

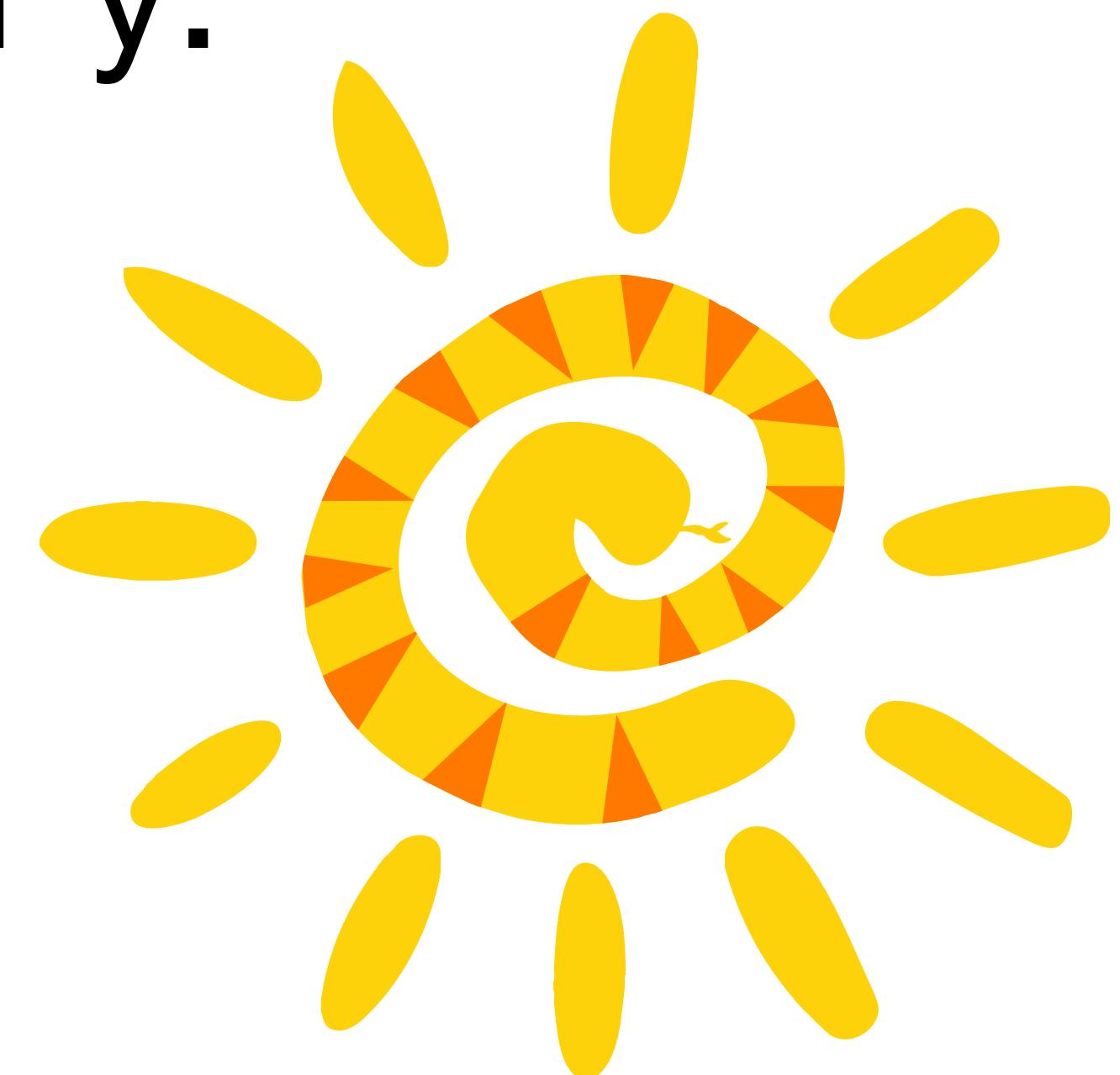
welcome to the SunPy workshop!

grab some pizza and do one of the following:

[1] if you have Anaconda, install SunPy:

```
> conda install sunpy
```

[2] if you don't have Anaconda, find
a buddy that does



sunpy/SPD_2017: Repository

GitHub, Inc. [US] | https://github.com/sunpy/SPD_2017

Apps Read Later vids News, etc. food Finance ideas photography tech general language/linguists fiction/books To read politics/polemicists Other Bookmarks

Monica

This repository Search Pull requests Issues Marketplace Explore Watch 4 Star 0 Fork 0

sunpy / SPD_2017

Code Issues 0 Pull requests 0 Projects 0 Wiki Insights

Repository for the SunPy workshop at SPD 2017

9 commits 1 branch 0 releases 2 contributors

Branch: master New pull request Create new file Upload files Find file Clone or download

DanRyanIrish spectral line fitting notebook and file. Latest commit da5a2c4 5 hours ago

sample-photos added sample photos to repository. a day ago

EVS_L2_2011045_01_005_01.fit spectral line fitting notebook and file. 5 hours ago

