
py-deps Documentation

Release 0.2.0

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June 22, 2015

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About py-dep

The `py-dep` provides parsing the dependencies of Python packages and generating the metadata for graph.

The graph data is for [NetworkX](#), [Graphviz](#), [blockdiag](#), [Linkdraw](#), etc.

1.1 Status

1.2 Requirements

- Python 2.7 over or Python 3.3 over or PyPy 2.4.0 over
- pip 1.5.6 or 6.1.1 over
- wheel 0.24.0 over
- NetworkX 1.9 over
- pylibmc 1.4.3 over (optional)

1.3 Features

- Generating Linkdraw data (JSON and decoded JSON).
- Generating Networkx DiGraph object data.
- Cache the parsed dependencies.
- Searching packages from PyPI.

1.4 Known issue with the packages that depends on py-deps

The packages that depend on `py-deps`; after that called “X” package, there is a known issue that fails to install using the `pip`. This problem is caused by `py-deps` is a package that depends on the `pip` and `wheel`. When you install the “X” in the `pip` following exception occurs.:

The AssertionError: Multiple .dist-info directories occurs, because py-deps depends on

`pip, wheel.`

1.4.1 Workaround

The workaround for this problem is to use `setuptools` instead of `pip`.

- You should use the `easy_install` command when you are installing the X from `PyPI`.
- Use the `python setup.py install` when you install from the source tree , such as repository.
- When you use the `Tox` in unit test , you should specify `install_command` in `[testenv]` section of `tox.ini`:

```
[testenv]
install_command = easy_install {opts} {packages}
```

See also `pgraph` is already corresponding to the above-mentioned problems.

Basic usage

py-deps provides parsing the Python deps and generating graph data.

2.1 Search packages

Search packages from PyPI:

```
$ python
>>> from py_deps import Package
>>> Package.search('deps')
[{'_pypi_ordering': False,
  'name': 'anybox.recipe.sysdeps',
  'summary': 'A buildout recipe to check system dependencies',
  'version': '0.5'},
 {'_pypi_ordering': False,
  'name': 'appdynamics-bindeps-linux-x64',
  'summary': 'Dependencies for AppDynamics Python agent',
  'version': '4.0.5.0'},
 {'_pypi_ordering': False,
  'name': 'appdynamics-bindeps-linux-x86',
  'summary': 'Dependencies for AppDynamics Python agent',
  'version': '4.0.5.0'},
 {'_pypi_ordering': False,
  'name': 'appdynamics-bindeps-osx-x64',
  'summary': 'Dependencies for AppDynamics Python agent',
  'version': '4.0.5.0'},
 {'_pypi_ordering': False,
  'name': 'deps',
  'summary': 'deps discovers your Python dependencies',
  'version': '0.1.0'},
 {'_pypi_ordering': False,
  'name': 'gtkeggdeps',
  'summary': 'Interactive egg dependency browser',
  'version': '0.0.7'},
 {'_pypi_ordering': False,
  'name': 'htmldeps',
  'summary': 'Expand CSS and javascript dependency links in HTML',
  'version': '1.2.1'},
 {'_pypi_ordering': False,
  'name': 'py-deps',
  'summary': 'parsing the Python deps and generating graph data',
  'version': '0.3.0'},
```

```
{'_pypi_ordering': False,
 'name': 'pydeps',
 'summary': 'Display module dependencies',
 'version': '1.2.1'},
{'_pypi_ordering': False,
 'name': 'runestone-test-deps',
 'summary': 'This is dependencies for RSI',
 'version': '0.1'},
{'_pypi_ordering': False,
 'name': 'tl.eggdeps',
 'summary': 'Compute a dependency graph between active Python eggs.',
 'version': '0.4'},
{'_pypi_ordering': False,
 'name': 'tt.eggdeps',
 'summary': 'Compute a dependency graph between active Python eggs.',
 'version': '0.5'}]
```

2.2 Initialize

Cache the parsed dependencies into the `py-deps.pickle` on current working directory. This file format is [pickle](#)..

```
$ python
>>> from py_deps import Package
>>> pkg = Package('py-deps')
```

