care

• **files** *(list of str, optional)* – path(s) to commit

• **date** *(str, optional)* – Date in one of the formats git understands

• **index_file** *(str, optional)* – An alternative index to use

**commit_exists** *(commitish)*

Does commitish exist in the repo?

**Parameters**

commitish *(str)* – A commit or an object that can be dereferenced to one.

**Returns**

**Return type** bool

**config**

**configure_fake_dates** ()

Configure repository to use fake dates.

**count_objects**

return dictionary with count, size(in KiB) information of git objects

**deinit_submodule** *(path, **kwargs)*

Deinit a submodule

**Parameters**

• **path** *(str)* – path to the submodule; relative to *self.path*

• **kwargs** – see **__init__**

**describe** *(commitish=None, **kwargs)*

Quick and dirty implementation to call *git-describe*

**Parameters**

kwargs – transformed to cmdline options for *git-describe*; see **__init__** for description of the transformation

**diff** *(fr, to, paths=None, untracked='all', eval_submodule_state='full')*

Like status(), but reports changes between to arbitrary revisions
Parameters

- **fr** (str or None) – Revision specification (anything that Git understands). Passing None considers anything in the target state as new.

- **to** (str or None) – Revision specification (anything that Git understands), or None to compare to the state of the work tree.

- **paths** (list or None) – If given, limits the query to the specified paths. To query all paths specify None, not an empty list.

- **untracked** (['no', 'normal', 'all']) – If and how untracked content is reported when to is None: ‘no’: no untracked files are reported; ‘normal’: untracked files and entire untracked directories are reported as such; ‘all’: report individual files even in fully untracked directories.

- **eval_submodule_state** (['full', 'commit', 'no']) – If ‘full’ (the default), the state of a submodule is evaluated by considering all modifications, with the treatment of untracked files determined by untracked. If ‘commit’, the modification check is restricted to comparing the submodule’s HEAD commit to the one recorded in the superdataset. If ‘no’, the state of the subdataset is not evaluated.

Returns

Each content item has an entry under a pathlib Path object instance pointing to its absolute path inside the repository (this path is guaranteed to be underneath Repo.path). Each value is a dictionary with properties:

- **type** Can be ‘file’, ‘symlink’, ‘dataset’, ‘directory’


Return type dict
diffstatus (fr, to, paths=None, untracked='all', eval_submodule_state='full', eval_file_type=True, _cache=None)

Like diff(), but reports the status of ‘clean’ content too.

It supports an additional submodule evaluation state ‘global’. If given, it will return a single ‘modified’ (vs. ‘clean’) state label for the entire repository, as soon as it can.
dirty

Is the repository dirty?

Note: This provides a quick answer when you simply want to know if there are any untracked changes or modifications in this repository or its submodules. For finer-grained control and more detailed reporting, use status() instead.

fake_dates_enabled

Is the repository configured to use fake dates?
fetch (remote=None, refspec=None, all_=False, git_options=None, **kwargs)

Fetches changes from a remote (or all remotes).

Parameters

- **remote** (str, optional) – name of the remote to fetch from. If no remote is given and all_ is not set, the tracking branch is fetched.

- **refspec** (str or list, optional) – refspec(s) to fetch.

- **all** (bool, optional) – fetch all remotes (and all of their branches). Fails if remote was given.

- **git_options** (list, optional) – Additional command line options for git-fetch.
• **kwargs** – Deprecated. GitPython-style keyword argument for git-fetch. Will be appended to any git_options.

```python
def fetch_(remote=None, refspec=None, all_=False, git_options=None)
Like fetch, but returns a generator
```

```python
def format_commit_(fmt, commitish=None)
Return git show output for commitish.
```

**Parameters**

- **fmt** (*str*) – A format string accepted by git show.
- **commitish** (*str*, *optional*) – Any commit identifier (defaults to “HEAD”).

**Returns**

**Return type** str or, if there are not commits yet, None.

```python
def gc(allow_background=False, auto=False)
Perform house keeping (garbage collection, repacking)
```

```python
def get_active_branch()
Get the name of the active branch
```

**Returns**

Returns None if there is no active branch, i.e. detached HEAD, and the branch name otherwise.

**Return type** str or None

```python
def get_branch_commits_(branch=None, limit=None, stop=None)
Return commit hexshas for a branch
```

**Parameters**

- **branch** (*str*, *optional*) – If not provided, assumes current branch
- **limit** (None | 'left-only', *optional*) – Limit which commits to report. If None – all commits (merged or not), if 'left-only’ – only the commits from the left side of the tree upon merges
- **stop** (*str*, *optional*) – hexsha of the commit at which stop reporting (matched one is not reported either)

**Yields** str

```python
def get_branches()
Get all branches of the repo.
```

**Returns**

Names of all branches of this repository.

**Return type** [str]

```python
def get_commit_date(branch=None, date='authored')
Get the date stamp of the last commit (in a branch or head otherwise)
```

**Parameters**

- **date** ({'authored', 'committed'}) – Which date to return. “authored” will be the date shown by “git show” and the one possibly specified via –date to git commit

**Returns**

None if no commit

**Return type** int or None

```python
def get_content_info(paths=None, ref=None, untracked='all', eval_file_type=True)
Get identifier and type information from repository content.
```

This is simplified front-end for git ls-files/tree.
Both commands differ in their behavior when queried about subdataset paths. `ls-files` will not report anything, `ls-tree` will report on the subdataset record. This function uniformly follows the behavior of `ls-tree` (report on the respective subdataset mount).

Parameters

- **paths** *(list(pathlib.PurePath) or None)* – Specific paths, relative to the resolved repository root, to query info for. Paths must be normed to match the reporting done by Git, i.e. no parent dir components (ala “some/../this”). If `None`, info is reported for all content.

- **ref** *(gitref or None)* – If given, content information is retrieved for this Git reference (via `ls-tree`), otherwise content information is produced for the present work tree (via `ls-files`). With a given reference, the reported content properties also contain a ‘bytesize’ record, stating the size of a file in bytes.

- **untracked** *({'no', 'normal', 'all'})* – If and how untracked content is reported when no ref was given: ‘no’: no untracked files are reported; ‘normal’: untracked files and entire untracked directories are reported as such; ‘all’: report individual files even in fully untracked directories.

- **eval_file_type** *(bool)* – If True, inspect file type of untracked files, and report annex symlink pointers as type ‘file’. This convenience comes with a cost; disable to get faster performance if this information is not needed.

Returns

Each content item has an entry under a pathlib `Path` object instance pointing to its absolute path inside the repository (this path is guaranteed to be underneath `Repo.path`). Each value is a dictionary with properties:

- **type** Can be ‘file’, ‘symlink’, ‘dataset’, ‘directory’

  Note that the reported type will not always match the type of content committed to Git, rather it will reflect the nature of the content minus platform/mode-specifics. For example, a symlink to a locked annexed file on Unix will have a type ‘file’, reported, while a symlink to a file in Git or directory will be of type ‘symlink’.

- **gitshasum** SHASUM of the item as tracked by Git, or None, if not tracked. This could be different from the SHASUM of the file in the worktree, if it was modified.

Return type  dict

Raises  ValueError – In case of an invalid Git reference (e.g. ‘HEAD’ in an empty repository)

**get_corresponding_branch** *(branch=None)*

Always returns None, a plain GitRepo has no managed branches

**get_files** *(branch=None)*

Get a list of files in git.

Parameters  branch *(str)* – Name of the branch to query. Default: active branch.

Returns  list of files.

Return type  [str]

**get_git_attributes** *

Query gitattributes which apply to top level directory

It is a thin compatibility/shortcut wrapper around more versatile get_gitattributes which operates on a list of paths and returns a dictionary per each path
Returns a dictionary with attribute name and value items relevant for the top ('.') directory of the repository, and thus most likely the default ones (if not overwritten with more rules) for all files within repo.

Return type dict

static get_git_dir(repo)
figure out a repo’s gitdir

`.git` might be a directory, a symlink or a file

Note: This method is likely to get deprecated, please use GitRepo.dot_git instead! That one’s not static, but it’s cheaper and you should avoid not having an instance of a repo you’re working on anyway. Note, that the property in opposition to this method returns an absolute path.

Parameters repo (path or Repo instance) – currently expected to be the repos base dir

Returns relative path to the repo’s git dir; So, default would be “.git”

Return type str

get_gitattributes(path, index_only=False)
Query gitattributes for one or more paths

Parameters

• path (path or list) – Path(s) to query. Paths may be relative or absolute.

• index_only (bool) – Flag whether to consider only gitattribute setting that are reflected in the repository index, not just in the work tree content.

Returns Each key is a queried path (always relative to the repository root), each value is a dictionary with attribute name and value items. Attribute values are either True or False, for set and unset attributes, or are the literal attribute value.

Return type dict

get_hexsha(commitish=None, short=False)
Return a hexsha for a given commitish.

Parameters

• commitish (str, optional) – Any identifier that refers to a commit (defaults to “HEAD”).

• short (bool, optional) – Return the abbreviated form of the hexsha.

Returns

Return type str or, if no commitish was given and there are no commits yet, None.

Raises ValueError – If a commitish was given, but no corresponding commit could be determined.

get_indexed_files()
Get a list of files in git’s index

Returns list of paths rooting in git’s base dir

Return type list
get_last_commit_hexsha(files)
Return the hash of the last commit the modified any of the given paths

get_merge_base(commitishes)
Get a merge base hexsha

Parameters
commitishes (str or list of str) – List of commitishes (branches, hexshas, etc) to determine the merge base of. If a single value provided, returns merge_base with the current branch.

Returns
If no merge-base for given commits, or specified treeish doesn’t exist, None returned

Return type
str or None

get_remote_branches()
Get all branches of all remotes of the repo.

Returns
Names of all remote branches.

Return type
list of str

get_remote_url(name, push=False)
Get the url of a remote.

Reads the configuration of remote name and returns its url or None, if there is no url configured.

Parameters
• name (str) – name of the remote
• push (bool) – if True, get the pushurl instead of the fetch url.

get_remotes(with_urls_only=False)
Get known remotes of the repository

Parameters
with_urls_only (bool, optional) – return only remotes which have urls

Returns
remotes – List of names of the remotes

Return type
list of str

get_revisions(revrange=None, fmt='%H', options=None)
Return list of revisions in revrange.

Parameters
• revrange (str or list of str or None, optional) – Revisions or revision ranges to walk. If None, revision defaults to HEAD unless a revision-modifying option like –all or –branches is included in options.
• fmt (string, optional) – Format accepted by –format option of git log. This should not contain new lines because the output is split on new lines.
• options (list of str, optional) – Options to pass to git log. This should not include –format.

Returns

Return type
List of revisions (str), formatted according to fmt.

get_staged_paths()
Returns a list of any stage repository path(s)

This is a rather fast call, as it will not depend on what is going on in the worktree.

get_submodules(sorted_=True, paths=None)
Return list of submodules.
Parameters

- `sorted (bool, optional)` – Sort submodules by path name.

- `paths (list (pathlib.PurePath), optional)` – Restrict submodules to those under `paths`.

Returns

- A list of submodule namedtuples if `compat` is true or otherwise a list of dictionaries as returned by `get_submodules_`

`get_submodules_ (paths=None)`

Yield submodules in this repository.

Parameters `paths (list (pathlib.PurePath), optional)` – Restrict submodules to those under `paths`.

Returns

- A generator that yields a dictionary with information for each submodule.

`get_tags (output=None)`

Get list of tags

Parameters `output (str, optional)` – If given, limit the return value to a list of values matching that particular key of the tag properties.

Returns Each item is a dictionary with information on a tag. At present this includes ‘hexsha’, and ‘name’, where the latter is the string label of the tag, and the former the hexsha of the object the tag is attached to. The list is sorted by the creator date (committer date for lightweight tags and tagger date for annotated tags), with the most recent commit being the last element.

Return type list

`classmethod get_toppath (path, follow_up=True, git_options=None)`

Return top-level of a repository given the path.

Parameters

- `follow_up (bool)` – If path has symlinks – they get resolved by git. If follow up is True, we will follow original path up until we hit the same resolved path. If no such path found, resolved one would be returned.

- `git_options (list of str)` – options to be passed to the git rev-parse call

- `None if no parent directory contains a git repository.`

`get_tracking_branch (branch=None, remote_only=False)`

Get the tracking branch for `branch` if there is any.

Parameters

- `branch (str)` – local branch to look up. If none is given, active branch is used.

- `remote_only (bool)` – Don’t return a value if the upstream remote is set to “.” (meaning this repository).

Returns (remote or None, refspec or None) of the tracking branch

Return type tuple
**git_version** = None

**is_ancestor**(reva, revb)
Is reva an ancestor of revb?

**Parameters**

- **revb**(reva, ) – Revisions.