README.md Update README.md a day ago

eclipse_example.ipynb added eclipse notebook 2 days ago

fido_example.ipynb Added an example notebook on the unified downloader fido. 12 days ago

jsoc_example.ipynb added jsoc example notebook 2 days ago

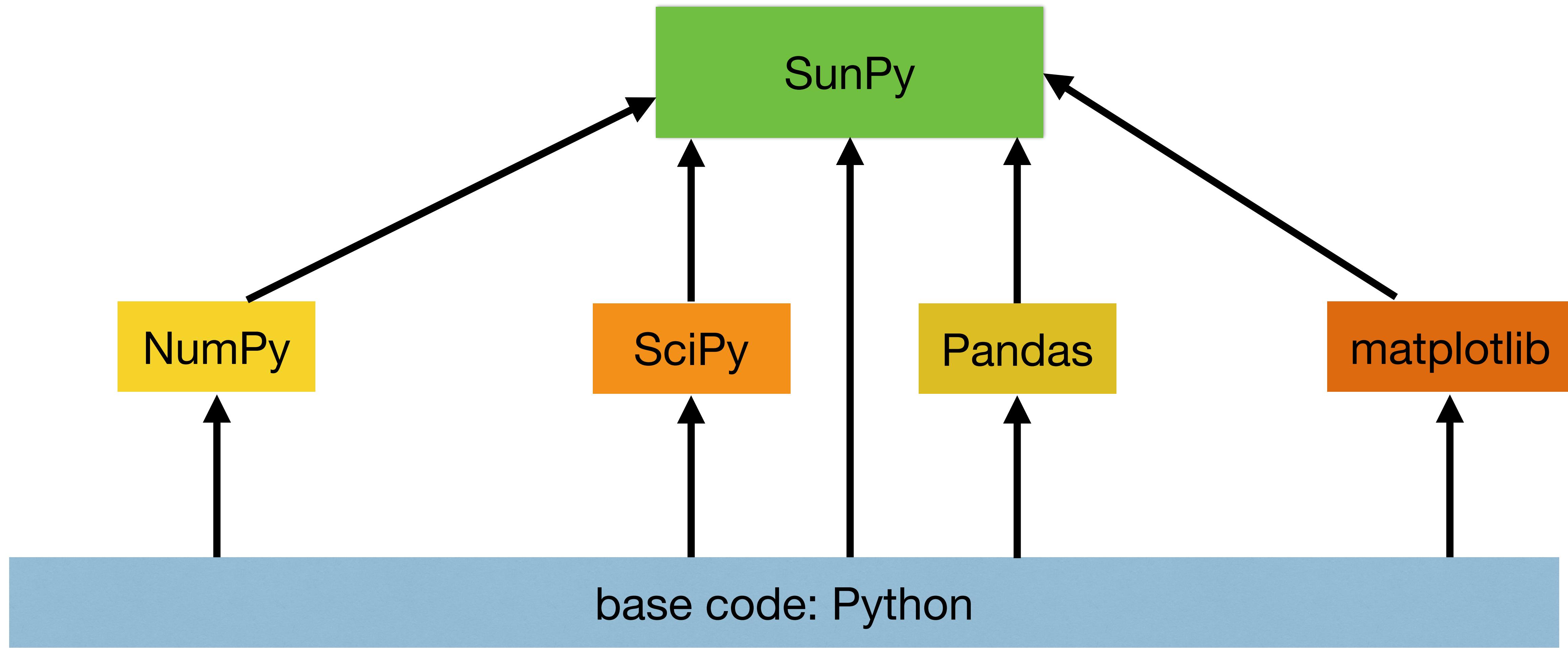
pythonTutorial_fitting_a_spectral_l... spectral line fitting notebook and file. 5 hours ago

