equitable-coloring

Release 0.1.2

Feb 15, 2022

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Overview

Update: This is now merged into `networkx` package (via [networkx/#3127](#)). See [networkx.algorithms.coloring.equitable_color](#).

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Equitable coloring for [networkX](#) graphs.

From [Wikipedia](#):

> In graph theory [..] an equitable coloring is an assignment of colors to the vertices of an undirected graph, in such a way that
>
> - No two adjacent vertices have the same color, and
> - The numbers of vertices in any two color classes differ by at most one.

[Kierstead et. al.](#) have provided a fast polynomial time algorithm for uncovering an equitable coloring using `r + 1` colors for a graph with maximum degree `r`. This package is an implementation of the algorithm for networkX graphs.

- Free software: MIT license

1.1 Installation

```
pip install equitable-coloring
```

1.2 Usage

To use `equitable-coloring`:

```
>>> import networkx as nx
>>> from equitable_coloring import equitable_color
>>> from equitable_coloring.utils import is_equitable
>>> G = nx.cycle_graph(4)
>>> d = equitable_color(G, num_colors=3)
>>> is_equitable(G, d)
True
```

1.3 Documentation

https://equitable-coloring.readthedocs.io/

1.4 Development

To run the all tests run:

```
pip install pytest-cov   # Needed the first time.
python setup.py test
```

Or, you can use `tox`.

CHAPTER 2

Installation

At the command line:

```
pip install equitable-coloring
```

Usage

To use equitable-coloring in a project:

```
>>> import networkx as nx
>>> from equitable_coloring import equitable_color
>>> from equitable_coloring.utils import is_equitable
>>> G = nx.cycle_graph(4)
>>> d = equitable_color(G, num_colors=3)
>>> is_equitable(G, d)
True
```

Reference

4.1 equitable_coloring

Contributing

Contributions are welcome, and they are greatly appreciated! Every little bit helps, and credit will always be given.

5.1 Bug reports

When reporting a bug please include:

- Your operating system name and version.
- Any details about your local setup that might be helpful in troubleshooting.
- Detailed steps to reproduce the bug.

5.2 Documentation improvements

equitable-coloring could always use more documentation, whether as part of the official equitable-coloring docs, in docstrings, or even on the web in blog posts, articles, and such.

5.3 Feature requests and feedback

The best way to send feedback is to file an issue at https://github.com/musically-ut/equitable-coloring/issues.

If you are proposing a feature:

- Explain in detail how it would work.
- Keep the scope as narrow as possible, to make it easier to implement.
- Remember that this is a volunteer-driven project, and that code contributions are welcome :)

5.4 Development

To set up *equitable-coloring* for local development:

1. Fork equitable-coloring (look for the "Fork" button).

2. Clone your fork locally:

```
git clone git@github.com:your_name_here/equitable-coloring.git
```

3. Create a branch for local development:

```
git checkout -b name-of-your-bugfix-or-feature
```

    Now you can make your changes locally.

4. When you're done making changes, run all the checks, doc builder and spell checker with tox one command:

```
tox
```

5. Commit your changes and push your branch to GitHub:

```
git add .
git commit -m "Your detailed description of your changes."
git push origin name-of-your-bugfix-or-feature
```

6. Submit a pull request through the GitHub website.

5.4.1 Pull Request Guidelines

If you need some code review or feedback while you're developing the code just make the pull request.

For merging, you should:

1. Include passing tests (run tox)[1].

2. Update documentation when there's new API, functionality etc.

3. Add a note to CHANGELOG.rst about the changes.

4. Add yourself to AUTHORS.rst.

5.4.2 Tips

To run a subset of tests:

```
tox -e envname -- pytest -k test_myfeature
```

To run all the test environments in *parallel* (you need to pip install detox):

```
detox
```

---

[1] If you don't have all the necessary python versions available locally you can rely on Travis - it will run the tests for each change you add in the pull request.

It will be slower though . . .

CHAPTER 6

Authors

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Changelog

7.1 0.1.2 (2018-06-30)

- Update README and usage instructions.

7.2 0.1.1 (2018-06-30)

- Initial version with tests.

7.3 0.1.0 (2018-06-11)

- First commit.

Indices and tables

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