Dictdiffer Documentation

Release 0.6.0

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Dictdiffer is a helper module that helps you to diff and patch dictionaries.
Installation

Dictdiffer is on PyPI so all you need is:

$ pip install dictdiffer
Let’s start with an example on how to find the diff between two dictionaries using `diff()` method:

```python
from dictdiffer import diff, patch, swap, revert

first = {
    "title": "hello",
    "fork_count": 20,
    "stargazers": ["/users/20", "/users/30"],
    "settings": {
        "assignees": [100, 101, 201],
    }
}

second = {
    "title": "hellooo",
    "fork_count": 20,
    "stargazers": ["/users/20", "/users/30", "/users/40"],
    "settings": {
        "assignees": [100, 101, 202],
    }
}

result = diff(first, second)

assert list(result) == [
    ('change', ['settings', 'assignees', 2], (201, 202)),
    ('add', 'stargazers', [(2, '/users/40')]),
    ('change', 'title', ('hello', 'hellooo'))
]
```

Now we can apply the diff result with `patch()` method:

```python
result = diff(first, second)
patched = patch(result, first)

assert patched == second
```

Also we can swap the diff result with `swap()` method:

```python
result = diff(first, second)
swapped = swap(result)

assert list(swapped) == [
    ('change', ['settings', 'assignees', 2], (202, 201)),
]```
Let's revert the last changes:

```python
result = diff(first, second)
reverted = revert(result, patched)
assert reverted == first
```

A tolerance can be used to consider closed values as equal. The tolerance parameter only applies for int and float.

Let’s try with a tolerance of 10% with the values 10 and 10.5:

```python
first = {'a': 10.0}
second = {'a': 10.5}
result = diff(first, second, tolerance=0.1)
assert list(result) == []
```

Now with a tolerance of 1%:

```python
result = diff(first, second, tolerance=0.01)
assert list(result) == ('change', 'a', (10.0, 10.5))
```
Dictdiffer is a helper module to diff and patch dictionaries.

\[ \text{dictdiffer}.\text{diff}(\text{first, second, node=None, ignore=None, path_limit=None, expand=False, tolerance=2.220446049250313e-16}) \]

Compare two dictionary/list/set objects, and returns a diff result.

Return iterator with differences between two dictionaries.

\[
\begin{align*}
\text{>>> from dictdiffer import diff} \\
\text{>>> result = diff(\{'a': 'b', \}'\}, \{'a': 'c'\})} \\
\text{>>> list(result)} \\
(\text{('change', 'a', ('b', 'c'))})
\end{align*}
\]

PathLimit:

\[
\begin{align*}
\text{>>> list(diff(\{}\}, \{'a': ('b': 'c')\}))} \\
(\text{(['add', '', [('a', ('b': 'c'))])})
\end{align*}
\]

\[
\begin{align*}
\text{>>> from dictdiffer.utils import PathLimit} \\
\text{>>> list(diff(\{}\}, \{'a': ('b': 'c')\}, path_limit=PathLimit(\}))} \\
(\text{(['add', '', [('a', ('b': 'c'))])})
\end{align*}
\]

\[
\begin{align*}
\text{>>> from dictdiffer.utils import PathLimit} \\
\text{>>> list(diff(\{}\}, \{'a': ('b': 'c')\}, path_limit=PathLimit([('a',)])})} \\
(\text{(['add', '', [('a', ('b': 'c'))])})
\end{align*}
\]

\[
\begin{align*}
\text{>>> from dictdiffer.utils import PathLimit} \\
\text{>>> list(diff(\{}\}, \{'a': ('b': 'c')\}, path_limit=PathLimit([('a', 'b')])})} \\
(\text{(['add', '', [('a', ('b': 'c'))])})
\end{align*}
\]

Expand:

\[
\begin{align*}
\text{... list(diff(\{}\}, \{'foo': 'bar', 'apple': 'mango'\}) ([('add', '', [(('foo', 'bar'), ('apple', 'mango'))])}) \\
\text{... list(diff(\{}\}, \{'foo': 'bar', 'apple': 'mango'\}, expand=True) ([('add', '', [(('foo', 'bar'))], ('add', '', [(('apple', 'mango'))]])}
\end{align*}
\]

Parameters

- **first** – original dictionary, list or set
- **second** – new dictionary, list or set
- **node** – key for comparison that can be used in `dot_lookup()`
Dictdiffer Documentation, Release 0.6.0

- **ignore** – list of keys that should not be checked
- **path_limit** – List of path limit tuples or dictdiffer.utils.Pathlimit object to limit the diff recursion depth
- **expand** – Expands the patches
- **tolerance** – threshold to consider 2 values identical

Changed in version 0.3: Added `ignore` parameter.

Changed in version 0.4: Arguments `first` and `second` can now contain a set.

Changed in version 0.5: Added `path_limit` parameter. Added `expand` parameter. Added `tolerance` parameter.

dictdiffer.**patch** *(diff_result, destination)*
Patch the diff result to the old dictionary.

dictdiffer.**swap** *(diff_result)*
Swap the diff result.

It uses following mapping:
- remove -> add
- add -> remove

In addition, swap the changed values for `change` flag.