timeseries_example.ipynb added a timeseries example notebook 6 days ago

5 Reasons Why I Think Python is Awesome

Monica Bobra
Stanford University
mbobra@stanford.edu

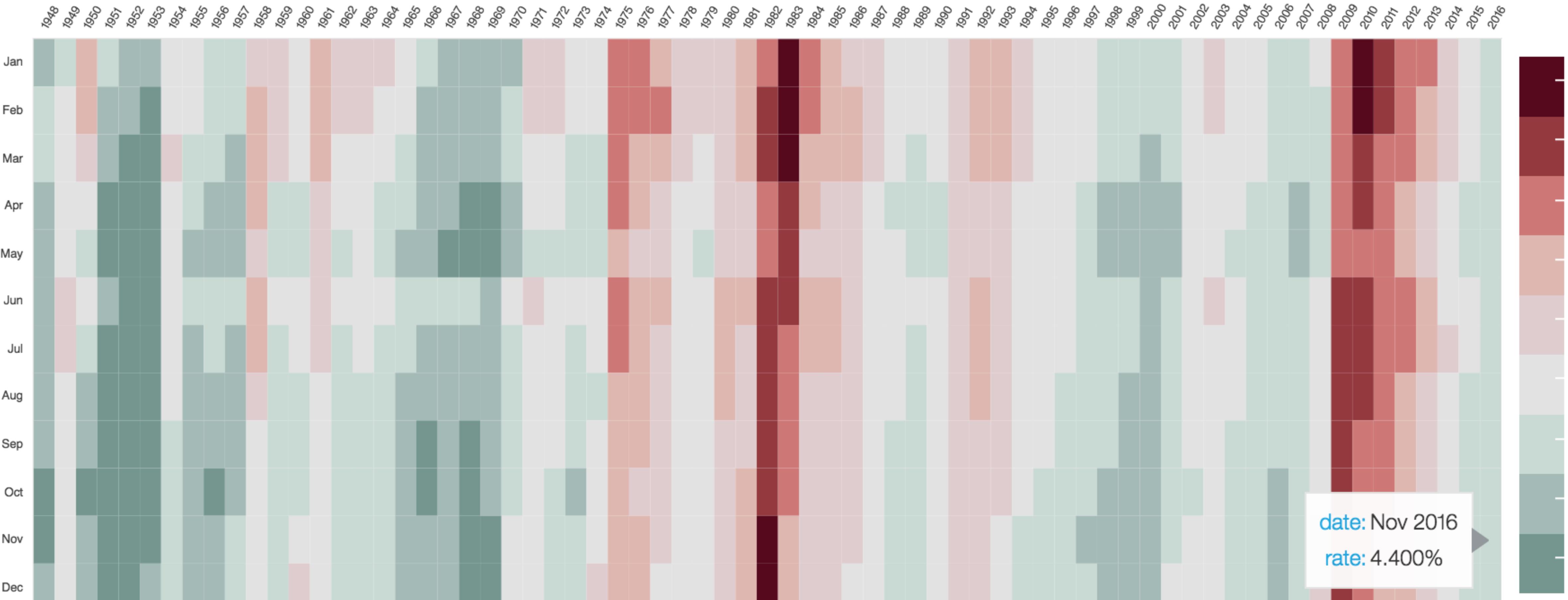
#1 the sheer number of packages



#1 the sheer number of packages
according to the Python
Package Index (PyPI),
there are 115,271 packages
as of today

interactive data visualization

US Unemployment (1948 - 2016)



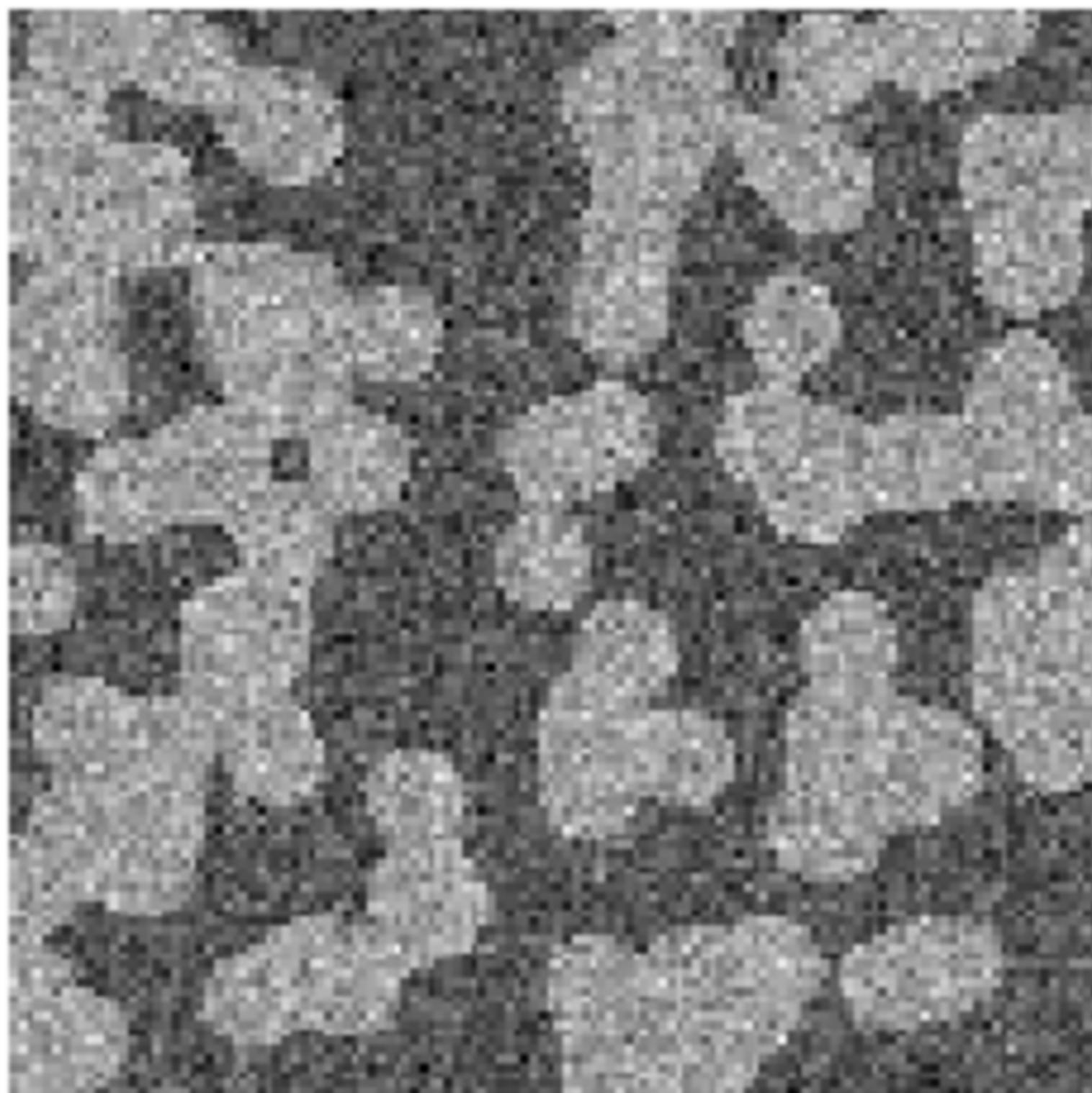
visualization from <http://bokeh.pydata.org/en/latest/docs/gallery/unemployment.html>



