Python for POF

Workshop Series - Part 1

PLEASE CHOOSE A PARTNER AND SIT NEXT TO EACH OTHER

Better if Windows users sit together.

Linux / MacOS users can mingle

Acknowledgements

and many more ...

Thanks to the people who share

Poll Time

Use of terminal

Programming (C, C++, Fortran, Java)

Windows users

Part 1.1

- Understand version control
- Make our first repository
- Integrate it with github
- Collaborate with a partner

- Basics of python

Part 1.2

- Understand different features
- Using jupyter notebook

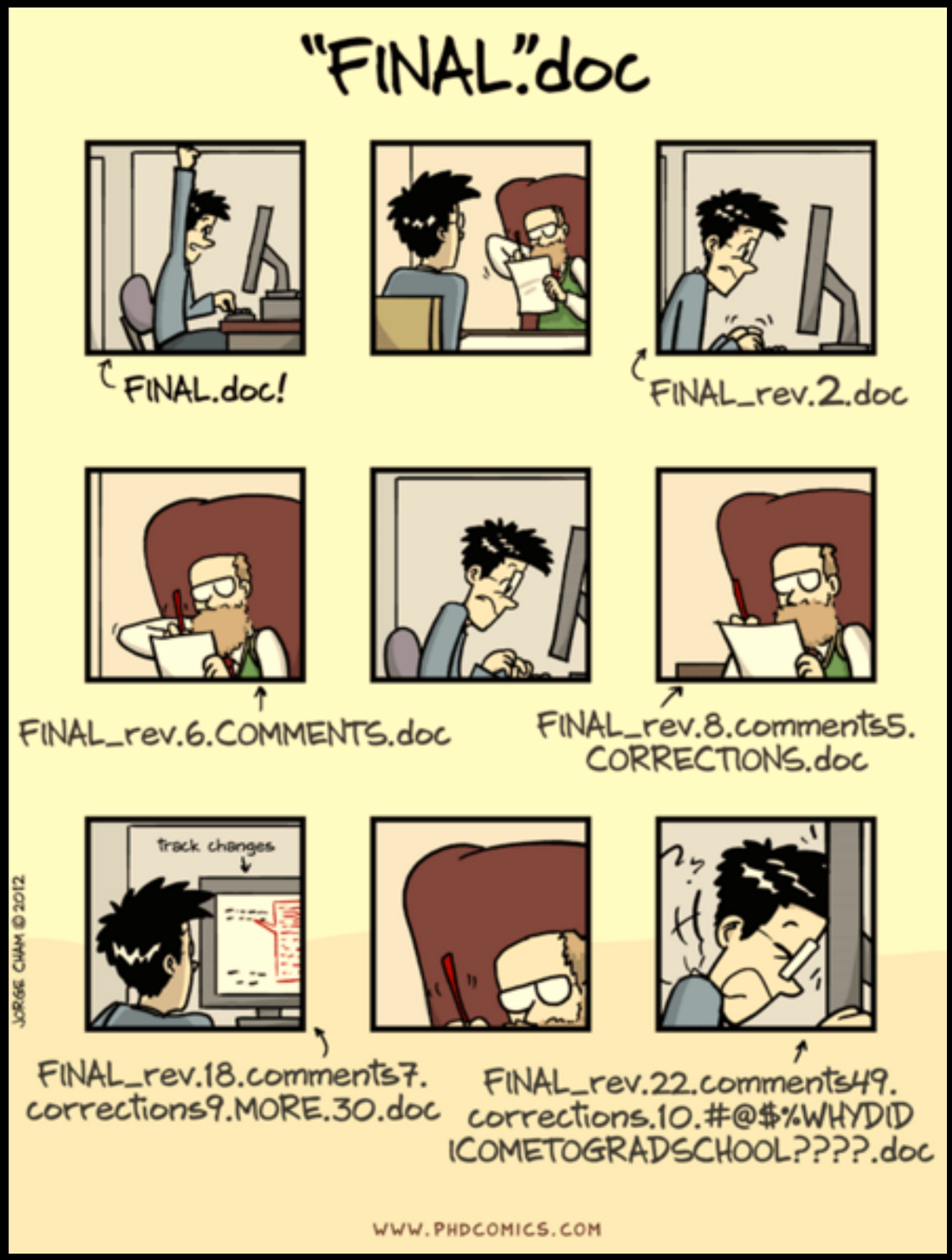
- Numpy
- Matplotlib

Part 1.3

- Solving simple equations

Version Control

- Large codes
- Scripts
- Text files
- .tex files
- png files (github)



Version Control

Back up changing files

Store and access commented history

Manage branching and merging

Time Machine !

for research

Git

Installation

```
🍻  vpn098157:~ which git
/usr/local/bin/git
```

Configure git

```
🍻  vpn098157:~ git config --global user.name "Vamsi Spandan"
```

```
🍻  vpn098157:~ git config --global user.email "email@email.com"
```

Lets get started !