**Returns**

**Return type** bool

**is_valid_git**()
Returns whether the underlying repository appears to be still valid

Note, that this almost identical to the classmethod is_valid_repo(). However, if we are testing an existing instance, we can save Path object creations. Since this testing is done a lot, this is relevant. Creation of the Path objects in is_valid_repo() takes nearly half the time of the entire function.

Also note, that this method is bound to an instance but still class-dependent, meaning that a subclass cannot simply overwrite it. This is particularly important for the call from within __init__(), which in turn is called by the subclasses’ __init__. Using an overwrite would lead to the wrong thing being called.

**classmethod is_valid_repo**(path)
Returns if a given path points to a git repository

**is_with_annex**()
Report if GitRepo (assumed) has (remotes with) a git-annex branch

**merge**(name, options=None, msg=None, allow_unrelated=False, **kwargs)

**precommit**()
Perform pre-commit maintenance tasks

**push**(remote=None, refspec=None, all_remotes=False, all_=False, git_options=None, **kwargs)
Push changes to a remote (or all remotes).

If remote and refspec are specified, and remote has remote.{remote}.datalad-push-default-first configuration variable set (e.g. by create-sibling-github), we will first push the first refspec separately to possibly ensure that the first refspec is chosen by remote as the “default branch”. See https://github.com/datalad/datalad/issues/4997 Upon successful push if this variable was set in the local git config, we unset it, so subsequent pushes would proceed normally.

**Parameters**

- **remote**(str, optional) – name of the remote to push to. If no remote is given and all_ is not set, the tracking branch is pushed.
- **refspec**(str or list, optional) – refspec(s) to push.
- **all**(bool, optional) – push to all remotes. Fails if remote was given.
- **git_options**(list, optional) – Additional command line options for git-push.
- **kwargs** – Deprecated. GitPython-style keyword argument for git-push. Will be appended to any git_options.

**push_**(remote=None, refspec=None, all_=False, git_options=None)
Like push, but returns a generator

**remove**(files, recursive=False, **kwargs)
Remove files.

Calls git-rm.

**Parameters**
• **files** *(str)* – list of paths to remove

• **recursive** *(False)* – whether to allow recursive removal from subdirectories

• **kwargs** – see **__init__**

**Returns** list of successfully removed files.

**Return type** *[str]*

**remove_branch**(branch)

**remove_remote**(name)

Remove existing remote

**save**(message=None, paths=None, _status=None, **kwargs)

Save dataset content.

**Parameters**

• **message** *(str or None)* – A message to accompany the changeset in the log. If None, a default message is used.

• **paths** *(list or None)* – Any content with path matching any of the paths given in this list will be saved. Matching will be performed against the dataset status (GitRepo.status()), or a custom status provided via _status. If no paths are provided, ALL non-clean paths present in the repo status or _status will be saved.

• **_status** *(dict or None)* – If None, Repo.status() will be queried for the given ds. If a dict is given, its content will be used as a constraint. For example, to save only modified content, but no untracked content, set paths to None and provide a _status that has no entries for untracked content.

• ****kwargs** – Additional arguments that are passed to underlying Repo methods. Supported:
  – git : bool (passed to Repo.add())
  – eval_submodule_state : {‘full’, ‘commit’, ‘no’} passed to Repo.status()
  – untracked : {‘no’, ‘normal’, ‘all’} - passed to Repo.status()
  – amend : bool (passed to GitRepo.commit)

**save**(message=None, paths=None, _status=None, **kwargs)

Like save() but working as a generator.

**set_gitattributes**(attrs, attrfile='.gitattributes', mode='a')

Set gitattributes

By default appends additional lines to attrfile. Note, that later lines in attrfile overrule earlier ones, which may or may not be what you want. Set mode to ‘w’ to replace the entire file by what you provided in attrs.

**Parameters**

• **attrs** *(list)* – Each item is a 2-tuple, where the first element is a path pattern, and the second element is a dictionary with attribute key/value pairs. The attribute dictionary must use the same semantics as those returned by get_gitattributes(). Path patterns can use absolute paths, in which case they will be normalized relative to the directory that contains the target .gitattributes file (see attrfile).

• **attrfile** *(path)* – Path relative to the repository root of the .gitattributes file the attributes shall be set in.

• **mode** *(str)* – ‘a’ to append .gitattributes, ‘w’ to replace it
**set_remote_url**(*name*, *url*, *push=False*)

Set the URL a remote is pointing to

Sets the URL of the remote *name*. Requires the remote to already exist.

**Parameters**

- **name** *(str)* – name of the remote
- **url** *(str)* –
- **push** *(bool)* – if True, set the push URL, otherwise the fetch URL

**status**(*paths=None, untracked='all', eval_submodule_state='full')

Simplified *git status* equivalent.

**Parameters**

- **paths** *(list or None)* – If given, limits the query to the specified paths. To query all paths specify *None*, not an empty list. If a query path points into a subdataset, a report is made on the subdataset record within the queried dataset only (no recursion).
- **untracked** *({'no', 'normal', 'all'})* – If and how untracked content is reported: ‘no’: no untracked files are reported; ‘normal’: untracked files and entire untracked directories are reported as such; ‘all’: report individual files even in fully untracked directories.
- **eval_submodule_state** *({'full', 'commit', 'no'})* – If ‘full’ (the default), the state of a submodule is evaluated by considering all modifications, with the treatment of untracked files determined by *untracked*. If ‘commit’, the modification check is restricted to comparing the submodule’s HEAD commit to the one recorded in the superdataset. If ‘no’, the state of the subdataset is not evaluated.

**Returns**

Each content item has an entry under a pathlib *Path* object instance pointing to its absolute path inside the repository (this path is guaranteed to be underneath *Repo.path*). Each value is a dictionary with properties:

- **type** Can be ‘file’, ‘symlink’, ‘dataset’, ‘directory’

**Return type** dict

**tag**(*tag, message=None, commit=None, options=None*)

Tag a commit

**Parameters**

- **tag** *(str)* – Custom tag label. Must be a valid tag name.
- **message** *(str, optional)* – If provided, adds ['-m', <message>] to the list of *git tag* arguments.
- **commit** *(str, optional)* – If provided, will be appended as last argument to the *git tag* call, and can be used to identify the commit that shall be tagged, if not HEAD.
- **options** *(list, optional)* – Additional command options, inserted prior a potential *commit* argument.

**untracked_files**

Legacy interface, do not use! Use the status() method instead.

Despite its name, it also reports on untracked datasets, and yields their names with trailing path separators.
**update_ref** *(ref, value, oldvalue=None, symbolic=False)*

Update the object name stored in a ref "safely".

Just a shim for *git update-ref* call if not symbolic, and *git symbolic-ref* if symbolic

**Parameters**

- **ref** *(str)* – Reference, such as *ref/heads/BRANCHNAME* or HEAD.
- **value** *(str)* – Value to update to, e.g. hexsha of a commit when updating for a branch ref, or branch ref if updating HEAD
- **oldvalue** *(str)* – Value to update from. Safeguard to be verified by *git*. This is only valid if *symbolic* is not True.
- **symbolic** *(None)* – To instruct if ref is symbolic, e.g. should be used in case of ref=HEAD

**update_remote** *(name=None, verbose=False)*

**update_submodule** *(path, mode='checkout', init=False)*

Update a registered submodule.

This will make the submodule match what the superproject expects by cloning missing submodules and updating the working tree of the submodules. The “updating” can be done in several ways depending on the value of submodule.<name>.update configuration variable, or the *mode* argument.

**Parameters**

- **path** *(str)* – Identifies which submodule to operate on by it’s repository-relative path.
- **mode** *(‘checkout’, ‘rebase’, ‘merge’)* – Update procedure to perform. ‘checkout’: the commit recorded in the superproject will be checked out in the submodule on a detached HEAD; ‘rebase’: the current branch of the submodule will be rebased onto the commit recorded in the superproject; ‘merge’: the commit recorded in the superproject will be merged into the current branch in the submodule.
- **init** *(bool)* – If True, initialize all submodules for which “git submodule init” has not been called so far before updating. Primarily provided for internal purposes and should not be used directly since would result in not so annex-friendly .git symlinks/references instead of full featured .git/ directories in the submodules

**class** datalad.support.gitrepo.PushInfo

Bases: dict

dict that carries results of a push operation of a single head

Reduced variant of GitPython’s RemoteProgress class

**Original copyright**: Copyright (C) 2008, 2009 Michael Trier and contributors

**Original license**: BSD 3-Clause “New” or “Revised” License

**DELETED** = 64
**ERROR** = 1024
**FAST_FORWARD** = 256
**FORCED_UPDATE** = 128
**NEW_HEAD** = 2
**NEW_TAG** = 1
**NO_MATCH** = 4
REJECTED = 8
REMOTE_FAILURE = 32
REMOTE_REJECTED = 16
UP_TO_DATE = 512

class datalad.support.gitrepo.StdOutCaptureWithGitProgress(*args)
    Bases: datalad.support.gitrepo.GitProgress
    proc_out = True
datalad.support.gitrepo.to_options(split_single_char_options=True, **kwargs)
    Transform keyword arguments into a list of cmdline options
    Imported from GitPython.
    Original copyright: Copyright (C) 2008, 2009 Michael Trier and contributors
    Original license: BSD 3-Clause “New” or “Revised” License

Parameters
- split_single_char_options(bool) -
- kwargs -

Returns

Return type list

datalad.support.annexrepo

Interface to git-annex by Joey Hess.
For further information on git-annex see https://git-annex.branchable.com/.

class datalad.support.annexrepo.AnnexInitOutput(done_future=None, encoding=None)
    Bases: datalad.runner.protocol.WitlessProtocol
    pipe_data_received(fd, byts)
    Called when the subprocess writes data into stdout/stderr pipe.
    fd is int file descriptor. data is bytes object.
    proc_err = True
    proc_out = True
class datalad.support.annexrepo.AnnexJsonProtocol(done_future=None, total_nbytes=None)
    Bases: datalad.runner.protocol.WitlessProtocol
    Subprocess communication protocol for annex ... -json commands
    Importantly, parsed JSON content is returned as a result, not string output.
    This protocol also handles git-annex’s JSON-style progress reporting.
    connection_made(transport)
    Called when a connection is made.
    The argument is the transport representing the pipe connection. To receive data, wait for data_received() calls. When the connection is closed, connection_lost() is called.
pipe_data_received(fd, data)
   Called when the subprocess writes data into stdout/stderr pipe.
   
   fd is int file descriptor. data is bytes object.

proc_err = True
proc_out = True
process_exited()
   Called when subprocess has exited.

class datalad.support.annexrepo.AnnexRepo(path, runner=None, backend=None, always_commit=True, create=True, create_sanity_checks=True, init=False, batch_size=None, version=None, description=None, git_opts=None, annex_opts=None, annex_init_opts=None, repo=None, fake_dates=False)

   Bases: datalad.support.gitrepo.GitRepo, datalad.dataset.repo.RepoInterface

Representation of an git-annex repository.

Paths given to any of the class methods will be interpreted as relative to PWD, in case this is currently beneath AnnexRepo’s base dir (self.path). If PWD is outside of the repository, relative paths will be interpreted as relative to self.path. Absolute paths will be accepted either way.

GIT_ANNEX_MIN_VERSION = '8.20200309'
WEB_UUID = '00000000-0000-0000-0000-000000000001'

add(files, git=None, backend=None, options=None, jobs=None, git_options=None, annex_options=None, update=False)
   Add file(s) to the repository.

Parameters
   
   • files(list of str) – list of paths to add to the annex
   • git(bool) – if True, add to git instead of annex.
   • backend –
   • options –
   • update(bool) –

   --update option for git-add. From git’s manpage: Update the index just where it already has an entry matching <pathspec>. This removes as well as modifies index entries to match the working tree, but adds no new files.

   If no <pathspec> is given when --update option is used, all tracked files in the entire working tree are updated (old versions of Git used to limit the update to the current directory and its subdirectories).

   Note: Used only, if a call to git-add instead of git-annex-add is performed

Returns

   Return type list of dict or dict

add_(files, git=None, backend=None, options=None, jobs=None, git_options=None, annex_options=None, update=False)
   Like add, but returns a generator
add_url_to_file (file, url, options=None, backend=None, batch=False, git_options=None, annex_options=None, unlink_existing=False)

Add file from url to the annex.

Downloads file from url and add it to the annex. If annex knows file already, records that it can be downloaded from url.

Note: Consider using the higher-level download_url instead.