`py-deps` retrieve latest version from PyPI without `version` argument as above. Specify version use `version` argument..

```
>>> pkg = Package('py-deps', version='0.3.0')
>>> pkg.version
0.3.0
```

2.2.1 Change cache file

Use `cache_name` argument..

```
>>> pkg = Package('py-deps', cache_name='some-cache.name')
```

2.2.2 Override cache forcibly

Use `update_force` argument. (default: `False`):

```
>>> pkg = Package('py-deps', update_force=True)
```

2.2.3 Changes the cache backend to Memcached

Installing `libmemcached-dev` package and `pylibmc`..

```
$ sudo apt-get install libmemcached-dev
$ . /path/to/venv/bin/activate
(venv)$ cd /path/to/py-deps
(venv)$ python setup.py memcache
```

Use servers argument. The argument syntax follows pylibmc.Client.:

```
>>> pkg = Package('py-deps', servers=['127.0.0.1:11211'])
```

2.3 Generate rendering data

Supports follows currently.

- pretty print
- Linkdraw

2.3.1 Pretty print

```
>>> print(pkg.draw())
py-deps -> [Sphinx, setuptools, pip, wheel, tox]
setuptools -> [certifi, wincertstore, setuptools[ssl], pytest]
pip -> [pytest, virtualenv, scripttest, mock, pytest, virtualenv,
scripttest, mock]
wheel -> [ed25519ll, keyring, argparse, pyxdg, jsonschema, pytest,
coverage, pytest-cov]
>>>
```

2.3.2 Linkdraw

```
>>> import json
>>> json.loads(pkg.draw('linkdraw'))
{'u'descr': u'py-deps dependencies',
 u'lines': [{u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'py-deps', u'target': u'Sphinx', u'width': u'1'},
 {u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'py-deps', u'target': u'setuptools', u'width': u'1'},
 {u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'py-deps', u'target': u'pip', u'width': u'1'},
 {u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'py-deps', u'target': u'wheel', u'width': u'1'},
 {u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'py-deps', u'target': u'tox', u'width': u'1'},
 {u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'setuptools', u'target': u'certifi', u'width': u'1'},
 {u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'setuptools', u'target': u'wincertstore', u'width': u'1'},
 {u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'setuptools', u'target': u'setuptools____ssl',
 u'width': u'1'},
 {u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'setuptools', u'target': u'pytest', u'width': u'1'},
 {u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'pip', u'target': u'pytest', u'width': u'1'},
 {u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'pip', u'target': u'virtualenv', u'width': u'1'},
 {u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'pip', u'target': u'scripttest', u'width': u'1'},
 {u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
```

```
{u'source': u'pip', u'target': u'mock', u'width': u'1'},
{u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'pip', u'target': u'pytest', u'width': u'1'},
{u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'pip', u'target': u'virtualenv', u'width': u'1'},
{u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'pip', u'target': u'scripttest', u'width': u'1'},
{u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'pip', u'target': u'mock', u'width': u'1'},
{u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'wheel', u'target': u'ed2551911', u'width': u'1'},
{u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'wheel', u'target': u'keyring', u'width': u'1'},
{u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'wheel', u'target': u'argparse', u'width': u'1'},
{u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'wheel', u'target': u'pyxdg', u'width': u'1'},
{u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'wheel', u'target': u'jsonschema', u'width': u'1'},
{u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'wheel', u'target': u'pytest', u'width': u'1'},
{u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'wheel', u'target': u'coverage', u'width': u'1'},
{u'color': u'#5F9EA0', u'descr': u'->', u'link': u'',
 u'source': u'wheel', u'target': u'pytest-cov', u'width': u'1'}],
u'nodes': [{u'color': u'', u'link': u'https://github.com/mkouhei/py-deps',
 u'name': u'py-deps', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'Sphinx', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'https://bitbucket.org/pypa/setuptools',
 u'name': u'setuptools', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'https://pip.pypa.io/',
 u'name': u'pip', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'http://bitbucket.org/pypa/wheel/',
 u'name': u'wheel', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'tox', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'certifi', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'wincertstore',
 u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'setuptools____ssl',
 u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'pytest', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'virtualenv', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'scripttest', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'mock', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'ed2551911', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'keyring', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'argparse', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'pyxdg', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'jsonschema', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'coverage', u'r': u'6'},
{u'color': u'#5F9EA0', u'link': u'', u'name': u'pytest-cov',
 u'r': u'6'}],
u'time': u'2015-05-08T03:52:59.542732'}
```

See also [How to use linkdraw](#).