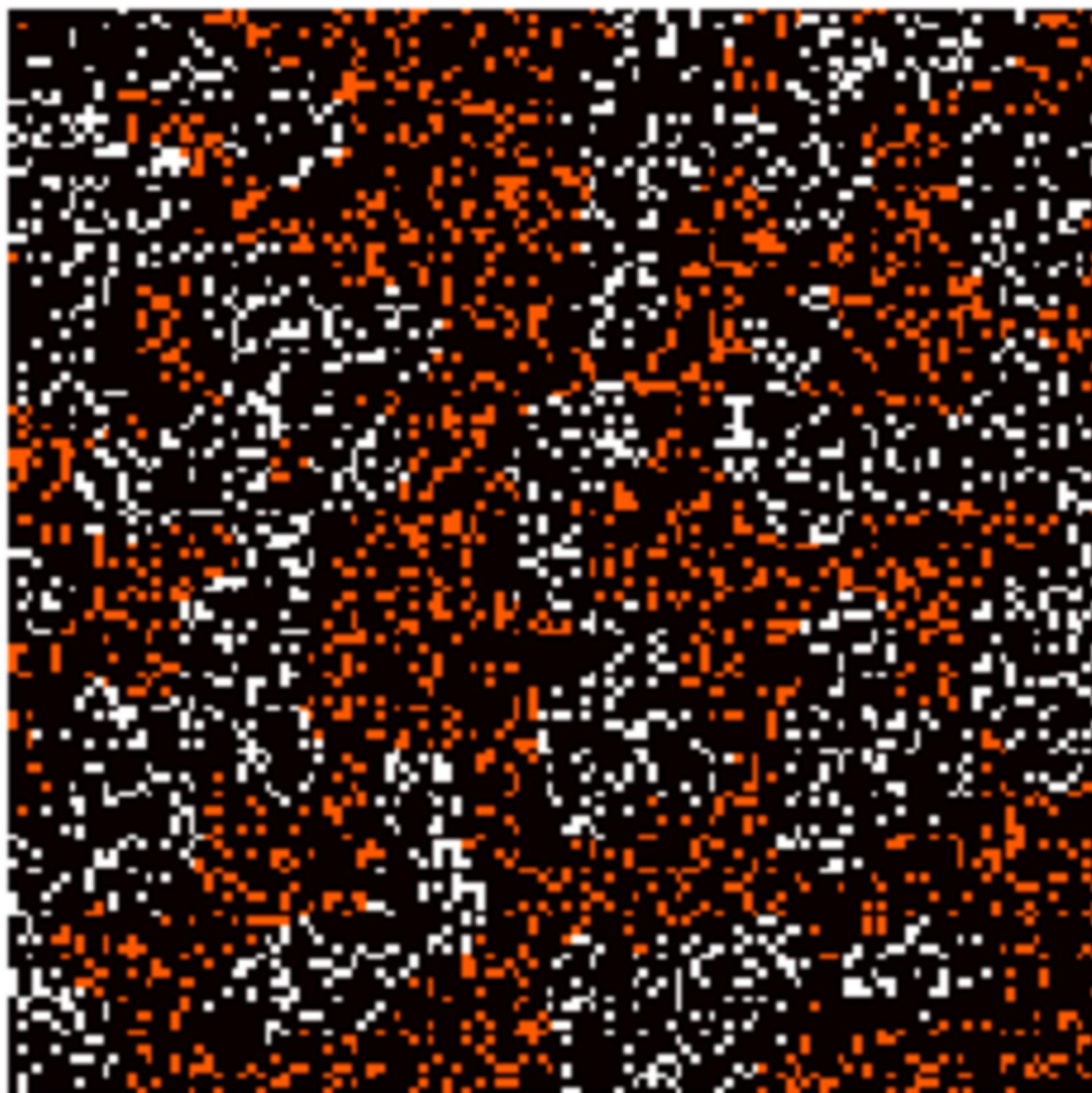
bokeh, <http://bokeh.pydata.org/>
mpld3, <https://mpld3.github.io/>
seaborn, <http://seaborn.pydata.org/>