Parameters

- **file**(str)
- **url**(str)
- **options**(list) – options to the annex command
- **batch**(bool, optional) – initiate or continue with a batched run of annex addurl, instead of just calling a single git annex addurl command
- **unlink_existing**(bool, optional) – by default crashes if file already exists and is under git. With this flag set to True would first remove it.

Returns

In batch mode only ATM returns dict representation of json output returned by annex

Return type

dict

add_urls (urls, options=None, backend=None, cwd=None, jobs=None, git_options=None, annex_options=None)

Downloads each url to its own file, which is added to the annex.

Parameters

- **urls**(list of str)
- **options**(list, optional) – options to the annex command
- **cwd**(string, optional) – working directory from within which to invoke git-annex

adjust (options=None)

enter an adjusted branch

This command is only available in a v6+ git-annex repository.

Parameters

- **options**(list of str) – currently requires ‘–unlock’ or ‘–fix’; default: –unlock

annexstatus (paths=None, untracked='all')

call_annex (args, files=None)

Call annex and return standard output.

Parameters

- **args**(list of str) – Arguments to pass to annex.
- **files**(list of str, optional) – File arguments to pass to annex. The advantage of passing these here rather than as part of args is that the call will be split into multiple calls to avoid exceeding the maximum command line length.

Returns

Return type

standard output (str)

Raises

See _call_annex() for information on Exceptions.

call_annex_items_ (args, files=None, sep=None)

Call git-annex, splitting output on sep.
Parameters

- **args** *(list of str)* – Arguments to pass to `git-annex`.
- **files** *(list of str, optional)* – File arguments to pass to `annex`. The advantage of passing these here rather than as part of `args` is that the call will be split into multiple calls to avoid exceeding the maximum command line length.
- **sep** *(str, optional)* – Split the output by `str.split(sep)` rather than `str.splitlines`.

Returns

**Return type** Generator that yields output items.

**Raises** See `_call_annex()` for information on Exceptions.

**call_annex_oneline** *(args, files=None)*

Call annex for a single line of output.

This method filters prior output line selection to exclude git-annex status output that is triggered by command execution, but is not related to the particular command. This includes lines like:

(merging ... into git-annex) (recording state ...)

Parameters

- **args** *(list of str)* – Arguments to pass to `annex`.
- **files** *(list of str, optional)* – File arguments to pass to `annex`. The advantage of passing these here rather than as part of `args` is that the call will be split into multiple calls to avoid exceeding the maximum command line length.

Returns Either a single output line, or an empty string if there was no output.

**Return type** str

**Raises**

- AssertionError if there is more than one line of output.
- See `_call_annex()` for information on Exceptions.

**call_annex_records** *(args, files=None)*

Call annex with `-json`* to request structured result records

This method behaves like `call_annex()`, but returns parsed result records.

Parameters

- **args** *(list of str)* – Arguments to pass to `annex`.
- **files** *(list of str, optional)* – File arguments to pass to `annex`. The advantage of passing these here rather than as part of `args` is that the call will be split into multiple calls to avoid exceeding the maximum command line length.

Returns List of parsed result records.

**Return type** list(dict)

**Raises**

- CommandError if the call exits with a non-zero status. All result records captured until the non-zero exit are available in the exception’s `kwargs`-dict attribute under key ‘stdout_json’.
See `_call_annex()` for more information on Exceptions.

**classmethod check_direct_mode_support()**

Does git-annex version support direct mode?

The result is cached at `cls.supports_direct_mode`.

**Returns**

**Return type** bool

**classmethod check_repository_versions()**

Get information on supported and upgradable repository versions.

The result is cached at `cls.repository_versions`.

**Returns** supported -> list of supported versions (int) upgradable -> list of upgradable versions (int)

**Return type** dict

**copy_to(files, remote, options=None, jobs=None)**

Copy the actual content of `files` to `remote`

**Parameters**

- files (str or list of str) – path(s) to copy
- remote (str) – name of remote to copy files to

**Returns** files successfully copied

**Return type** list of str

**default_backends**

**drop(files, options=None, key=False, jobs=None)**

Drops the content of annexed files from this repository.

Drops only if possible with respect to required minimal number of available copies.

**Parameters**

- files (list of str) – paths to drop
- options (list of str, optional) – commandline options for the git annex drop command
- jobs (int, optional) – how many jobs to run in parallel (passed to git-annex call)

**Returns** ‘success’ item in each object indicates failure/success per file path.

**Return type** list(JSON objects)

**drop_key(keys, options=None, batch=False)**

Drops the content of annexed files from this repository referenced by keys

Dangerous: it drops without checking for required minimal number of available copies.

**Parameters**

- keys (list of str, str)–
- batch (bool, optional) – initiate or continue with a batched run of annex dropkey, instead of just calling a single git annex dropkey command

**enable_remote(name, options=None, env=None)**

Enables use of an existing special remote
Parameters

- **name** *(str)* – name, the special remote was created with

- **options** *(list, optional)*

**file_has_content** *(files, allow_quick=False, batch=False)*

Check whether files have their content present under annex.

Parameters

- **files** *(list of str)* – file(s) to check for being actually present.

- **allow_quick** *(bool, optional)* – This is no longer supported.

Returns

For each input file states whether file has content locally

Return type

list of bool

**find** *(files, batch=False)*

Run *git annex find* on file(s).

Parameters

- **files** *(list of str)* – files to find under annex

- **batch** *(bool, optional)* – initiate or continue with a batched run of annex find, instead of just calling a single *git annex find* command. If any items in *files* are directories, this value is treated as False.

Returns

- A dictionary the maps each item in *files* to its *git annex find* result. Items without a successful result will be an empty string, and

- multi-item results (which can occur for if *files* includes a directory) will be returned as a list.

**fsck** *(paths=None, remote=None, fast=False, annex_options=None, git_options=None)*

Front-end for *git-annex fsck*

Parameters

- **paths** *(list)* – Limit operation to specific paths.

- **remote** *(str)* – If given, the identified remote will be fsck’ed instead of the local repository.

- **fast** *(bool)* – If True, typically means that no actual content is being verified, but tests are limited to the presence of files.

**get** *(files, remote=None, options=None, jobs=None, key=False)*

Get the actual content of files

Parameters

- **files** *(list of str)* – paths to get

- **remote** *(str, optional)* – from which remote to fetch content

- **options** *(list of str, optional)* – commandline options for the *git annex get* command

- **jobs** *(int or None, optional)* – how many jobs to run in parallel (passed to *git-annex call*). If not specified (None), then
• **key** *(bool, optional)* – If provided file value is actually a key

**Returns**

**files**

**Return type** list of dict

### get_annexed_files

**get_annexed_files** *(with_content_only=False, patterns=None)*

Get a list of files in annex

**Parameters**

• **with_content_only** *(bool, optional)* – Only list files whose content is present.

• **patterns** *(list, optional)* – Globs to pass to annex’s *–include*. Files that match any of these will be returned (i.e., they’ll be separated by *–or*).

**Returns**

**A list of POSIX file names**

### get_content_annexinfo

**get_content_annexinfo** *(paths=None, init=’git’, ref=None, eval_availability=False, key_prefix=”, **kwargs)*

**Parameters**

• **paths** *(list or None)* – Specific paths to query info for. In None, info is reported for all content.

• **init** *(’git’ or dict-like or None)* – If set to ‘git’ annex content info will amend the output of GitRepo.get_content_info(), otherwise the dict-like object supplied will receive this information and the present keys will limit the report of annex properties. Alternatively, if None is given, no initialization is done, and no limit is in effect.

• **ref** *(gitref or None)* – If not None, annex content info for this Git reference will be produced, otherwise for the content of the present worktree.

• **eval_availability** *(bool)* – If this flag is given, evaluate whether the content of any annex’ed file is present in the local annex.

• ****kwargs – Additional arguments for GitRepo.get_content_info(), if init is set to ‘git’.

**Returns**

Each content item has an entry under its relative path within the repository. Each value is a dictionary with properties:

• **type** Can be ‘file’, ‘symlink’, ‘dataset’, ‘directory’

• **revision** SHASUM is last commit affecting the item, or None, if not tracked.

• **key** Annex key of a file (if an annex’ed file)

• **bytesize** Size of an annexed file in bytes.

• **has_content** Bool whether a content object for this key exists in the local annex (with eval_availability)

• **objloc** pathlib.Path of the content object in the local annex, if one is available (with eval_availability)

**Return type** dict

### get_contentlocation

**get_contentlocation** *(key, batch=False)*

Get location of the key content

Normally under .git/annex objects in indirect mode and within file tree in direct mode.
Unfortunately there is no (easy) way to discriminate situations when given key is simply incorrect (not known to annex) or its content not currently present – in both cases annex just silently exits with -1

Parameters

- **key** *(str)* – key
- **batch** *(bool, optional)* – initiate or continue with a batched run of annex content-location

Returns  path relative to the top directory of the repository. If no content is present, empty string is returned

Return type  str

get_corresponding_branch *(branch=None)*

Get the name of a potential corresponding branch.

Parameters  branch *(str, optional)* – Name of the branch to report a corresponding branch for; defaults to active branch

Returns  Name of the corresponding branch, or None if there is no corresponding branch.

Return type  str or None

get_description *(uuid=None)*

Get annex repository description

Parameters  uuid *(str, optional)* – For which remote (based on uuid) to report description for

Returns  None returned if not found

Return type  str or None

get_file_backend *(files)*

Get the backend currently used for file(s).

Parameters  files *(list of str)* –

Returns  For each file in input list indicates the used backend by a str like “SHA256E” or “MD5”.

Return type  list of str

get_file_key *(files, batch=None)*

Get key of an annexed file.

Parameters

- **files** *(str or list)* – file(s) to look up
- **batch** *(None or bool, optional)* – If True, lookupkey –batch process will be used, which would not crash even if provided file is not under annex (but directly under git), but rather just return an empty string. If False, invokes without –batch. If None, use batch mode if more than a single file is provided.

Returns  keys used by git-annex for each of the files; in case of a list an empty string is returned if there was no key for that file

Return type  str or list

Raises

- FileInGitError – If running in non-batch mode and a file is under git, not annex
- FileNotInAnnexError – If running in non-batch mode and a file is not under git at all
get_file_size(path)
get_groupwanted(name)
    Get groupwanted expression for a group name
Parameters name (str) – Name of the groupwanted group
classmethod get_key_backend(key)
    Get the backend from a given key
get_metadata(files, timestamps=False, batch=False)
    Query git-annex file metadata
Parameters
    • files (str or iterable(str)) – One or more paths for which metadata is to be queried. If one or more paths could be directories, batch=False must be given to prevent git-annex given an error. Due to technical limitations, such error will lead to a hanging process.
    • timestamps (bool, optional) – If True, the output contains a ‘metadatakey-lastchanged’ key for every metadata item, reflecting the modification time, as well as a ‘lastchanged’ key with the most recent modification time of any metadata item.
    • batch (bool, optional) – If True, a metadata –batch process will be used, and only confirmed annex’ed files can be queried (else query will hang indefinitely). If False, invokes without –batch, and gives all files as arguments (this can be problematic with a large number of files).
Returns One tuple per file (could be more items than input arguments when directories are given). First tuple item is the filename, second item is a dictionary with metadata key/value pairs. Note that annex metadata tags are stored under the key ‘tag’, which is a regular metadata item that can be manipulated like any other.
Return type generator
get_preferred_content(property, remote=None)
    Get preferred content configuration of a repository or remote
Parameters
    • property ("wanted", "required", "group") – Type of property to query
    • remote (str, optional) – If not specified (None), returns the property for the local repository.
Returns Whether the setting is returned, or None if there is none.
Return type str
Raises
    • ValueError – If an unknown property label is given.
    • CommandError – If the annex call errors.
get_remotes(with_urls_only=False, exclude_special_remotes=False)
    Get known (special-) remotes of the repository
Parameters
    • exclude_special_remotes (bool, optional) – if True, don’t return annex special remotes
    • with_urls_only (bool, optional) – return only remotes which have urls
Returns **remotes** – List of names of the remotes

**Return type** list of str

**static** `get_size_from_key` *(key)*

A little helper to obtain size encoded in a key

Returns size of the file or None if either no size is encoded in the key or key was None itself

**Return type** int or None

**Raises** `ValueError` – if key is considered invalid (at least its size-related part)

**get_special_remotes** *(*)

Get info about all known (not just enabled) special remotes.

The present implementation is not able to report on special remotes that have only been configured in a private annex repo (annex.private=true).

**Returns**

Keys are special remote UUIDs. Each value is a dictionary with configuration information git-annex has for the remote. This should include the ‘type’ and ‘name’ as well as any `initremote` parameters that git-annex stores.