2.3.3 NetworkX

```
>>> pkg.draw('networkx')
>>> <networkx.classes.digraph.DiGraph at 0x7fbe2311dbd0>
```

2.4 Check cache

Stores parsed dependency metadata to pickles data file. The file name is `py-deps.pickle` in default.

Listing cached data with the `list_data` method of `Container`..

```
>>> from py_deps import Container
>>> Container().list_data()
{'py-deps': [py-deps, setuptools, pip, wheel, networkx, decorator],
 (snip) }
```

Read the cached package with `read_data` method of `Container`. This method returns `Package.traced_chain`.

```
>>> Container().read_data(('py-deps', '0.3.0'))
[py-deps, setuptools, pip, wheel, networkx, decorator]
```

References

py_deps.deps module.

class `py_deps.deps.Node` (*name*, *version=None*, *url=None*)

Bases: `object`

Node object class.

add_targets (*nodes*)

Add targets.

Parameters *nodes* (*list*) – nodes list

add_test_targets (*nodes*)

Add test targets.

Parameters *nodes* (*list*) – nodes list for testing.

remove_targets (**nodes*)

Remove targets.

Parameters **nodes* (**list*) – nodes list

class `py_deps.deps.Package` (*name*, *version=None*, *update_force=False*, ***kwargs*)

Bases: `object`

Package class.

cleanup (*alldir=False*)

Cleanup temporary build directory.

Parameters *alldir* (*bool*) – Remove all temporary directories. (default: `False`)

Return type `None`

draw (*draw_type=None*, *decode_type=''*, *disable_time=False*, *disable_descr=False*)

Generate drawing data.

Parameters

- **draw_type** (*str*) – [`dot``blockdiag``linkdraw`]
- **decode_type** (*str*) – [`'l'``json`(`linkdraw`)]

classmethod **search** (*pkg_name*, *exactly=False*)

Search package.

Return type `list`

Returns search packages

Parameters

- **pkg_name** (*str*) – package name.
- **exactly** (*bool*) – exactly match only.

trace_chain (*pkg_name=None*)

Trace dependency chain.

Parameters **pkg_name** (*str*) – package name**Return type** `None`**class** `py_deps.deps.Target` (*nodename, specs, extras=False*)Bases: `py_deps.deps.Node`

Target objects.

add_targets (*nodes*)

Add targets.

Parameters **nodes** (*list*) – nodes list**add_test_targets** (*nodes*)

Add test targets.

Parameters **nodes** (*list*) – nodes list for testing.**remove_targets** (**nodes*)

Remove targets.

Parameters ***nodes** (**list*) – nodes list`py_deps.deps.u2h` (*name*)

Change underscore to hyphen of package name.

Return type `str`**Returns** string replaced underscore with hyphen**Parameters** **name** (*str*) – package name`py_deps.graph` module.**class** `py_deps.graph.Graph` (*chain_data*)Bases: `object`

Graph data generate abstract class.

generate_nodes ()

Generate nodes data.

class `py_deps.graph.Linkdraw` (*chain_data*)Bases: `py_deps.graph.Graph`

Linkdraw object class.

disable_descr ()

Disable description.

disable_time ()

Disable time.

generate_data ()

Generate Linkdraw data.

generate_edges()
Generate edges data.

generate_nodes()
Generate nodes data.

class `py_deps.graph.Metadata`
Bases: `object`
Metadata object class.

class `py_deps.graph.Networkx(chain_data)`
Bases: `py_deps.graph.Graph`
Networkx object class.

generate_data()
Generate networkx graph data.

generate_edges()
Generate edges data.

generate_nodes()
Generate nodes data.