UNDERSTANDING GIT ENVIRONMENT

*“All **world’s** a stage; **men and women** are merely players”*

Shakespeare

*“All **your folder** **is** a stage; **files** are merely players”*

VS

Lets get started !

my_folder

- Prepare the stage (folder)

Lets get started !

my_folder

- file_one.txt
- file_two.txt
- file_three.txt

- Prepare the stage (folder)
- Recruit actors (files)

Lets get started !

my_folder

- file_one.txt
- file_two.txt
- file_three.txt

- Prepare the stage (folder)
- Recruit actors (files)
- Stage the actors (files)

Lets get started !

my_folder

- file_one.txt
- file_two.txt
- file_three.txt

- Prepare the stage (folder)
- Recruit actors (files)
- Stage the actors (files)
- Snapshot !

Lets get started !

my_folder

- file_one.txt
- file_two.txt
- file_three.txt

- Prepare the stage (folder)
- Recruit actors (files)
- Stage the actors (files)
- Snapshot !

First commit !!!

Lets do it together

Initialise git from a terminal in a directory

Open a terminal

cd Desktop

Managing your git folder

git status	check status of files
git log	check history
git checkout	to rewind to a specific snapshot

Version Control , Open Science

Scientist collects some data

Write some programs to analyse

Write up paper, and submit (sometimes with data) [rarely code]

After O(months), reviews are back - modify scripts and reanalyse

Resubmit and paper is published

Version Control , Open Science

Scientist collects some data (stored in an open repository)