Note: This is a faithful translation of git-annex:remote.log with one exception. For a special remote initialized with the –sameas flag, git-annex stores the special remote name under the “sameas-name” key, we copy this value under the “name” key so that callers don’t have to check two places for the name. If you need to detect whether you’re working with a sameas remote, the presence of either “sameas-name” or “sameas-uuid” is a reliable indicator.

**Return type** dict

**get_tracking_branch** *(branch=None, remote_only=False, corresponding=True)*

Get the tracking branch for `branch` if there is any.

By default returns the tracking branch of the corresponding branch if `branch` is a managed branch.

**Parameters**

- `branch` *(str)* – local branch to look up. If none is given, active branch is used.
- `remote_only` *(bool)* – Don’t return a value if the upstream remote is set to “.” (meaning this repository).
- `corresponding` *(bool)* – If True actually look up the corresponding branch of `branch` (also if `branch` isn’t explicitly given)

**Returns** (remote or None, refspec or None) of the tracking branch

**Return type** tuple

**get_urls** *(file_, key=False, batch=False)*

Get URLs for a file/key

**Parameters**

- `file` *(str)* –
- `key` *(bool, optional)* – Whether provided files are actually annex keys

**Returns**

**Return type** A list of URLs

`git_annex_version = None`
info \((files, batch=False, fast=False)\)

Provide annex info for file(s).

**Parameters**  
files \((list of str)\) – files to look for

**Returns**  
Info for each file

**Return type**  
dict

init_remote \((name, options)\)

Creates a new special remote

**Parameters**  
name \((str)\) – name of the special remote

is_available \((file, remote=None, key=False, batch=False)\)

Check if file or key is available (from a remote)

In case if key or remote is misspecified, it wouldn’t fail but just keep returning False, although possibly also complaining out loud :)

**Parameters**  
• file \((str)\) – Filename or a key
  • remote \((str, optional)\) – Remote which to check. If None, possibly multiple remotes are checked before positive result is reported
  • key \((bool, optional)\) – Whether provided files are actually annex keys
  • batch \((bool, optional)\) – Initiate or continue with a batched run of annex checkpoint

**Returns**  
with True indicating that file/key is available from (the) remote

**Return type**  
bool

is_crippled_fs()

Return True if git-annex considers current filesystem ‘crippled’.

**Returns**

**Return type**  
True if on crippled filesystem, False otherwise

is_direct_mode()

Return True if annex is in direct mode

**Returns**

**Return type**  
True if in direct mode, False otherwise.

is_initialized()

quick check whether this appears to be an annex-init’ed repo

is_managed_branch \((branch=None)\)

Whether \(branch\) is managed by git-annex.

ATM this returns True if on an adjusted branch of annex v6+ repository: either ‘adjusted/my_branch(unlocked)’ or ‘adjusted/my_branch(fixed)’

Note: The term ‘managed branch’ is used to make clear it’s meant to be more general than the v6+ ‘adjusted branch’.

**Parameters**  
branch \((str)\) – name of the branch; default: active branch

**Returns**  
True if on a managed branch, False otherwise

**Return type**  
bool
**is_remote_annex_ignored** *(remote)*
Return True if remote is explicitly ignored

**is_special_annex_remote** *(remote, check_if_known=True)*
Return whether remote is a special annex remote
Decides based on the presence of an annex- option and lack of a configured URL for the remote.

**is_under_annex** *(files, allow_quick=False, batch=False)*
Check whether files are under annex control

**Parameters**

- **files** *(list of str)* – file(s) to check for being under annex
- **allow_quick** *(bool, optional)* – This is no longer supported.

**Returns** For each input file states whether file is under annex

**Return type** list of bool

**is_valid_annex** *(allow_noninitialized=False, check_git=True)*
Returns whether the underlying repository appears to be still valid
Note, that this almost identical to the classmethod is_valid_repo(). However, if we are testing an existing instance, we can save Path object creations. Since this testing is done a lot, this is relevant. Creation of the Path objects in is_valid_repo() takes nearly half the time of the entire function.

Also note, that this method is bound to an instance but still class-dependent, meaning that a subclass cannot simply overwrite it. This is particularly important for the call from within __init__(), which in turn is called by the subclasses’ __init__. Using an overwrite would lead to the wrong thing being called.

**classmethod is_valid_repo** *(path, allow_noninitialized=False)*
Return True if given path points to an annex repository

**localsync** *(remote=None, managed_only=False)*
Consolidate the local git-annex branch and/or managed branches.
This method calls *git annex sync* to perform purely local operations that:

1. Update the corresponding branch of any managed branch.
2. Synchronize the local ‘git-annex’ branch with respect to particular or all remotes (as currently reflected in the local state of their remote ‘git-annex’ branches).

If a repository has git-annex’s ‘synced/...’ branches these will be updated. Otherwise, such branches that are created by *git annex sync* are removed again after the sync is complete.

**Parameters**

- **remote** *(str or list, optional)* – If given, specifies the name of one or more remotes to sync against. If not given, all remotes are considered.
- **managed_only** *(bool, optional)* – Only perform a sync if a managed branch with a corresponding branch is detected. By default, a sync is always performed.

**merge_annex** *(remote=None)*

**migrate_backend** *(files, backend=None)*
Changes the backend used for *file*.
The backend used for the key-value of *files*. Only files currently present are migrated. Note: There will be no notification if migrating fails due to the absence of a file’s content!

**Parameters**

• **files** *(list)* – files to migrate.

• **backend** *(str)* – specify the backend to migrate to. If none is given, the default backend of this instance will be used.

**precommit()**
Perform pre-commit maintenance tasks, such as closing all batched annexes since they might still need to flush their changes into index

**remove (files, force=False, **kwargs)**
Remove files from git/annex

**Parameters**

• **files** –

• **force** *(bool, optional)* –

**repo_info (fast=False, merge_annex_branches=True)**
Provide annex info for the entire repository.

**Parameters**

• **fast** *(bool, optional)* – Pass –fast to git annex info.

• **merge_annex_branches** *(bool, optional)* – Whether to allow git-annex if needed to merge annex branches, e.g. to make sure up to date descriptions for git annex remotes

**Returns** Info for the repository, with keys matching the ones returned by annex

**Return type** *dict*

**repository_versions = None**

**rm_url (file, url)**
Record that the file is no longer available at the url.

**Parameters**

• **file** *(str)* –

• **url** *(str)* –

**set_default_backend (backend, persistent=True, commit=True)**
Set default backend

**Parameters**

• **backend** *(str)* –

• **persistent** *(bool, optional)* – If persistent, would add/commit to .gitattributes. If not – would set within .git/config

**set_groupwanted (name, expr)**
Set expr for the name groupwanted

**set_metadata (files, reset=None, add=None, init=None, remove=None, purge=None, recursive=False)**
Manipulate git-annex file-metadata

**Parameters**

• **files** *(str or list(str))* – One or more paths for which metadata is to be manipulated. The changes applied to each file item are uniform. However, the result may not be uniform across files, depending on the actual operation.
• **reset**(dict, optional) – Metadata items matching keys in the given dict are (re)set
to the respective values.

• **add**(dict, optional) – The values of matching keys in the given dict appended to
any possibly existing values. The metadata keys need not necessarily exist before.

• **init**(dict, optional) – Metadata items for the keys in the given dict are set to the
respective values, if the key is not yet present in a file’s metadata.

• **remove**(dict, optional) – Values in the given dict are removed from the metadata
items matching the respective key, if they exist in a file’s metadata. Non-existing values,
or keys do not lead to failure.

• **purge**(list, optional) – Any metadata item with a key matching an entry in the
given list is removed from the metadata.

• **recursive**(bool, optional) – If False, fail (with CommandError) when directory
paths are given as files.

Returns JSON obj per modified file

Return type list

**set_metadata** (files, reset=None, add=None, init=None, remove=None, purge=None, recursive=False)

Like set_metadata() but returns a generator

**set_preferred_content** (property, expr, remote=None)

Set preferred content configuration of a repository or remote

Parameters

• **property**({'wanted', 'required', 'group'}) – Type of property to query

• **expr**(str) – Any expression or label supported by git-annex for the given property.

• **remote**(str, optional) – If not specified (None), sets the property for the local
repository.

Returns Raw git-annex output in response to the set command.

Return type str

Raises

• ValueError – If an unknown property label is given.

• CommandError – If the annex call errors.

**set_remote_dead**(name)

Announce to annex that remote is “dead”

**set_remote_url**(name, url, push=False)

Set the URL a remote is pointing to

Sets the URL of the remote name. Requires the remote to already exist.

Parameters

• **name**(str) – name of the remote

• **url**(str)

• **push**(bool) – if True, set the push URL, otherwise the fetch URL; if True, additionally
set annexurl to url, to make sure annex uses it to talk to the remote, since access via fetch
URL might be restricted.
supports_direct_mode = None

supports_unlocked_pointers
Return True if repository version supports unlocked pointers.

sync (remotes=None, push=True, pull=True, commit=True, content=False, all=False, fast=False)
This method is deprecated, use call_annex(['sync', ...]) instead.

Synchronize local repository with remotes

Use this command when you want to synchronize the local repository with one or more of its remotes. You can specify the remotes (or remote groups) to sync with by name; the default if none are specified is to sync with all remotes.

Parameters

  • remotes (str, list(str), optional) – Name of one or more remotes to be sync’ed.
  • push (bool) – By default, git pushes to remotes.
  • pull (bool) – By default, git pulls from remotes
  • commit (bool) – A commit is done by default. Disable to avoid committing local changes.
  • content (bool) – Normally, syncing does not transfer the contents of annexed files. This option causes the content of files in the work tree to also be uploaded and downloaded as necessary.
  • all (bool) – This option, when combined with content, makes all available versions of all files be synced, when preferred content settings allow
  • fast (bool) – Only sync with the remotes with the lowest annex-cost value configured

unannex (files, options=None)
undo accidental add command

Use this to undo an accidental git annex add command. Note that for safety, the content of the file remains in the annex, until you use git annex unused and git annex dropunused.

Parameters

  • files (list of str)
  • options (list of str)

Returns successfully unannexed files

Return type list of str

unlock (files)
unlock files for modification

Note: This method is silent about errors in unlocking a file (e.g., the file has not content). Use the higher-level interface.unlock to get more informative reporting.

Parameters files (list of str)

Returns successfully unlocked files

Return type list of str

uuid
Annex UUID

Returns Returns a the annex UUID, if there is any, or None otherwise.
Return type str

whereis (files, output='uuids', key=False, options=None, batch=False)

Lists repositories that have actual content of file(s).

Parameters

- **files (list of str)** – files to look for
- **output (list of str)** – If ‘descriptions’, a list of remotes descriptions returned is per each file. If ‘full’, for each file a dictionary of all fields is returned as returned by annex
- **key (bool, optional)** – Whether provided files are actually annex keys
- **options (list, optional)** – Options to pass into git-annex call

Returns

if output == ‘descriptions’, contains a list of descriptions of remotes for each input file, describing the remote for each remote, which was found by git-annex whereis, like:

```
u'me@mycomputer:~/where/my/repo/is [origin]' or
u'web' or
u'me@mycomputer:~/some/other/clone'
```

if output == ‘uuids’, returns a list of uuids. if output == ‘full’, returns a dictionary with filenames as keys and values a detailed record, e.g.:

```
{'00000000-0000-0000-0000-000000000001': {
    'description': 'web',
    'here': False,
    'urls': ['http://127.0.0.1:43442/about.txt', 'http://example.com/someurl']
}}
```

Return type list of list of unicode or dict

class datalad.support.annexrepo.BatchedAnnex (annex_cmd, git_options=None, annex_options=None, path=None, json=False, output_proc=None, batch_opt='--batch')

Bases: datalad.cmd.BatchedCommand

Container for an annex process which would allow for persistent communication

class datalad.support.annexrepo.BatchedAnnexes (batch_size=0, git_options=None)

Bases: datalad.cmd.SafeDelCloseMixin, dict

Class to contain the registry of active batch’ed instances of annex for a repository

clear ()

Override just to make sure we don’t rely on __del__ to close all the pipes

close ()

Close communication to all the batched annexes

It does not remove them from the dictionary though

get (codename, annex_cmd=None, **kwargs)

Return the value for key if key is in the dictionary, else default.
datalad Documentation, Release 0.15.5

datalad.support.annexrepo.readline_until_ok_or_failed(stdout, maxlines=100)
Read stdout until line ends with ok or failed

datalad.support.archives

Various handlers/functionality for different types of files (e.g. for archives)

class datalad.support.archives.ArchivesCache(toppath=None, persistent=False)
    Bases: object
    Cache to maintain extracted archives