`py_deps.graph.pretty_print(chain_data)`
Pretty print on terminal.

Parameters `chain_data` (*list*) – List of `deps.Node`

`py_deps.graph.router(chain_data, draw_type=None, decode_type='', disable_time=False, disable_descr=False)`
Routing drawing tool.

`py_deps.cache` module.

class `py_deps.cache.Container(cache_name=None)`
Bases: `object`
Package container class.

list_data()
Return dictionary stored package metadata.

Return type `dict`

Returns packages metadata

read_data(key)
Read traced_chain data.

Return type `list`

Returns dependency chain list

Parameters `key` (*tuple*) – package name, version

store_data(key, data)
store traced_chain data.

class `py_deps.cache.Memcached(servers=None, username=None, password=None, behaviors=None)`
Bases: `py_deps.cache.Container`

Cache backend is Memcached.

list_data()
Return dictionary stored package metadata.

Return type dict

Returns packages metadata

read_data (*key*)

Read traced_chain data.

Return type list

Returns dependency chain list

Parameters **key** (*tuple*) – package name, version

store_data (*key*, *data*)

Store traced_chain data.

Parameters

- **key** (*tuple*) – package name, version
- **data** (*list*) – traced dependency chain data

class `py_deps.cache.Pickle` (*cache_name=None*)

Bases: `py_deps.cache.Container`

Cache backend is Pickle.

list_data ()

Return dictionary stored package metadata.

Return type dict

Returns packages metadata

load_cache ()

Load cache file.

read_data (*key*)

Read traced_chain data.

Return type list

Returns dependency chain list

Parameters **key** (*tuple*) – package name, version

save_cache ()

Save cache file.

store_data (*key*, *data*)

Store traced_chain data.

Parameters

- **key** (*tuple*) – package name, version
- **data** (*list*) – traced dependency chain data

`py_deps.cache.backend` (***kwargs*)

Specify cache backend.

Return type `py_deps.cache.Container`

Returns Pickle object or Memcached object.

Parameters ****kwargs** – parameters

servers Memcached servers (required in Memcached)

Required when Memcached. Using Pickle in default without `servers`.

username Memcached SASL username (optional)

password Memcached SASL password (optional)

cache_name Pickle filename (default, optional)

Design notes

4.1 Memo

purpose	setup.py	Egg	wheel (metadata.json)
requires	install_requires	requires.txt	run_requires.requires
no PyPI	dependency_links	dependency_links.txt	
optional	extras_require		extras
extra resource			run_requires.extra
test			test_requires.requires

History

5.1 0.5.0 (2015-06-22)

- Supports memcached as the backend of cache.

5.2 0.4.6 (2015-06-11)

- Fixes not control the version of package correctly.

5.3 0.4.5 (2015-06-07)

- Adds disable time, descr for Linkdraw.

5.4 0.4.4 (2015-06-03)

- Removes debug print.

5.5 0.4.3 (2015-06-02)

- Adds JSON decoder for Linkdraw.

5.6 0.4.2 (2015-05-31)

- Fixes #7 not handling the failure of python setup egg_info.
- Adds py_deps.exceptions module.
- Adds py_deps.logger module.
- Fixes issues of DistributionNotFound, InstallationError.

5.7 0.4.1 (2015-05-28)

- Adds Container.list_data method.
- Unsupports wheel format for distribution.

5.8 0.4.0 (2015-05-20)

- Searching packages from PyPI.

5.9 0.3.0 (2015-05-12)

- Supports NetworkX DiGraph objects.
- Changes to use mock instead of pip.req.RequirementSet.prepare_files.
- Coverage 98% over.

5.10 0.2.0 (2015-05-10)

- Cache the parsed dependencies.
- Fixes setting the url of node and targets.

5.11 0.1.1 (2015-05-08)

- Fixes test data of pretty_print, linkdraw.

5.12 0.1.0 (2015-05-07)

- Supports generating linkdraw data.
- Supports pip 6.1.1 over.
- Supports wheel format for distribution.
- Adds unit tests.

5.13 0.0.1 (2015-04-29)

- First release

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