computer vision

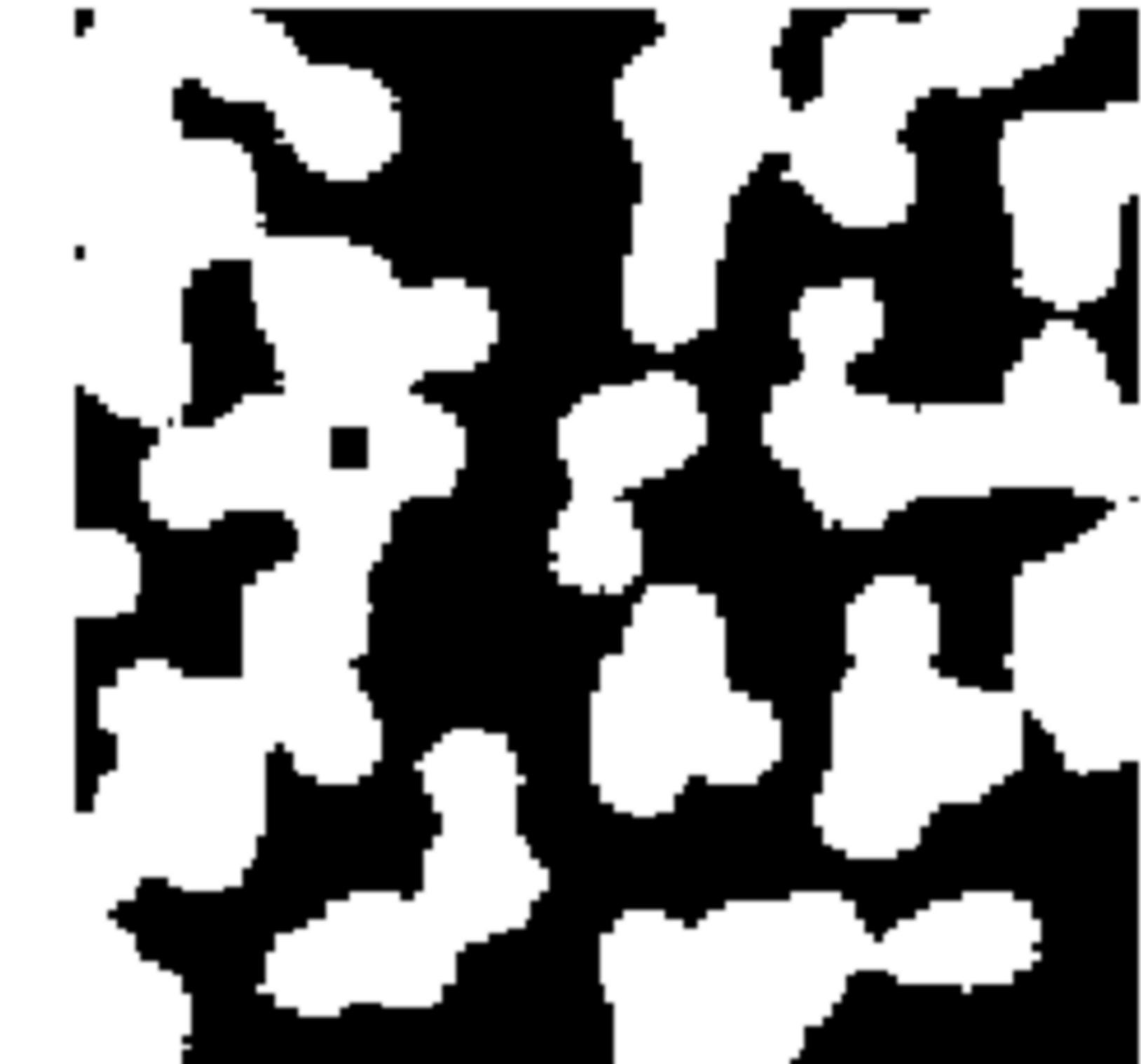
Noisy data



Markers



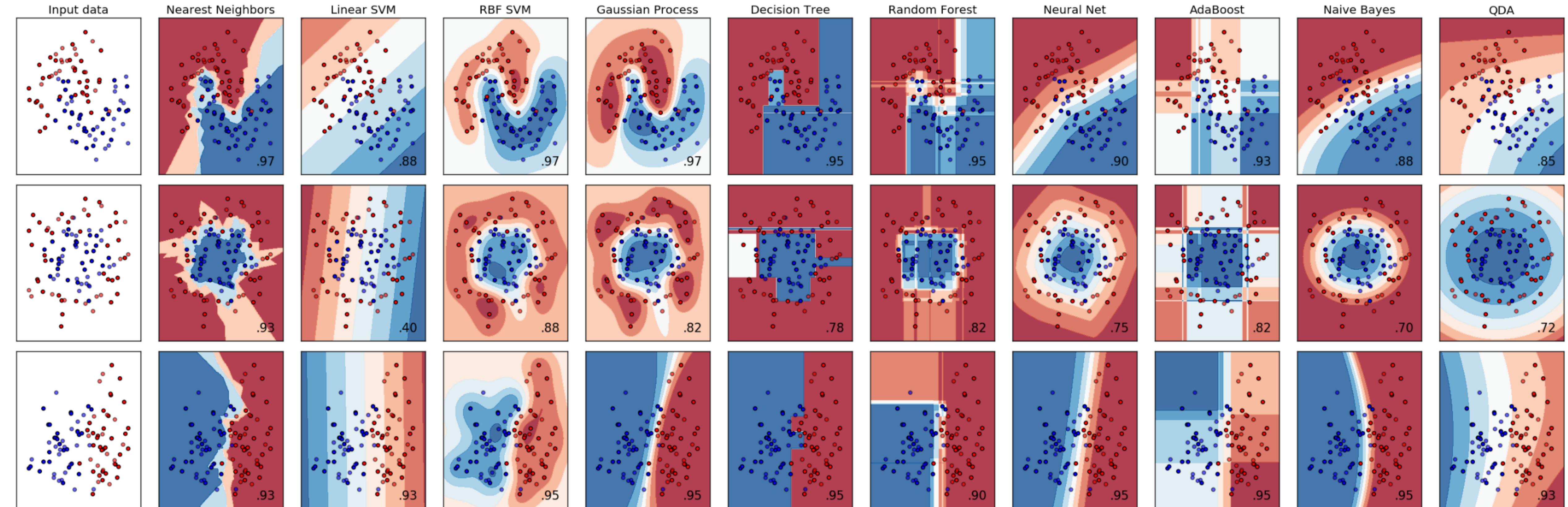
Segmentation



example from http://scikit-image.org/docs/stable/auto_examples/segmentation/plot_random_walker_segmentation.html

scikit-image, <http://scikit-image.org/>
opencv, <http://opencv.org/>
pillow, <https://pillow.readthedocs.io>

machine learning



visualization from http://scikit-learn.org/stable/auto_examples/classification/plot_classifier_comparison.html

scikit-learn, <http://scikit-learn.org/>
caffe, <http://caffe.berkeleyvision.org/>

related fields



PlasmaPy

sunpy, <http://sunpy.org/>, The SunPy Community (2015)