    Parameters
    • toppath (str) – Top directory under .git/ of which temp directory would be created. If
      not provided – random tmpdir is used
    • persistent (bool, optional) – Passed over into generated ExtractedArchives

clean(force=False)
get_archive(archive)
path

class datalad.support.archives.ExtractedArchive(archive, path=None, persistent=False)
    Bases: object
    Container for the extracted archive

    STAMP_SUFFIX = '.stamp'

    assure_extracted()
    Return path to the extracted archive. Extract archive if necessary

clean(force=False)
get_extracted_file(afile)
get_extracted_filename(afile)
    Return full path to the afile within extracted archive
    It does not actually extract any archive

gte_extracted_files()
    Generator to provide filenames which are available under extracted archive

gte_leading_directory(depth=None, consider=None, exclude=None)
    Return leading directory of the content within archive

    Parameters
    • depth (int or None, optional) – Maximal depth of leading directories to consider. If None - no upper limit
    • consider (list of str, optional) – Regular expressions for file/directory names to be considered (before exclude). Applied to the entire relative path to the file as in the archive
    • exclude (list of str, optional) – Regular expressions for file/directory names to be excluded from consideration. Applied to the entire relative path to the file as in the archive

    Returns If there is no single leading directory – None returned
Return type  str or None

is_extracted

path
Given an archive – return full path to it within cache (extracted)

stamp_path
datalad.support.archives.decompress_file(archive, dir_, leading_directories='strip')
Decompress archive into a directory dir_

Parameters

• archive (str) –
• dir (str) –
• leading_directories ({'strip', None}) – If strip, and archive contains a single leading directory under which all content is stored, all the content will be moved one directory up and that leading directory will be removed.

datalad.customremotes.main
datalad.customremotes.main.main(args=None, backend=None)
datalad.customremotes.main.setup_parser(backend)

datalad.customremotes.base
Base classes to custom git-annex remotes (e.g. extraction from archives)

class datalad.customremotes.base.AnnexCustomRemote(path=None, cost=None, fin=None, fout=None)
Bases: object
Base class to provide custom special remotes for git-annex
Implements git-annex special custom remotes protocol described at http://git-annex.branchable.com/design/external_special_remote_protocol/

AVAILABILITY = 'LOCAL'
COST = 100
CUSTOM_REMOTE_NAME = None
SUPPORTED_SCHEMES = ()
debug(msg)
error(msg, annex_err='ERROR')
gen_URLS(key)
Yield URL(s) associated with a Key.
get_DIRHASH(key, full=False)
Gets a two level hash associated with a Key.

Parameters

• full (bool, optional) – If True, would spit out full DIRHASH path, i.e. with a KEY/ directory
like "abc/def". This is always the same for any given Key, so (Something) –

• be used for eg, creating hash directory structures to store Keys in. (can) –

get_URLS (key)
Gets URL(s) associated with a Key.
Use a generator gen_URLS where possible. This one should be deprecated in 0.15.

get_contentlocation (key, absolute=False, verify_exists=True)
Return (relative to top or absolute) path to the file containing the key
This is a wrapper around AnnexRepo.get_contentlocation which provides caching of the result (we are asking the location for the same archive key often)

heavydebug (msg, *args, **kwargs)
info (msg)
main ()
Interface to the command line tool
progress (bytes)
read (req=None, n=1)
Read a message from git-annex
Parameters
• req (string, optional) – Expected request - first msg of the response
• n (int) – Number of response elements after first msg

req_CHECKPRESENT (key)

CHECKPRESENT-SUCCESS Key Indicates that a key has been positively verified to be present in the remote.

CHECKPRESENT-FAILURE Key Indicates that a key has been positively verified to not be present in the remote.

CHECKPRESENT-UNKNOWN Key ErrorMsg Indicates that it is not currently possible to verify if the key is present in the remote. (Perhaps the remote cannot be contacted.)

req_CHECKURL (url)
The remote replies with one of CHECKURL-FAILURE, CHECKURL-CONTENTS, or CHECKURL-MULTI.

CHECKURL-CONTENTS Size|UNKNOWN Filename Indicates that the requested url has been verified to exist. The Size is the size in bytes, or use “UNKNOWN” if the size could not be determined. The Filename can be empty (in which case a default is used), or can specify a filename that is suggested to be used for this url.

CHECKURL-MULTI Url Size|UNKNOWN Filename ... Indicates that the requested url has been verified to exist, and contains multiple files, which can each be accessed using their own url. Note that since a list is returned, neither the Url nor the Filename can contain spaces.

CHECKURL-FAILURE Indicates that the requested url could not be accessed.

req_CLAIMURL (url)
req_EXPORTSUPPORTED ()
req_GETAVAILABILITY ()
req_GETCOST()

req_INITREMOTE(*args)
    Initialize this remote. Provides high level abstraction.
    Specific implementation should go to _initialize

req_PREPARE(*args)
    Prepare “to deliver”. Provides high level abstraction
    Specific implementation should go to _prepare

req_REMOVE(key)
    REMOVE-SUCCESS Key Indicates the key has been removed from the remote. May be returned if the remote didn’t have the key at the point removal was requested.
    REMOVE-FAILURE Key ErrorMsg Indicates that the key was unable to be removed from the remote.

req_TRANSFER(cmd, key, file)

req_WHEREIS(key)
    Added in 5.2.20150812-17-g6bc46e3
    provide any information about ways to access the content of a key stored in it, such as eg, public urls. This will be displayed to the user by eg, git annex whereis. The remote replies with WHEREIS-SUCCESS or WHEREIS-FAILURE. Note that users expect git annex whereis to run fast, without eg, network access. This is not needed when SETURIPRESENT is used, since such uris are automatically displayed by git annex whereis.
    WHEREIS-SUCCESS String Indicates a location of a key. Typically an url, the string can be anything that it makes sense to display to the user about content stored in the special remote.
    WHEREIS-FAILURE Indicates that no location is known for a key.

send(*args)
    Send a message to git-annex
    Parameters *args (list of strings) – arguments to be joined by a space and passed to git-annex

send_unsupported(msg=None)
    Send UNSUPPORTED-REQUEST to annex and log optional message in our log

stop(msg=None)

exception datalad.customremotes.base.AnnexRemoteQuit
    Bases: Exception

datalad.customremotes.base.ensure_datalad_remote(repo, remote=None, encryption=None, autoenable=False)
    Initialize and enable datalad special remote if it isn’t already.
    Parameters
        • repo (AnnexRepo) –
        • remote (str, optional) – Special remote name. This should be one of the values in datalad.consts.DATALAD_SPECIAL_REMOTES_UUIDS and defaults to datalad.consts.DATALAD_SPECIAL_REMOTE.
        • autoenable (encryption,) – Passed to init_datalad_remote.

datalad.customremotes.base.generate_uuids()
    Generate UUIDs for our remotes. Even though quick, for consistency pre-generated and recorded in consts.py
**datalad customremotes.base.get_function_nargs**\((f)\)
**datalad customremotes.base.init_datalad_remote**\((repo, remote, encryption=None, autoenable=False, opts=[])\)

Initialize datalad special remote

**datalad customremotes.archives**

Custom remote to support getting the load from archives present under annex

```python
class datalad.customremotes.archives.ArchiveAnnexCustomRemote(persistent_cache=True, **kwargs)
```

Bases: `datalad.customremotes.base.AnnexCustomRemote`

Special custom remote allowing to obtain files from archives

Archives should also be under annex control.

**AVAILABILITY** = 'local'

**COST** = 500

**CUSTOM_REMOTE_NAME** = 'archive'

**SUPPORTED_SCHEMES** = ('dl+archive',)

**URL_PREFIX** = 'dl+archive:'

**URL_SCHEME** = 'dl+archive'

```python
cache
get_file_url(archive_file=None, archive_key=None, file=None, size=None)
```

Given archive (file or a key) and a file – compose URL for access

#### Examples

```python
dl+archive:SHA256E-s176–69...3e.tar.gz#path=1/d2/2d&size=123 when size of file within archive was known to be 123
dl+archive:SHA256E-s176–69...3e.tar.gz#path=1/d2/2d when size of file within archive was not pro-

Parameters

- **size**\((int, optional)\) – Size of the file. If not provided, will simply be empty