Create a repository to hold the work

Repository has everything from scripts to .tex files

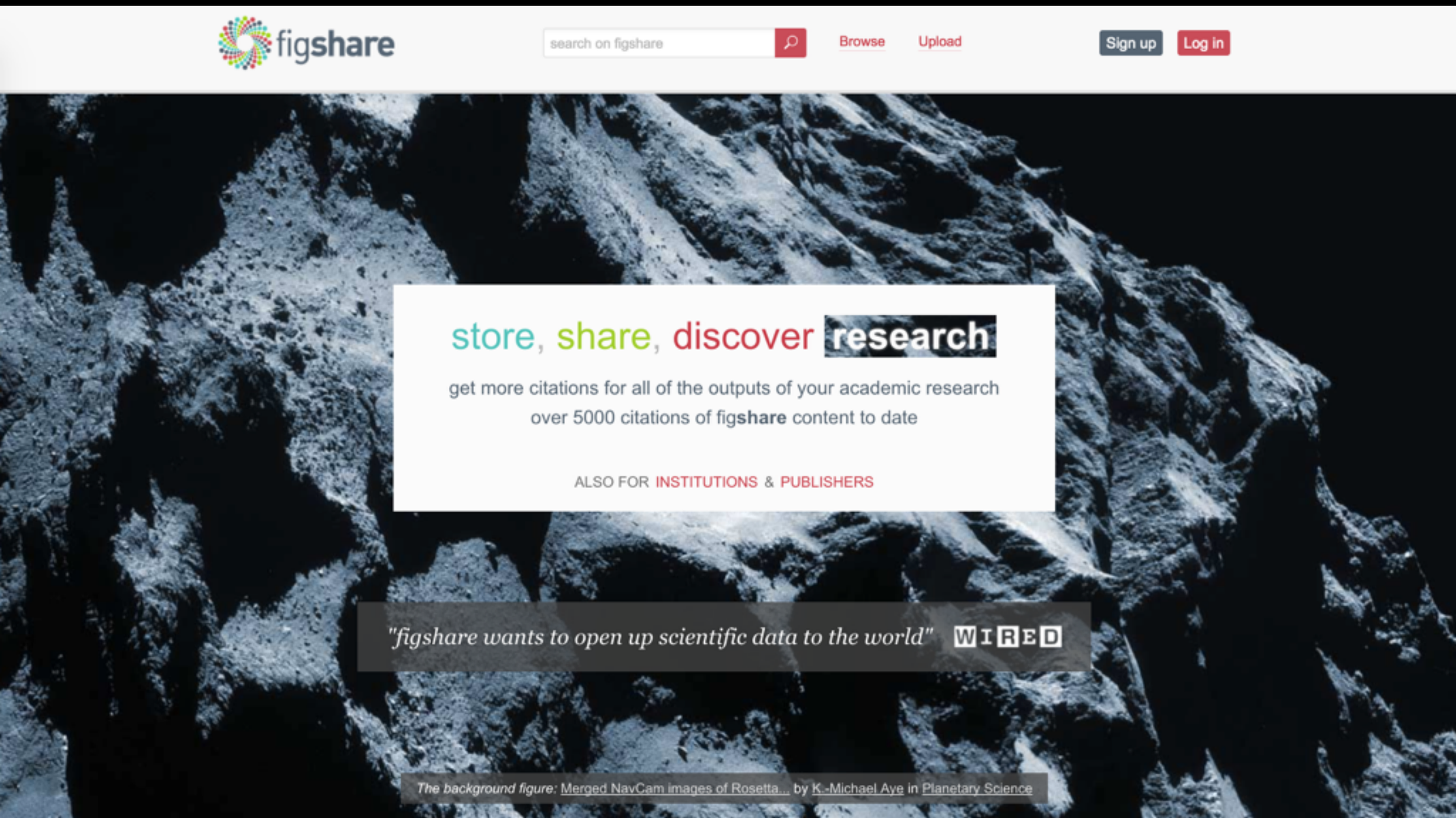
Preprint submitted to arXiv

After publishing - everything is available for reproduction

Open work is more widely cited and re-used !