astropy, <http://www.astropy.org/>, The Astropy Collaboration (2013)
plasmapy, <https://github.com/PlasmaPy/PlasmaPy>, Murphy et al. (2016)
spacepy, <https://pythonhosted.org/SpacePy/>, Morley et al. (2011)

#2 reproducibility

IS THERE A REPRODUCIBILITY CRISIS?

A *Nature* survey lifts the lid on how researchers view the ‘crisis’ rocking science and what they think will help.

BY MONYA BAKER

52%
Yes, a significant crisis

38%
Yes, a slight crisis

7%
Don't know

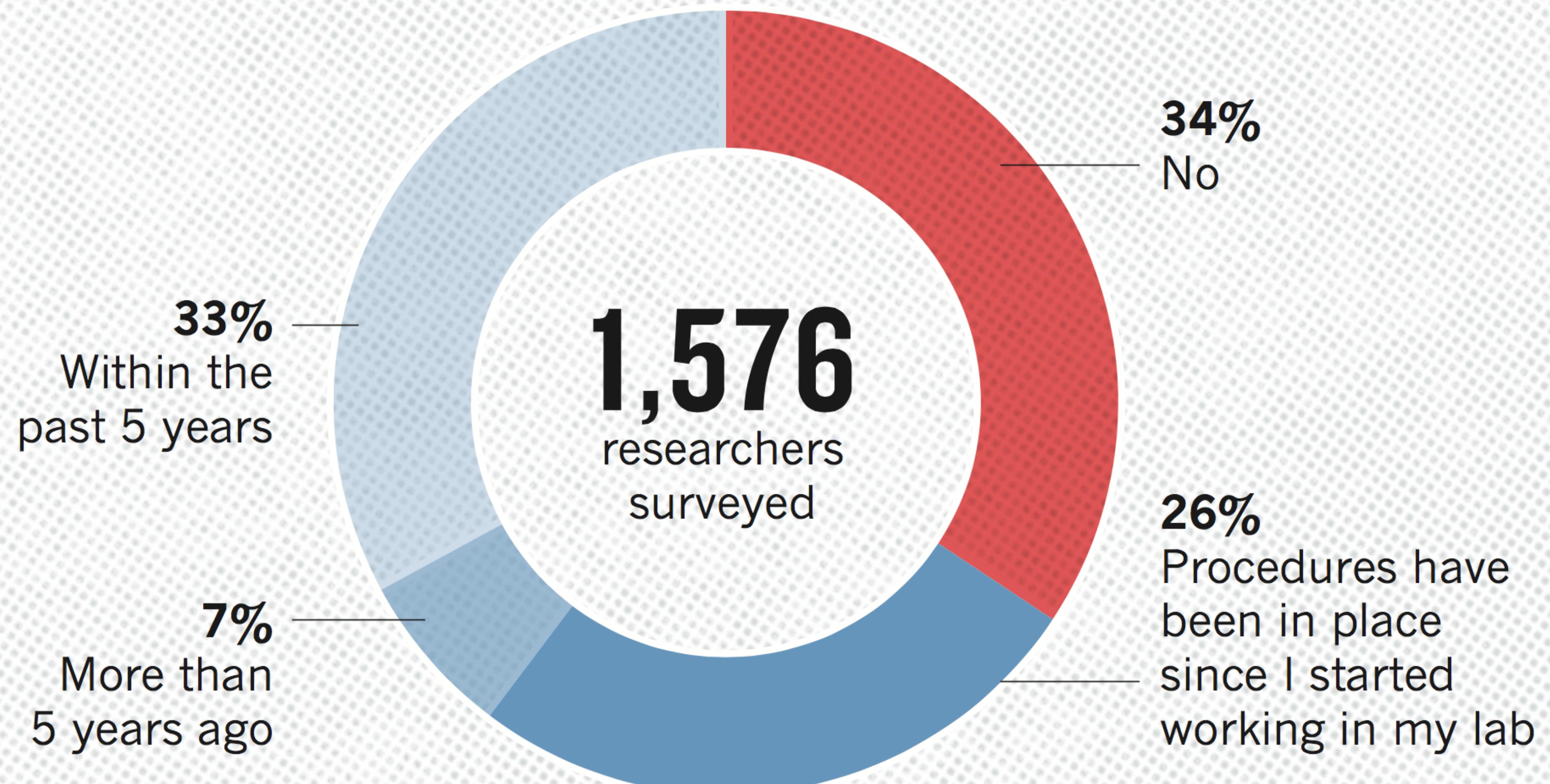
3%
No, there is no crisis

1,576
RESEARCHERS SURVEYED

Nature, 452, 533, May 2016

HAVE YOU ESTABLISHED PROCEDURES FOR REPRODUCIBILITY?