```python
>>> from dictdiffer import swap
>>> swapped = swap([('add', 'a.b.c', ('a', 'b'))])
>>> next(swapped)
('remove', 'a.b.c', ('a', 'b'))
```

```python
>>> swapped = swap([('change', 'a.b.c', ('a', 'b'))])
>>> next(swapped)
('change', 'a.b.c', ('b', 'a'))
```

dictdiffer.**revert** *(diff_result, destination)*
Call swap function to revert patched dictionary object.

Usage example:

```python
>>> from dictdiffer import diff, revert
>>> first = {'a': 'b'}
>>> second = {'a': 'c'}
>>> revert(diff(first, second), second)
{'a': 'b'}
```

dictdiffer.**dot_lookup** *(source, lookup, parent=False)*
Allow you to reach dictionary items with string or list lookup.

Recursively find value by lookup key split by `.`.

```python
>>> from dictdiffer.utils import dot_lookup
>>> dot_lookup({'a': {'b': 'hello'}}, 'a.b')
'hello'
```

If parent argument is True, returns the parent node of matched object.

```python
>>> dot_lookup({'a': {'b': 'hello'}}, 'a.b', parent=True)
{'b': 'hello'}
```

If node is empty value, returns the whole dictionary object.
>>> dot_lookup({'a': {'b': 'hello'}}, '')
{'a': {'b': 'hello'}}
CHAPTER 4

Changes

Version 0.6.0 (released 2016-06-22)

• Adds support for comparing NumPy arrays. (#68)
• Adds support for comparing mutable mappings, sequences and sets from collections.abc module. (#67)
• Updates package structure, sorts imports and runs doctests.
• Fixes order in which handled conflicts are unified so that the Merger’s unified_patches can be always applied.

Version 0.5.0 (released 2016-01-04)

• Adds tolerance parameter used when user wants to treat closed values as equals
• Adds support for comparing numerical values and NaN. (#54) (#55)

Version 0.4.0 (released 2015-03-11)

• Adds support for diffing and patching of sets. (#44)
• New tests for diff on the same lists. (#48)
• Fix for exception when dict has unicode keys and ignore parameter is provided. (#50)
• PEP8 improvements.

Version 0.3.0 (released 2014-11-05)

• Adds ignore argument to diff function that allows skipping check on specified keys. (#34 #35)
• Fix for diffing of dict or list subclasses. (#37)
• Better instance checking of diffing objects. (#39)

Version 0.2.0 (released 2014-09-29)

• Fix for empty list instructions. (#30)
• Regression test for empty list instructions.

Version 0.1.0 (released 2014-09-01)

• Fix for list removal issues during patching caused by wrong iteration. (#10)
• Fix for issues with multiple value types for the same key. (#10)
• Fix for issues with strings handled as iterables. (#6)
• Fix for integer keys. (#12)
• Regression test for complex dictionaries. (#4)
• Better testing with Travis CI, tox, pytest, code coverage. (#10)
• Initial release of documentation on ReadTheDocs. (#21 #24)
• Support for Python 3. (#15)

Version 0.0.4 (released 2014-01-04)
• List diff behavior treats lists as lists instead of sets. (#3)
• Differed typed objects are flagged as changed now.
• Swap function refactored.

Version 0.0.3 (released 2013-05-26)
• Initial public release on PyPI.
Bug reports, feature requests, and other contributions are welcome. If you find a demonstrable problem that is caused by the code of this library, please:

1. Search for already reported problems.
2. Check if the issue has been fixed or is still reproducible on the latest master branch.
3. Create an issue with a test case.

If you create a feature branch, you can run the tests to ensure everything is operating correctly:

```bash
$ ./run-tests.sh
...
Name Stmts Miss Cover  Missing
-----------------------------------------------
dictdiffer/__init__  88  0  100%
dictdiffer/version  2  0  100%
-----------------------------------------------
TOTAL               90  0  100%
...
52 passed, 2 skipped in 0.44 seconds
```
Dictdiffer is free software; you can redistribute it and/or modify it under the terms of the MIT License quoted below.

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