```python
req_CHECKPRESENT(key)
```

Check if copy is available

TODO: just proxy the call to annex for underlying tarball

Replies

**CHECKPRESENT-SUCCESS Key** Indicates that a key has been positively verified to be present in the remote.

**CHECKPRESENT-FAILURE Key** Indicates that a key has been positively verified to not be present in the remote.

**CHECKPRESENT-UNKNOWN Key ErrorMsg** Indicates that it is not currently possible to verify if the key is present in the remote. (Perhaps the remote cannot be contacted.)
req_CHECKURL (url)
  Replies

CHECKURL-CONTENTS Size|UNKNOWN Filename Indicates that the requested url has been verified to exist. The Size is the size in bytes, or use “UNKNOWN” if the size could not be determined. The Filename can be empty (in which case a default is used), or can specify a filename that is suggested to be used for this url.

CHECKURL-MULTI Url Size|UNKNOWN Filename … Indicates that the requested url has been verified to exist, and contains multiple files, which can each be accessed using their own url. Note that since a list is returned, neither the Url nor the Filename can contain spaces.

CHECKURL-FAILURE Indicates that the requested url could not be accessed.

req_REMOVE (key)
  REMOVE-SUCCESS Key Indicates the key has been removed from the remote. May be returned if the remote didn’t have the key at the point removal was requested
  REMOVE-FAILURE Key ErrorMsg Indicates that the key was unable to be removed from the remote.

req_WHEREIS (key)
  WHEREIS-SUCCESS String Indicates a location of a key. Typically an url, the string can be anything that it makes sense to display to the user about content stored in the special remote.
  WHEREIS-FAILURE Indicates that no location is known for a key.

stop (*args)
  Stop communication with annex

datalad.customremotes.archives.link_file_load (src, dst, dry_run=False)
  Just a little helper to hardlink files’s load

datalad.customremotes.archives.main()
  cmdline entry point

Configuration management

config
datalad.config

class datalad.config.ConfigManager (dataset=None, overrides=None, source='any')
  Bases: object

  Thin wrapper around git-config with support for a dataset configuration.

  The general idea is to have an object that is primarily used to read/query configuration option. Upon creation, current configuration is read via one (or max two, in the case of the presence of dataset-specific configuration) calls to git config. If this class is initialized with a Dataset instance, it supports reading and writing configuration from .datalad/config inside a dataset too. This file is committed to Git and hence useful to ship certain configuration items with a dataset.

  The API aims to provide the most significant read-access API of a dictionary, the Python ConfigParser, and GitPython’s config parser implementations.

  This class is presently not capable of efficiently writing multiple configurations items at once. Instead, each modification results in a dedicated call to git config. This author thinks this is OK, as he cannot think of a situation where a large number of items need to be written during normal operation.
Each instance carries a public `overrides` attribute. This dictionary contains variables that override any setting read from a file. The overrides are persistent across reloads.

Any DATALAD_* environment variable is also presented as a configuration item. Settings read from environment variables are not stored in any of the configuration files, but are read dynamically from the environment at each `reload()` call. Their values take precedence over any specification in configuration files, and even overrides.

**Parameters**

- **dataset** *(Dataset, optional)* – If provided, all `git config` calls are executed in this dataset’s directory. Moreover, any modifications are, by default, directed to this dataset’s configuration file (which will be created on demand)

- **overrides** *(dict, optional)* – Variable overrides, see general class documentation for details.

- **source** *(['any', 'local', 'dataset', 'dataset-local'], optional) – Which sources of configuration setting to consider. If ‘dataset’, configuration items are only read from a dataset’s persistent configuration file, if any is present (the one in `.datalad/config`, not `.git/config`); if ‘local’, any non-committed source is considered (local and global configuration in Git config’s terminology); if ‘dataset-local’, persistent dataset configuration and local, but not global or system configuration are considered; if ‘any’ all possible sources of configuration are considered.

**add**(var, value, where='dataset', reload=True)

Add a configuration variable and value

**Parameters**

- **var** *(str)* – Variable name including any section like `git config` expects them, e.g. ‘core.editor’

- **value** *(str)* – Variable value

- **where** *(['dataset', 'local', 'global', 'override'], optional) – Indicator which configuration file to modify. ‘dataset’ indicates the persistent configuration in `.datalad/config` of a dataset; ‘local’ the configuration of a dataset’s Git repository in `.git/config`; ‘global’ refers to the general configuration that is not specific to a single repository (usually in `$USER/.gitconfig`); ‘override’ limits the modification to the ConfigManager instance, and the assigned value overrides any setting from any other source.

- **reload** *(bool)* – Flag whether to reload the configuration from file(s) after modification. This can be disable to make multiple sequential modifications slightly more efficient.

**get**(k[, d]) → D[k] if k in D, else d. d defaults to None.

**Parameters**

- **default** *(optional)* – Value to return when key is not present. `None` by default.

- **get_all** *(bool, optional)* – If True, return all values of multiple identical configuration keys. By default only the last specified value is returned.

**get_from_source**(source, key, default=None)

Like `get()`, but a source can be specific.

If `source` is ‘dataset’, only the committed configuration is queried, overrides are applied. In the case of ‘local’, the committed configuration is ignored, but overrides and configuration from environment variables are applied as usual.

**get_value**(section, option, default=None)

Like `get()`, but with an optional default value
If the default is not None, the given default value will be returned in case the option did not exist. This behavior imitates GitPython’s config parser.

`getbool(section, option, default=None)`
A convenience method which coerces the option value to a bool

Values “on”, “yes”, “true” and any int!=0 are considered True Values which evaluate to bool False, “off”, “no”, “false” are considered False TypeError is raised for other values.

`getfloat(section, option)`
A convenience method which coerces the option value to a float

`getint(section, option)`
A convenience method which coerces the option value to an integer

`has_option(section, option)`
If the given section exists, and contains the given option

`has_section(section)`
Indicates whether a section is present in the configuration

`items(section=None)`
Return a list of (name, value) pairs for each option

Optionally limited to a given section.

`keys()`
Returns list of configuration item names

`obtain(var, default=None, dialog_type=None, valtype=None, store=False, where=None, reload=True, **kwargs)`
Convenience method to obtain settings interactively, if needed

A UI will be used to ask for user input in interactive sessions. Questions to ask, and additional explanations can be passed directly as arguments, or retrieved from a list of pre-configured items.

Additionally, this method allows for type conversion and storage of obtained settings. Both aspects can also be pre-configured.

**Parameters**

- **var (str)** – Variable name including any section like `git config` expects them, e.g. ‘core.editor’
- **default (any type)** – In interactive sessions and if `store` is True, this default value will be presented to the user for confirmation (or modification). In all other cases, this value will be silently assigned unless there is an existing configuration setting.
- **dialog_type (‘question’, ‘yesno’, None)** – Which dialog type to use in interactive sessions. If None, pre-configured UI options are used.
- **store (bool)** – Whether to store the obtained value (or default)
- **where (‘dataset’, ‘local’, ‘global’, ‘override’), optional** – Indicator which configuration file to modify. ‘dataset’ indicates the persistent configuration in .datalad/config of a dataset; ‘local’ the configuration of a dataset’s Git repository in .git/config; ‘global’ refers to the general configuration that is not specific to a single repository (usually in $USER/.gitconfig); ‘override’ limits the modification to the ConfigManager instance, and the assigned value overrides any setting from any other source.
- **reload (bool)** – Flag whether to reload the configuration from file(s) after modification. This can be disable to make multiple sequential modifications slightly more efficient.
- ****kwargs** – Additional arguments for the UI function call, such as a question text.
**options** *(section)*
Returns a list of options available in the specified section.

**reload** *(force=False)*
Reload all configuration items from the configured sources

If *force* is False, all files configuration was previously read from are checked for differences in the modification times. If no difference is found for any file no reload is performed. This mechanism will not detect newly created global configuration files, use *force* in this case.

**remove_section** *(sec, where='dataset', reload=True)*
Rename a configuration section

**Parameters**

- **sec** *(str)* – Name of the section to remove.
- **where** *({'dataset', 'local', 'global', 'override'}, optional)* –
  Indicator which configuration file to modify. ‘dataset’ indicates the persistent configuration in .datalad/config of a dataset; ‘local’ the configuration of a dataset’s Git repository in .git/config; ‘global’ refers to the general configuration that is not specific to a single repository (usually in $USER/.gitconfig); ‘override’ limits the modification to the ConfigManager instance, and the assigned value overrides any setting from any other source.
- **reload** *(bool)* – Flag whether to reload the configuration from file(s) after modification. This can be disable to make multiple sequential modifications slightly more efficient.

**rename_section** *(old, new, where='dataset', reload=True)*
Rename a configuration section

**Parameters**

- **old** *(str)* – Name of the section to rename.
- **new** *(str)* – Name of the section to rename to.
- **where** *({'dataset', 'local', 'global', 'override'}, optional)* –
  Indicator which configuration file to modify. ‘dataset’ indicates the persistent configuration in .datalad/config of a dataset; ‘local’ the configuration of a dataset’s Git repository in .git/config; ‘global’ refers to the general configuration that is not specific to a single repository (usually in $USER/.gitconfig); ‘override’ limits the modification to the ConfigManager instance, and the assigned value overrides any setting from any other source.
- **reload** *(bool)* – Flag whether to reload the configuration from file(s) after modification. This can be disable to make multiple sequential modifications slightly more efficient.

**rewrite_url** *(url)*
Any matching ‘url.<base>.insteadOf’ configuration is applied

Any URL that starts with such a configuration will be rewritten to start, instead, with <base>. When more than one insteadOf strings match a given URL, the longest match is used.

**Parameters**

- **cfg** *(ConfigManager or dict)* – dict-like with configuration variable name/value-pairs.
- **url** *(str)* – URL to be rewritten, if matching configuration is found.

**Returns** Rewritten or unmodified URL.

**Return type** *str*
sections()
Returns a list of the sections available

set(var, value, where='dataset', reload=True, force=False)
Set a variable to a value.
In opposition to add, this replaces the value of var if there is one already.

Parameters

- **var (str)** – Variable name including any section like git config expects them, e.g. 'core.editor'
- **value (str)** – Variable value
- **force (bool)** – if set, replaces all occurrences of var by a single one with the given value. Otherwise raise if multiple entries for var exist already
- **where ({'dataset', 'local', 'global', 'override'}, optional)** – Indicator which configuration file to modify. ‘dataset’ indicates the persistent configuration in .datalad/config of a dataset; ‘local’ the configuration of a dataset’s Git repository in .git/config; ‘global’ refers to the general configuration that is not specific to a single repository (usually in $USER/.gitconfig); ‘override’ limits the modification to the ConfigManager instance, and the assigned value overrides any setting from any other source.
- **reload (bool)** – Flag whether to reload the configuration from file(s) after modification. This can be disable to make multiple sequential modifications slightly more efficient.

unset(var, where='dataset', reload=True)
Remove all occurrences of a variable

Parameters

- **var (str)** – Name of the variable to remove
- **where ({'dataset', 'local', 'global', 'override'}, optional)** – Indicator which configuration file to modify. ‘dataset’ indicates the persistent configuration in .datalad/config of a dataset; ‘local’ the configuration of a dataset’s Git repository in .git/config; ‘global’ refers to the general configuration that is not specific to a single repository (usually in $USER/.gitconfig); ‘override’ limits the modification to the ConfigManager instance, and the assigned value overrides any setting from any other source.
- **reload (bool)** – Flag whether to reload the configuration from file(s) after modification. This can be disable to make multiple sequential modifications slightly more efficient.

datalad.config.anything2bool(val)
datalad.config.get_git_version
Return version of available git

datalad.config.parse_gitconfig_dump(dump, cwd=None, multi_value=True)
Parse a dump-string from git config -z -list
This parser has limited support for discarding unrelated output that may contaminate the given dump. It does so performing a relatively strict matching of configuration key syntax, and discarding lines in the output that are not valid git-config keys.
There is also built-in support for parsing outputs generated with --show-origin (see return value).

Parameters

- **dump (str)** – Null-byte separated output
- **cwd** (*path-like, optional*) – Use this absolute path to convert relative paths for origin reports into absolute paths. By default, the process working directory PWD is used.

- **multi_value** (*bool, optional*) – If True, report values from multiple specifications of the same key as a tuple of values assigned to this key. Otherwise, the last configuration is reported.

**Returns** –

----

- **set** (*dict,*) – Configuration items are returned as key/value pairs in a dictionary. The second tuple-item will be a set of path objects comprising all source files, if origin information was included in the dump (--show-origin). An empty set is returned otherwise.

### datalad.config.quote_config(v)

Helper to perform minimal quoting of config keys/value parts

**Parameters**

- **v** (*str*) – To-be-quoted string

### datalad.config.rewrite_url(cfg, url)

Any matching ‘url.<base>.insteadOf’ configuration is applied

Any URL that starts with such a configuration will be rewritten to start, instead, with <base>. When more than one insteadOf strings match a given URL, the longest match is used.

**Parameters**

- **cfg** (*ConfigManager or dict*) – dict-like with configuration variable name/value-pairs.

- **url** (*str*) – URL to be rewritten, if matching configuration is found.

**Returns** Rewritten or unmodified URL.

**Return type** *str*

### datalad.config.write_config_section(fobj, suite, name, props)

Write a config section with (multiple) settings.

**Parameters**

- **fobj** (*File*) – Opened target file

- **suite** (*str*) – First item of the section name, e.g. ‘submodule’, or ‘datalad’

- **name** (*str*) – Remainder of the section name

- **props** (*dict*) – Keys are configuration setting names within the section context (i.e. not duplicating suite and/or name), values are configuration setting values.

### Test infrastructure

tests.utils Miscellaneous utilities to assist with testing
tests.utils_testrepos
tests.heavyoutput Helper to provide heavy load on stdout and stderr

datalad.tests.utils

Miscellaneous utilities to assist with testing

class datalad.tests.utils.HTTPPath(*path*)
Serve the content of a path via an HTTP URL.

This class can be used as a context manager, in which case it returns the URL.
Alternatively, the `start` and `stop` methods can be called directly.

**Parameters**

`path` *(str)* – Directory with content to serve.

```python
start()
```

Start serving `path` via HTTP.

```python
stop()
```

Stop serving `path`.

class datalad.tests.utils.SilentHTTPHandler(*args, **kwargs)

Bases: http.server.SimpleHTTPRequestHandler

A little adapter to silence the handler

**log_message** *(format, *args)*

Log an arbitrary message.

This is used by all other logging functions. Override it if you have specific logging wishes.

The first argument, `FORMAT`, is a format string for the message to be logged. If the format string contains any `%` escapes requiring parameters, they should be specified as subsequent arguments (it’s just like printf!).

The client ip and current date/time are prefixed to every message.

```python
datalad.tests.utils.assert_dict_equal(d1, d2)
datalad.tests.utils.assert_in_results(results, **kwargs)
datalad.tests.utils.assert_is_generator(gen)
datalad.tests.utils.assert_message(message, results)
```

Verify that the particular combination of keys and values is found in one of the results.

Verify that each status dict in the results has a message

This only tests the message template string, and not a formatted message with args expanded.

```python
datalad.tests.utils.assert_no_errorsLogged(func, skip_re=None)
datalad.tests.utils.assert_not_in_results(results, **kwargs)
```

Verify that the particular combination of keys and values is not in any of the results.