Among the most popular strategies was having different lab members redo experiments.



TOOLBOX

INTERACTIVE NOTEBOOKS: SHARING THE CODE

The free IPython notebook makes data analysis easier to record, understand and reproduce.

ILLUSTRATION BY THE PROJECT TWINS



Reproducible academic publications

This section contains academic papers that have been published in the peer-reviewed literature or pre-print sites such as the [ArXiv](#) that include one or more notebooks that enable (even if only partially) readers to reproduce the results of the publication. If you include a publication here, please link to the journal article as well as providing the nbviewer notebook link (and any other relevant resources associated with the paper).

1. [Discovery of Gravitational Waves by the LIGO collaboration](#). That page, from the LIGO Open Science Center, contains multiple notebooks for various datasets corresponding to different events; [this binder](#) lets you run the code right away. More details on the [GW150914](#) event as well as the original [main Physical Review Letters paper](#), "Observation of Gravitational Waves from a Binary Black Hole Merger".
2. [Characterizing Strain Variation in Engineered E. coli Using a Multi-Omics-Based Workflow](#), by Brunk et al.
3. [Predicting Coronal Mass Ejections Using Machine Learning Methods](#) by Monica Bobra and Stathis Ilonidis (Astrophysical Journal, 2016). An [IPython notebook](#), which reproduces all the results, has been permanently deposited in the [Stanford Digital Repository](#).
4. [The Paper of the Future](#) by Alyssa Goodman et al. (Authorea Preprint, 2017). This article explains and shows with demonstrations how scholarly "papers" can morph into long-lasting rich records of scientific discourse, enriched with deep data and code linkages, interactive figures, audio, video, and commenting. It includes an interactive d3.js visualization and has an astronomical data figure with an IPYthon Notebook "behind" it.

#3 constant support

Riot X Monica Secure | https://riot.im/app/#/room/#sunpy-general:matrix.org

Apps Read Later vids News, etc. food Finance ideas photography SVG Crowbar 2 tech general language/linguists fiction/books To read » Other Bookmarks

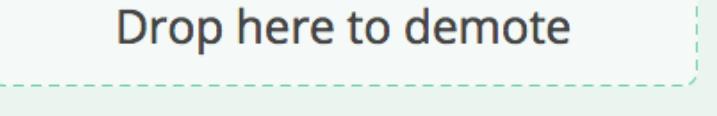
⚠ You are not receiving desktop notifications [Enable them now](#)

Filter room names <  SunPy Python for Solar Physics - <http://sunpy.org> - Main SunPy Channel

Favorites 

People 1  Kolja

Rooms 3  SunPy  SunPy Board  drms

Low Priority 

Historical >

61 Filter room members

Jump to first unread message. 

DavidPS nice!! itachi_uchiha_- don't forget that you have another blog to update!! nitinkgp23, DuyguKeskek, [@pgabor:matrix.org](#) - You too!!! nitinkgp23 - you really have to catch up!!! abit2 - thanks you for being the only one I don't need to mention!! nitinkgp23 Yeah.. It has been a long time. I will write a blog post by tomorrow.

