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# Software Packaging with Python: Writing a setup.py

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# Why would you need to do this?

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- You want to your code to be reliably installed and used by others

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- You want to your code to be reliably installed and used by others
  - You have a cpu-intensive function that you is too slow in python
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# What is a python package?

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## PYTHON PACKAGING TERMINOLOGY

- “package”: the biggest thing. E.g., *astropy*, *numpy*, *sunpy*. A directory with an “\_\_init\_\_.py”
- “module”: a single “something.py” file - the module is “something”
- “subpackage”: a package within a package
- “source directory/folder”: the directory / folder with all of a codes “stuff”
- “repository” / “repo”: the source directory \*in version control\*
- “submodule”: a git repo embedded in \*another\* git repo
  - “astropy-helpers”: an example seen in Astropy packages

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# What is a python package?

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## **SAMPLE PACKAGE LAYOUT**

README

LICENSE

setup.py

mypackage/\_\_init\_\_.py

mypackage/mymodule.py

mypackage/secondmodule.py

mypackage/subpackage/\_\_init\_\_.py

mypackage/subpackage/anothermodule.py

```
import mypackage
from mypackage import my module
from mypackage import secondmodule
from mypackage import subpackage
from mypackage.subpackage import anothermodule
```

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# What is a python package?

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**lower-case**

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# Writing a setup.py file

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If all you want to do is distribute a module called `foo`, contained in a file `foo.py`, then your setup script can be as simple as this:

```
from distutils.core import setup
setup(name='foo',
      version='1.0',
      py_modules=['foo'],
      )
```

**<https://docs.python.org/3/distutils/introduction.html#distutils-simple-example>**

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# Writing a setup.py file

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```
#!/usr/bin/env python

from distutils.core import setup

setup(name='Distutils',
      version='1.0',
      description='Python Distribution Utilities',
      author='Greg Ward',
      author_email='gward@python.net',
      url='https://www.python.org/sigs/distutils-sig/',
      packages=['distutils', 'distutils.command'],
      )
```

**<https://docs.python.org/3/distutils/setupscript.html>**

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# Let's add a C extension


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**<https://github.com/astrofrog/fast-histogram/>**

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# Let's add a C extension

Branch: master ▾ fast-histogram / setup.py Find file Copy path


 **astrofrog** Back to development: v0.3 58cf5ce 3 days ago




1 contributor







22 lines (18 sloc) | 741 Bytes Raw Blame History





```
1  import os
2
3  import numpy as np
4  from setuptools import setup
5  from setuptools.extension import Extension
6
7  extensions = [Extension("fast_histogram._histogram_core",
8                          [os.path.join('fast_histogram', '_histogram_core.c')],
9                          include_dirs=[np.get_include()])]
10
11  setup(name='fast-histogram',
12        version='0.3.dev0',
13        description='Fast simple 1D and 2D histograms',
14        long_description=open('README.rst').read(),
15        install_requires=['numpy'],
16        author='Thomas Robitaille',
17        author_email='thomas.robitaille@gmail.com',
18        license='BSD',
19        url='https://github.com/astrofrog/fast-histogram',
20        packages=['fast_histogram', 'fast_histogram.tests'],
21        ext_modules=extensions)
```


# What does the fast-histogram package contain?

 **astrofrog** / **fast-histogram**





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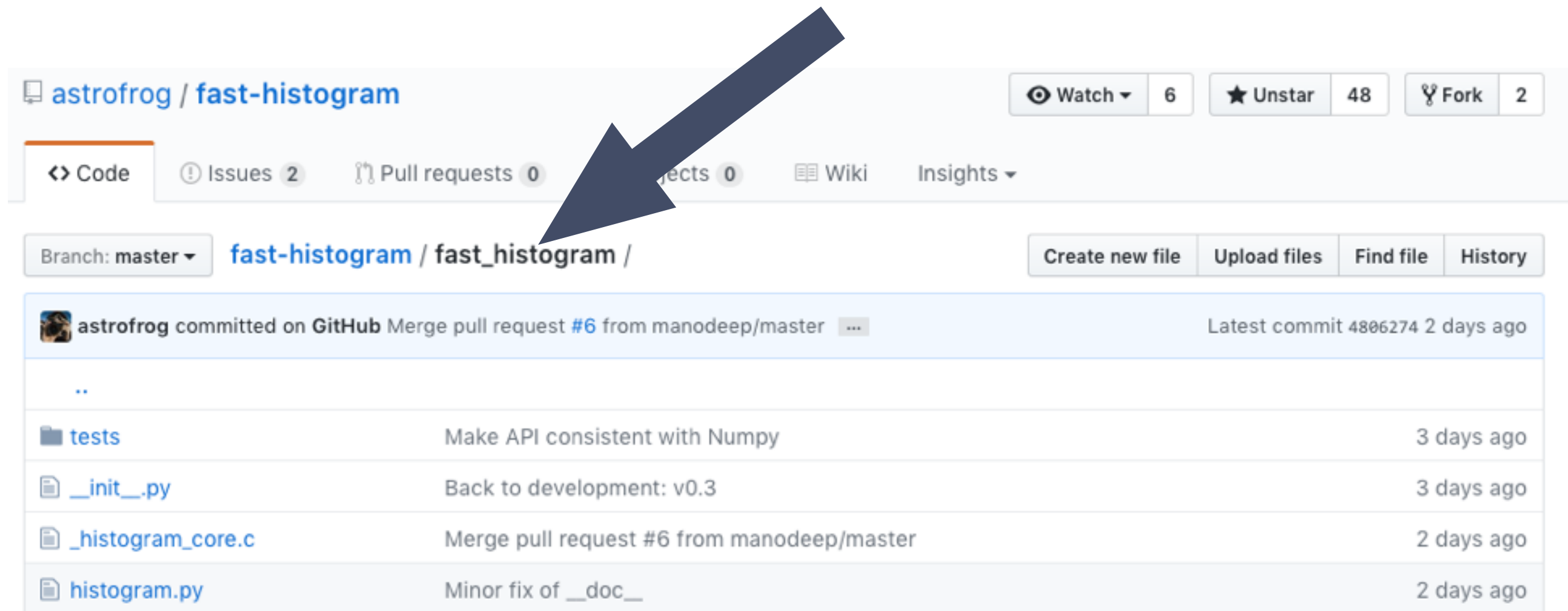
Branch: master ▾ **fast-histogram** / fast\_histogram /    

 **astrofrog** committed on **GitHub** Merge pull request [#6](#) from manodeep/master ... Latest commit 4806274 2 days ago

..

 <a href="#">tests</a>	Make API consistent with Numpy	3 days ago
 <a href="#">__init__.py</a>	Back to development: v0.3	3 days ago
 <a href="#">_histogram_core.c</a>	Merge pull request #6 from manodeep/master	2 days ago
 <a href="#">histogram.py</a>	Minor fix of __doc__	2 days ago

# What does the fast-histogram package contain?



astrofrog / fast-histogram

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<https://github.com/astrofrog/fast-histogram/>

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# What does the fast-histogram package contain?

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**Look at histogram1d within histogram.py**



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# Now the C extension

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**The C function (+ boilerplate)**