```python
datalad.tests.utils.assert_re_in(regex, c, flags=0, match=True, msg=None)
```

Assert that container (list, str, etc) contains entry matching the regex

```python
datalad.tests.utils.assert_repo_status(path, annex=None, untracked_mode='normal', **kwargs)
```

Compare a repo status against (optional) exceptions.

Anything file/directory that is not explicitly indicated must have state ‘clean’, i.e. no modifications and recorded in Git.

**Parameters**

* `path` *(str or Repo)* – in case of a str: path to the repository’s base dir; Note, that passing a Repo instance prevents detecting annex. This might be useful in case of a non-initialized annex, a GitRepo is pointing to.
• **annex** *(bool or None)* – explicitly set to True or False to indicate, that an annex is (not) expected; set to None to autodetect, whether there is an annex. Default: None.

• **untracked_mode** *(\{'no\', \'normal\', \'all\'})* – If and how untracked content is reported. The specification of untracked files that are OK to be found must match this mode. See `Repo.status()`.

• **kwargs** – Files/directories that are OK to not be in ‘clean’ state. Each argument must be one of ‘added’, ‘untracked’, ‘deleted’, ‘modified’ and each value must be a list of filenames (relative to the root of the repository, in POSIX convention).

datalad.tests.utils.assert_result_count *(results, n, **kwargs)*

Verify specific number of results (matching criteria, if any)

datalad.tests.utils.assert_result_values_cond *(results, prop, cond)*

Verify that the values of all results for a given key in the status dicts fulfill condition `cond`.

Parameters

- **results** –
- **prop** *(str)* –
- **cond** *(callable)* –

datalad.tests.utils.assert_result_values_equal *(results, prop, values)*

Verify that the values of all results for a given key in the status dicts match the given sequence

datalad.tests.utils.assert_status *(label, results)*

Verify that each status dict in the results has a given status label `label` can be a sequence, in which case status must be one of the items in this sequence.

datalad.tests.utils.assert_str_equal *(s1, s2)*

Helper to compare two lines

datalad.tests.utils.check_not_generatorfunction *(func)*

Internal helper to verify that we are not decorating generator tests

datalad.tests.utils.clone_url *(url)*

datalad.tests.utils.get_convoluted_situation *(path, repocls=data-
lad.support.annexrepo.AnnexRepo ‘)*

Delayed parsing so it could be monkey patched etc

datalad.tests.utils.get_most_obscure_supported_name *(tdir, return_candidates=False)*

Return the most obscure filename that the filesystem would support under TEMPDIR

Parameters

- **return_candidates** *(bool, optional)* – if True, return a tuple of (good, candidates) where candidates are “partially” sorted from trickiest considered
• TODO (we might want to use it as a function where we would provide tdir)

datalad.tests.utils.get_mtimes_and_digests(target_path)
    Return digests (md5) and mtimes for all the files under target_path

datalad.tests.utils.get_ssh_port(host)
    Get port of host in ssh_config.

    Our tests depend on the host being defined in ssh_config, including its port. This method can be used by tests that want to check handling of an explicitly specified host.

    Note that if host does not match a host in ssh_config, the default value of 22 is returned.

    Parameters host (str) –
    Returns
    Return type port (int)
    Raises SkipTest if port cannot be found.

datalad.tests.utils.has_symlink_capability(p1, p2)

datalad.tests.utils.ignore_nose_capturing_stdout(func)
    DEPRECATED and will be removed soon. Does nothing!

    Originally was intended as a decorator workaround for nose’s behaviour with redirecting sys.stdout, but now we monkey patch nose now so no test should no longer be skipped.

    See issue reported here: https://code.google.com/p/python-nose/issues/detail?id=243&can=1&sort=-id&colspec=ID%20Type%20Status%20Priority%20Stars%20Milestone%20Owner%20Summary

datalad.tests.utils.integration(f)
    Mark test as an “integration” test which generally is not needed to be run

    Generally tend to be slower. Should be used in combination with @slow and @turtle if that is the case.

datalad.tests.utils.known_failure(func)
    Test decorator marking a test as known to fail

    This combines probe_known_failure and skip_known_failure giving the skipping precedence over the probing.

datalad.tests.utils.known_failure_direct_mode(func)
    DEPRECATED. Stop using. Does nothing

    Test decorator marking a test as known to fail in a direct mode test run

    If datalad.repo.direct is set to True behaves like known_failure. Otherwise the original (undecorated) function is returned.

datalad.tests.utils.known_failure_githubci_osx(func)
    Test decorator for a known test failure on Github’s macOS CI

datalad.tests.utils.known_failure_githubci_win(func)
    Test decorator for a known test failure on Github’s Windows CI

datalad.tests.utils.known_failure_osx(func)
    Test decorator for a known test failure on macOS

    On Windows behaves like known_failure. Otherwise the original (undecorated) function is returned.

    1.5. Commands and API
datalad.tests.utils.maybe_adjust_repo(repo)
   Put repo into an adjusted branch if it is not already.

datalad.tests.utils.nok_startswith(s, prefix)

datalad.tests.utils.ok_annex_get(ar, files, network=True)
   Helper to run .get decorated checking for correct operation
       get passes through stderr from the ar to the user, which pollutes screen while running tests
       Note: Currently not true anymore, since usage of –json disables progressbars

datalad.tests.utils.ok_archives_caches(repopath, n=1, persistent=None)
   Given a path to repository verify number of archives
       Parameters
         • repopath (str) – Path to the repository
         • n (int, optional) – Number of archives directories to expect
         • persistent (bool or None, optional) – If None – both persistent and not count.

datalad.tests.utils.ok_broken_symlink(path)

datalad.tests.utils.ok_clean_git(path, annex=None, index_modified=[], untracked=[])
  Obsolete test helper. Use assert_repo_status() instead.
       Still maps a few common cases to the new helper, to ease transition in extensions.

datalad.tests.utils.ok_endswith(s, suffix)

datalad.tests.utils.ok_exists(path)

datalad.tests.utils.ok_file_has_content(path, content, strip=False, re_=False, decompress=False, **kwargs)
   Verify that file exists and has expected content

datalad.tests.utils.ok_file_under_git(path, filename=None, annexed=False)
   Test if file is present and under git/annex control
       If relative path provided, then test from current directory

datalad.tests.utils.ok_generator(gen)

datalad.tests.utils.ok_git_config_not_empty(ar)
   Helper to verify that nothing rewritten the config file

datalad.tests.utils.ok_good_symlink(path)

datalad.tests.utils.ok_startswith(s, prefix)

datalad.tests.utils.ok_symlink(path)
   Checks whether path is either a working or broken symlink

datalad.tests.utils.patch_config(vars)
   Patch our config with custom settings. Returns mock.patch cm
       Only the merged configuration from all sources (global, local, dataset) will be patched. Source-constrained
       patches (e.g. only committed dataset configuration) are not supported.

datalad.tests.utils.probe_known_failure(func)
   Test decorator allowing the test to pass when it fails and vice versa
       Setting config datalad.tests.knownfailures.probe to True tests, whether or not the test is still failing. If it’s not,
       an AssertionError is raised in order to indicate that the reason for failure seems to be gone.
**datalad Documentation, Release 0.15.5**

**datalad.tests.utils.put_file_under_git**(path, filename=None, content=None, annexed=False)

Place file under git/annex and return used Repo

**datalad.tests.utils.set_annex_version**(version)

Override the git-annex version.

This temporarily masks the git-annex version present in external_versions and make AnnexRepo forget its cached version information.

**datalad.tests.utils.set_date**(timestamp)

Temporarily override environment variables for git/git-annex dates.

**Parameters**

- **timestamp**(int) – Unix timestamp.

**datalad.tests.utils.skip_httpretty_on_problematic_pythons**(func)

As discovered some httpretty bug causes a side-effect on other tests on some Pythons. So we skip the test if such problematic combination detected

**References**


**datalad.tests.utils.skip_if_adjusted_branch**(func)

Skip test if adjusted branch is used by default on TMPDIR file system.

**datalad.tests.utils.skip_if_no_module**(module)

**datalad.tests.utils.skip_if_no_network**(func=None)

Skip test completely in NONETWORK settings

If not used as a decorator, and just a function, could be used at the module level

**datalad.tests.utils.skip_if_on_windows**(func=None)

Skip test completely under Windows

**datalad.tests.utils.skip_if_root**(func=None)

Skip test if uid == 0.

Note that on Windows (or anywhere else os.geteuid is not available) the test is _not_ skipped.

**datalad.tests.utils.skip_if_scrapy_without_selector**()

A little helper to skip some tests which require recent scrapy

**datalad.tests.utils.skip_if_url_is_not_available**(url, regex=None)

**datalad.tests.utils.skip_nomultiplex_ssh**(func)

Skips SSH tests if default connection/manager does not support multiplexing

e.g. currently on windows or if set via datalad.ssh.multiplex-connections config variable

**datalad.tests.utils.skip_ssh**(func)

Skips SSH tests if on windows or if environment variable DATALAD_TESTS_SSH was not set

**datalad.tests.utils.skip_wo_symlink_capability**(func)

Skip test when environment does not support symlinks

Perform a behavioral test instead of top-down logic, as on windows this could be on or off on a case-by-case basis.

**datalad.tests.utils.slow**(f)

Mark test as a slow, although not necessarily integration or usecase test

Rule of thumb cut-off to mark as slow is 10 sec

**datalad.tests.utils.turtle**(f)

Mark test as very slow, meaning to not run it on Travis due to its time limit

**1.5. Commands and API**
Rule of thumb cut-off to mark as turtle is 2 minutes

datalad.tests.utils.usecase(f)
Mark test as a usecase user ran into and which (typically) caused bug report to be filed/troubleshooted
Should be used in combination with @slow and @turtle if slow.

datalad.tests.utils_testrepos

class datalad.tests.utils_testrepos.BasicAnnexTestRepo (path=None,
                   puke_if_exists=True)
    Bases: datalad.tests.utils_testrepos.TestRepo
    Creates a basic test git-annex repository
    REPO_CLASS
        alias of datalad.support.annexrepo.AnnexRepo
    create_info_file()
    populate()

class datalad.tests.utils_testrepos.BasicGitTestRepo (path=None,
                                                     puke_if_exists=True)
    Bases: datalad.tests.utils_testrepos.TestRepo
    Creates a basic test git repository.
    REPO_CLASS
        alias of datalad.support.gitrepo.GitRepo
    create_info_file()
    populate()

class datalad.tests.utils_testrepos.InnerSubmodule
    Bases: object
    create()
    path
    url

class datalad.tests.utils_testrepos.NestedDataset (path=None, puke_if_exists=True)
    Bases: datalad.tests.utils_testrepos.BasicAnnexTestRepo
    populate()

class datalad.tests.utils_testrepos.SubmoduleDataset (path=None, puke_if_exists=True)
    Bases: datalad.tests.utils_testrepos.BasicAnnexTestRepo
    populate()

class datalad.tests.utils_testrepos.TestRepo (path=None, puke_if_exists=True)
    Bases: object
    REPO_CLASS = None
    create()
    create_file (name, content, add=True, annex=False)
    path
populate()
url
datalad.tests.heavyoutput

Helper to provide heavy load on stdout and stderr

Command line interface infrastructure

cmdline.main
cmdline.helpers
cmdline.common_args
datalad.cmdline.main

datalad.cmdline.main.main(args=None)
datalad.cmdline.main.setup_parser(cmdlineargs, formatter_class=<class 'argparse.RawDescriptionHelpFormatter'>, return_subparsers=False, completing=False, help_ignore_extensions=False)

The holy grail of establishing CLI for DataLad’s Interfaces

Parameters

• cmdlineargs –
• formatter_class –
• return_subparsers(bool, optional) – is used ATM only by BuildManPage in _datalad_build_support
• completing –
• help_ignore_extensions –
class datalad.cmdline.helpers.ArgumentParserDisableAbbrev (prog=None, usage=None, description=None, epilog=None, parents=[], formatter_class=<class 'argparse.HelpFormatter'>, prefix_chars='-', fromfile_prefix_chars=None, argument_default=None, conflict_handler='error', add_help=True, allow_abbrev=True)

Bases: argparse.ArgumentParser
class datalad.cmdline.helpers.HelpAction (option_strings, dest, nargs=None, const=None, default=None, type=None, choices=None, required=False, help=None, metavar=None)

Bases: argparse.Action
class datalad.cmdline.helpers.LogLevelAction (option_strings, dest, nargs=None, const=None, default=None, type=None, choices=None, required=False, help=None, metavar=None)

Bases: argparse.Action
datalad.cmdline.helpers.add_entrypoints_to_interface_groups (interface_groups)
datalad.cmdline.helpers.fail_with_short_help (parser=None, msg=None, known=None, provided=None, hint=None, exit_code=1, what='command', out=None)

Generic helper to fail with short help possibly hinting on what was intended if known were provided
datalad.cmdline.helpers.get_commands_from_groups (groups)
Get a dictionary of command: interface_spec
datalad.cmdline.helpers.get_description_with_cmd_summary (grp_short_descriptions, interface_groups, parser_description)
datalad.cmdline.helpers.get_repo_instance (path='.', class_=None)
Returns an instance of appropriate datalad repository for path. Check whether a certain path is inside a known type of repository and returns an instance representing it. May also check for a certain type instead of detecting the type of repository.

Parameters
• path (str) – path to check; default: current working directory
• class (class) – if given, check whether path is inside a repository, that can be represented as an instance of the passed class.

Raises RuntimeError, in case cwd is not inside a known repository.
datalad.cmdline.helpers.parser_add_common_opt (parser, opt, names=None, **kwargs)
datalad.cmdline.helpers.parser_add_common_options (parser, version=None)
datalad.cmdline.helpers.parser_add_version_opt (parser, mod_name, include_name=False, delay=False)

Setup –version option

Parameters

- **parser**
- **mod_name** (str, optional)
- **include_name** (bool, optional)
- **delay** (bool, optional) – If set to True, no action is taken immediately, and rather we assign the function which would print the version. Necessary for early pre-parsing of the cmdline

datalad.cmdline.helpers.run_via_pbs (args, pbs)

datalad.cmdline.helpers.strip_arg_from_argv (args, value, opt_names)

Strip an originally listed option (with its value) from the list cmdline args