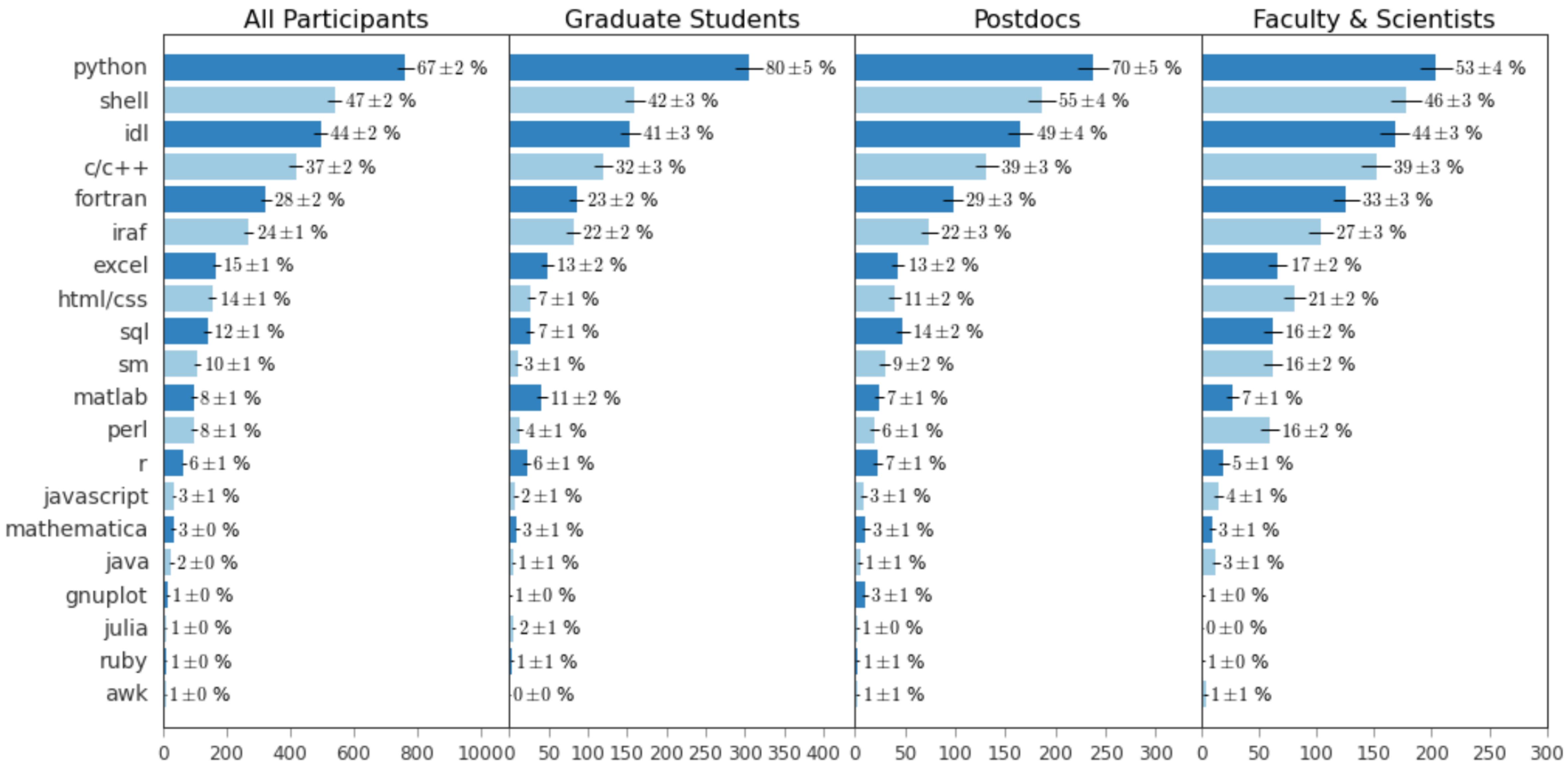
4+  Github [\[@Cadair:matrix.org\]](#) [sunpy/sunpy] Cadair closed **pull request #2259**: [Test] Removal of folder for CI that openjpeg uses [closed] - <https://github.com/sunpy/sunpy/pull/2259>  jhourcle (IRC) left the room.



M  Send a message (unencrypted)...

    Invite to this room

#4 large community



#4 large community

Programming Language	2017	2012	2007	2002	1997	1992	1987
Java	1	1	1	1	15	-	-
C	2	2	2	2	1	1	1
C++	3	3	3	3	2	2	5
C#	4	4	7	14	-	-	-
Python	5	7	6	11	27	-	-
Visual Basic .NET	6	19	-	-	-	-	-
PHP	7	6	4	5	-	-	-
JavaScript	8	9	8	8	22	-	-
Perl	9	8	5	4	4	10	-
Assembly language	10	-	-	-	-	-	-

#5 social coding

The screenshot shows the GitHub homepage with a dark background featuring a faint circuit board pattern. In the center, the text "Built for developers" is displayed in large white font. Below it, a paragraph explains GitHub's purpose: "GitHub is a development platform inspired by the way you work. From open source to business, you can host and review code, manage projects, and build software alongside millions of other developers." At the top, there is a navigation bar with links for Features, Business, Explore, Marketplace, and Pricing. On the right side, there is a search bar labeled "Search GitHub" and a "Sign in or Sign up" button. A prominent sign-up form is overlaid on the right, containing fields for "Username" (placeholder "Pick a username"), "Email" (placeholder "you@example.com"), and "Password" (placeholder "Create a password"). Below the password field is a note: "Use at least one letter, one numeral, and seven characters." A large green "Sign up for GitHub" button is at the bottom of the form. At the very top of the page, a browser header shows the title "The world's leading software" and the URL "GitHub, Inc. [US] | https://github.com".

The world's leading software

GitHub, Inc. [US] | https://github.com

Features Business Explore Marketplace Pricing

Search GitHub

Sign in or Sign up

Username

Pick a username

Email

you@example.com

Password

Create a password

Use at least one letter, one numeral, and seven characters.

Sign up for GitHub

By clicking "Sign up for GitHub", you agree to our [terms of service](#) and [privacy policy](#). We'll occasionally send you account related emails.

#5 social coding

“100% of people use software
in their research, but very little
have formal training.”

—Momcheva and Tollerud (2015)

#5 social coding

PEP 8



Travis CI



Read the Docs

Create, host, and browse documentation.

more resources

- SunPy Guide: <http://docs.sunpy.org/en/stable/guide/index.html>
- Open Astronomy course: https://github.com/OpenAstronomy/crash_course
- SunPy workshops: <https://github.com/sunpy/presentations>