**datalad.cmdline.common_args**

### 1.5.3 Configuration

DataLad uses the same configuration mechanism and syntax as Git itself. Consequently, datalad can be configured using the `git config` command. Both a **global** user configuration (typically at `~/.gitconfig`), and a **local** repository-specific configuration (`.git/config`) are inspected.

In addition, datalad supports a persistent dataset-specific configuration. This configuration is stored at `/.datalad/config` in any dataset. As it is part of a dataset, settings stored there will also be in effect for any consumer of such a dataset. Both **global** and **local** settings on a particular machine always override configuration shipped with a dataset.

All datalad-specific configuration variables are prefixed with `datalad.`. It is possible to override or amend the configuration using environment variables. Any variable with a name that starts with `DATALAD_` will be available as the corresponding `datalad.` configuration variable, replacing any `__` (two underscores) with a hyphen, then any `_` (single underscore) with a dot, and finally converting all letters to lower case. Values from environment variables take precedence over configuration file settings.

In addition, the `DATALAD_CONFIG_OVERRIDES_JSON` environment variable can be set to a JSON record with configuration values. This is particularly useful for options that aren’t accessible through the naming scheme described above (e.g., an option name that includes an underscore).

The following sections provide a (non-exhaustive) list of settings honored by datalad. They are categorized according to the scope they are typically associated with.

**Global user configuration**

**datalad.clone.url-substitute.github** GitHub URL substitution rule: Mangling for GitHub-related URL. A substitution specification is a string with a match and substitution expression, each following Python’s regular expression syntax. Both expressions are concatenated to a single string with an arbitrary delimiter character. The delimiter is defined by prefixing the string with the delimiter. Prefix and delimiter are stripped from the expressions (Example: `".\^http://(.*)\$,https://1")`. This setting can be defined multiple times. Substitutions will be applied incrementally, in order of their definition. The first substitution in such a series must match, otherwise no further substitutions in a series will be considered. However, following
the first match all further substitutions in a series are processed, regardless whether intermediate expressions match or not. Default: (',https://github.com/([\^/]+)(.*)$,'\1###\2', '\]^\+,-', '\s+|(%2520)+|(%20)+,_','(.[^#)+###(.*)',https://github.com/\1/\2')

datalad.clone.url-substitute.osf  Open Science Framework URL substitution rule: Mangling for OSF-related URLs. A substitution specification is a string with a match and substitution expression, each following Python’s regular expression syntax. Both expressions are concatenated to a single string with an arbitrary delimiter character. The delimiter is defined by prefixing the string with the delimiter. Prefix and delimiter are stripped from the expressions (Example: “^http://(\*)$,”https://1”). This setting can be defined multiple times. Substitutions will be applied incrementally, in order of their definition. The first substitution in such a series must match, otherwise no further substitutions in a series will be considered. However, following the first match all further substitutions in a series are processed, regardless whether intermediate expressions match or not. Default: (',^https://osf.io/([\^/]+)[/\]*$',osf://\1,')

datalad.externals.nda.dbserver  NDA database server: Hostname of the database server Default: https://nda.nih.gov/

DataManager/dataManager

datalad.locations.cache  Cache directory: Where should datalad cache files? Default: ~/.cache/datalad

datalad.locations.default-dataset  Default dataset path: Where should datalad should look for (or install) a default dataset? Default: ~/.datalad

datalad.locations.extra-procedures  Extra procedure directory: Where should datalad search for some additional procedures?

datalad.locations.locks  Lockfile directory: Where should datalad store lock files? Default: ~/.cache/datalad/locks

datalad.locationssockets  Socket directory: Where should datalad store socket files? Default: ~/.cache/datalad/sockets

datalad.locations.system-procedures  System procedure directory: Where should datalad search for system procedures? Default: /etc/xdg/datalad/procedures

datalad.locations.user-procedures  User procedure directory: Where should datalad search for user procedures? Default: ~/.config/datalad/procedures

datalad.ssh.identityfile  If set, pass this file as ssh’s -i option.: Default: None

[datalad.ssh.multiplex-connections  Whether to use a single shared connection for multiple SSH processes aiming at the same target.: Default: True

[value must be convertible to type bool]

[datalad.tests.cache  Cache directory for tests: Where should datalad cache test files? Default: ~/.cache/datalad/tests

Local repository configuration

datalad.crawl.cache  Crawler download caching: Should the crawler cache downloaded files?

[bool]

datalad.fake-dates  Fake (anonymize) dates: Should the dates in the logs be faked? Default: False

[value must be convertible to type bool]

Sticky dataset configuration

datalad.locations.dataset-procedures  Dataset procedure directory: Where should datalad search for dataset procedures (relative to a dataset root)? Default: .datalad/procedures
**Miscellaneous configuration**

- **datalad.annex.retry** Value for annex.retry to use for git-annex calls: On transfer failure, annex.retry (sans “datalad.”) controls the number of times that git-annex retries. DataLad will call git-annex with annex.retry set to the value here unless the annex.retry is explicitly configured. Default: 3
  
  [value must be convertible to type ‘int’]

- **datalad.credentials.force-ask** Force (re-)entry of credentials: Should DataLad prompt for credential (re-)entry? This can be used to update previously stored credentials. Default: False
  
  [bool]

- **datalad.exc.str.tblinkit** This flag is used by datalad to cap the number of traceback steps included in exception logging and result reporting to DATALAD_EXC_STR_TBLIMIT of pre-processed entries from traceback.

- **datalad.fake-dates-start** Initial fake date: When faking dates and there are no commits in any local branches, generate the date by adding one second to this value (Unix epoch time). The value must be positive. Default: 1112911993
  
  [value must be convertible to type ‘int’]

- **datalad.github.token-note** Github token note: Description for a Personal access token to generate. Default: DataLad

- **datalad.install.inherit-local-origin** Inherit local origin of dataset source: If enabled, a local ‘origin’ remote of a local dataset clone source is configured as an ‘origin-2’ remote to make its annex automatically available. The process is repeated recursively for any further qualifying ‘origin’ dataset thereof. Note that if clone.defaultRemoteName is configured to use a name other than ‘origin’, that name will be used instead. Default: True
  
  [value must be convertible to type bool]

- **datalad.log.level** Used for control the verbosity of logs printed to stdout while running datalad commands/debugging:

- **datalad.log.name** Include name of the log target in the log line:

- **datalad.log.names** Which names (,-separated) to print log lines for:

- **datalad.log.outputs** Whether to log stdout and stderr for executed commands: When enabled, setting the log level to 5 should catch all execution output, though some output may be logged at higher levels Default: False
  
  [value must be convertible to type bool]

- **datalad.log.result-level** Log level for command result messages: If ‘match-status’, it will log ‘impossible’ results as a warning, ‘error’ results as errors, and everything else as ‘debug’. Otherwise the indicated log-level will be used for all such messages Default: debug
  

- **datalad.log.timestamp** Used to add timestamp to datalad logs: Default: False
  
  [value must be convertible to type bool]

- **datalad.log.traceback** Runs TraceBack function with collide set to True, if this flag is set to “collide”. This replaces any common prefix between current traceback log and previous invocation with “…”:

- **datalad.metadata.create-aggregate-annex-limit** Limit configuration annexing aggregated metadata in new dataset: Git-annex large files expression (see https://git-annex.branchable.com/tips/largefiles; given expression will be wrapped in parentheses) Default: anything

- **datalad.metadata.maxfieldsize** Maximum metadata field size: Metadata fields exceeding this size (in bytes/chars) are excluded from metadata extractio Default: 100000
**datalad.Datatypes**

- **datalad.metadata.nativetype**: Native dataset metadata scheme: Set this label to engage a particular metadata extraction parser.
- **datalad.metadata.store-aggregate-content**: Aggregated content metadata storage: If this flag is enabled, content metadata is aggregated into superdataset to allow for discovery of individual files. If disable unique content metadata values are still aggregated to enable dataset discovery. Default: True
- **datalad.repo.backend**: git-annex backend: Backend to use when creating git-annex repositories. Default: MD5E
- **datalad.repo.direct**: Direct Mode for git-annex repositories: Set this flag to create annex repositories in direct mode by default. Default: False
- **datalad.repo.version**: git-annex repository version: Specifies the repository version for git-annex to be used by default. Default: 8
- **datalad.runtime.max-annex-jobs**: Maximum number of git-annex jobs to request when “jobs” option set to “auto” (default): Set this value to enable parallel annex jobs that may speed up certain operations (e.g., get file content). The effective number of jobs will not exceed the number of available CPU cores (or 3 if there is less than 3 cores). Default: 1
- **datalad.runtime.max-jobs**: Maximum number of jobs DataLad can run in “parallel”: Set this value to enable parallel multi-threaded DataLad jobs that may speed up certain operations, in particular operation across multiple datasets (e.g., install multiple subdatasets, etc). Default: 1
- **datalad.runtime.raiseonerror**: Error behavior: Set this flag to cause DataLad to raise an exception on errors that would have otherwise just get logged. Default: False
- **datalad.runtime.report-status**: Command line result reporting behavior: If set (to other than ‘all’), constrains command result report to records matching the given status. ‘success’ is a synonym for ‘ok’ OR ‘notneeded’, ‘failure’ stands for ‘impossible’ OR ‘error’. Default: None
- **datalad.runtime.stalled-external**: Behavior for handing external processes: What to do with external processes if they do not finish in some minimal reasonable time. If “abandon”, datalad would proceed without waiting for external process to exit. ATM applies only to batched git-annex processes. Should be changed with caution. Default: wait
- **datalad.save.no-message**: Commit message handling: When no commit message was provided: attempt to obtain one interactively (interactive); or use a generic commit message (generic). NOTE: The interactive option is experimental. The behavior may change in backwards-incompatible ways. Default: generic
- **datalad.search.default-mode**: Default search mode: Label of the mode to be used by default. Default: egrep
**datalad.search.index-default-documenttype**  Type of search index documents: Labels of document types to include in a default search index Default: datasets

[ value must be one of [CMD: ('all', 'datasets', 'files') CMD][PY: ('all', 'datasets', 'files') PY]]

**datalad.search.indexercachesize**  Maximum cache size for search index (per process): Actual memory consumption can be twice as high as this value in MB (one process per CPU is used) Default: 256

[ value must be convertible to type ‘int’ ]

**datalad.testsdataladremote**  Binary flag to specify whether each annex repository should get datalad special remote in every test repository:

[ value must be convertible to type bool ]

**datalad.testsknownfailures.probe**  Probes tests that are known to fail on whether or not they are actually still failing:

Default: False

[ value must be convertible to type bool ]

**datalad.testsknownfailures.skip**  Skips tests that are known to currently fail: Default: True

[ value must be convertible to type bool ]

**datalad.testsnonnetwork**  Skips network tests completely if this flag is set Examples include test for s3, git_repositories, openfmri etc:

[ value must be convertible to type bool ]

**datalad.testsnonlo**  Specifies network interfaces to bring down/up for testing. Currently used by travis.:  

**datalad.testsnoterardown**  Does not execute teardown_package which cleans up temp files and directories created by tests if this flag is set:

[ value must be convertible to type bool ]

**datalad.testsruncmdline**  Binary flag to specify if shell testing using shunit2 to be carried out:

[ value must be convertible to type bool ]

**datalad.testssetup.testrepos**  Pre-creates repositories for @with_testrepos within setup_package: Default: False

[ value must be convertible to type bool ]

**datalad.testssh**  Skips SSH tests if this flag is not set:

[ value must be convertible to type bool ]

**datalad.tests.temp.dir**  Create a temporary directory at location specified by this flag. It is used by tests to create a temporary git directory while testing git annex archives etc: Default: None

[ value must be a string ]

**datalad.tests.temp.fs**  Specify the temporary file system to use as loop device for testing DATA-LAD_TESTS_TEMP_DIR creation:

**datalad.tests.temp.fssize**  Specify the size of temporary file system to use as loop device for testing DATA-LAD_TESTS_TEMP_DIR creation:

**datalad.tests.temp.keep**  Function rmtemp will not remove temporary file/directory created for testing if this flag is set:

[ value must be convertible to type bool ]

**datalad.tests.ui.backend**  Tests UI backend: Which UI backend to use Default: tests-noninteractive

**datalad.tests.usecassette**  Specifies the location of the file to record network transactions by the VCR module. Currently used by when testing custom special remotes:
DataLad can be customized and additional functionality can be integrated via extensions. Each extension provides its own documentation:

- Crawling web resources and automated data distributions
- Neuroimaging data and workflows
- Containerized computational environments
- Advanced metadata tooling with JSON-LD reporting and additional metadata extractors
- Resources for working with the UKBiobank as a DataLad dataset
- Deposit and retrieve DataLad datasets via the Open Science Framework
- Functionality that has been phased out of the core package
- Special interest functionality or drafts of future additions to DataLad proper

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