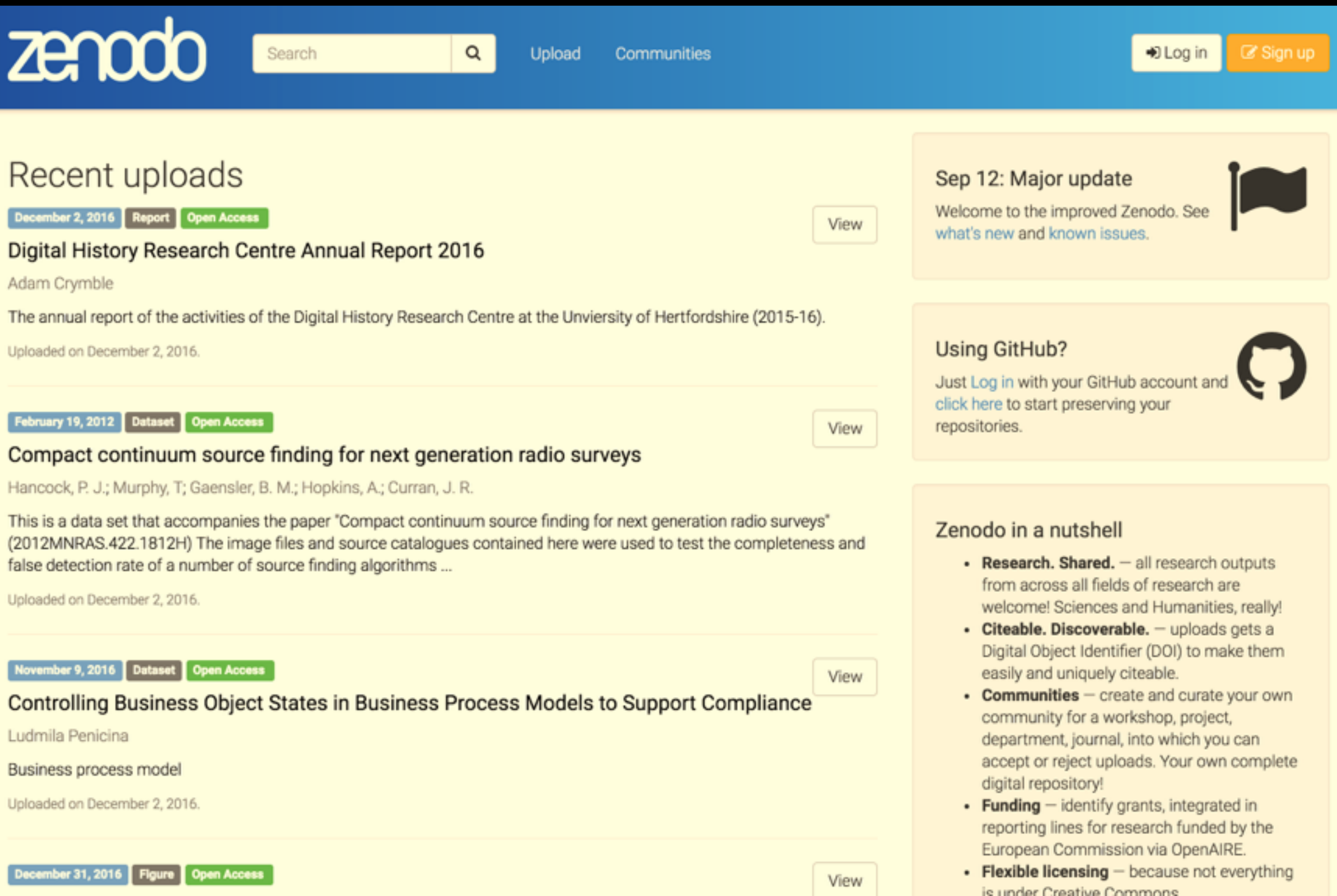
figshare

share all your figures in a citable manner



Zenodo

share your documentation



Make your code and documentation citable

https://guides.github.com/activities/citable-code/

End of Part 1

Time for a break

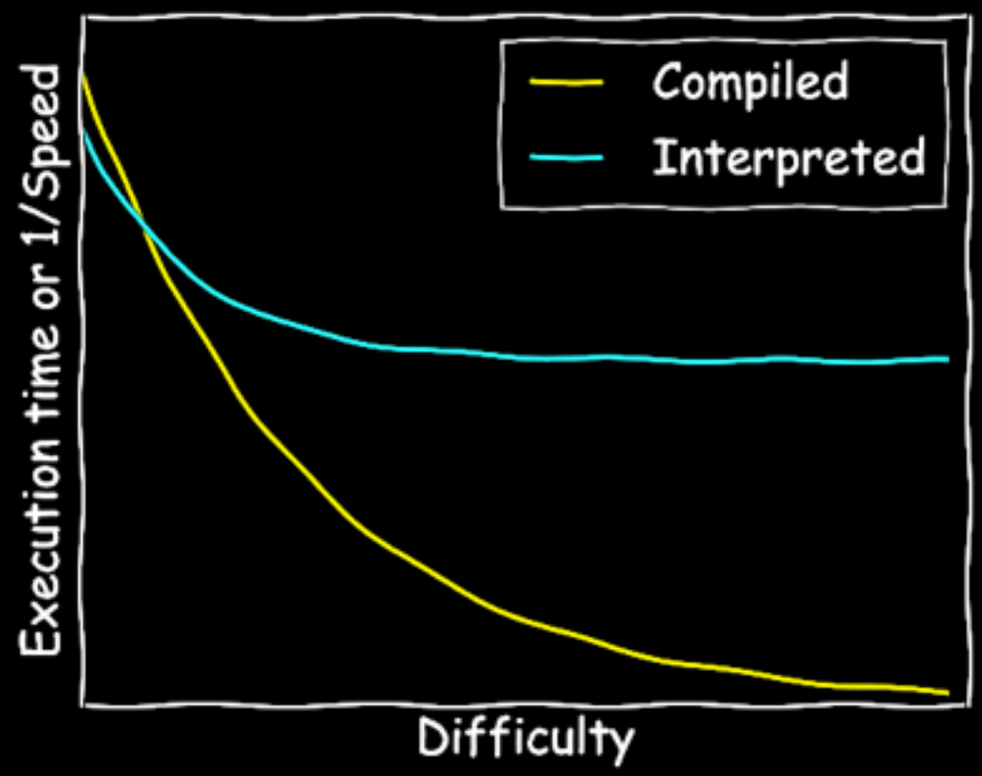
Part 2
Understanding the basics of python

Python 2 or Python 3

2.7 3.5

Part 2
Understanding the basics of python

Python is a interpreted language



Start the python interpreter

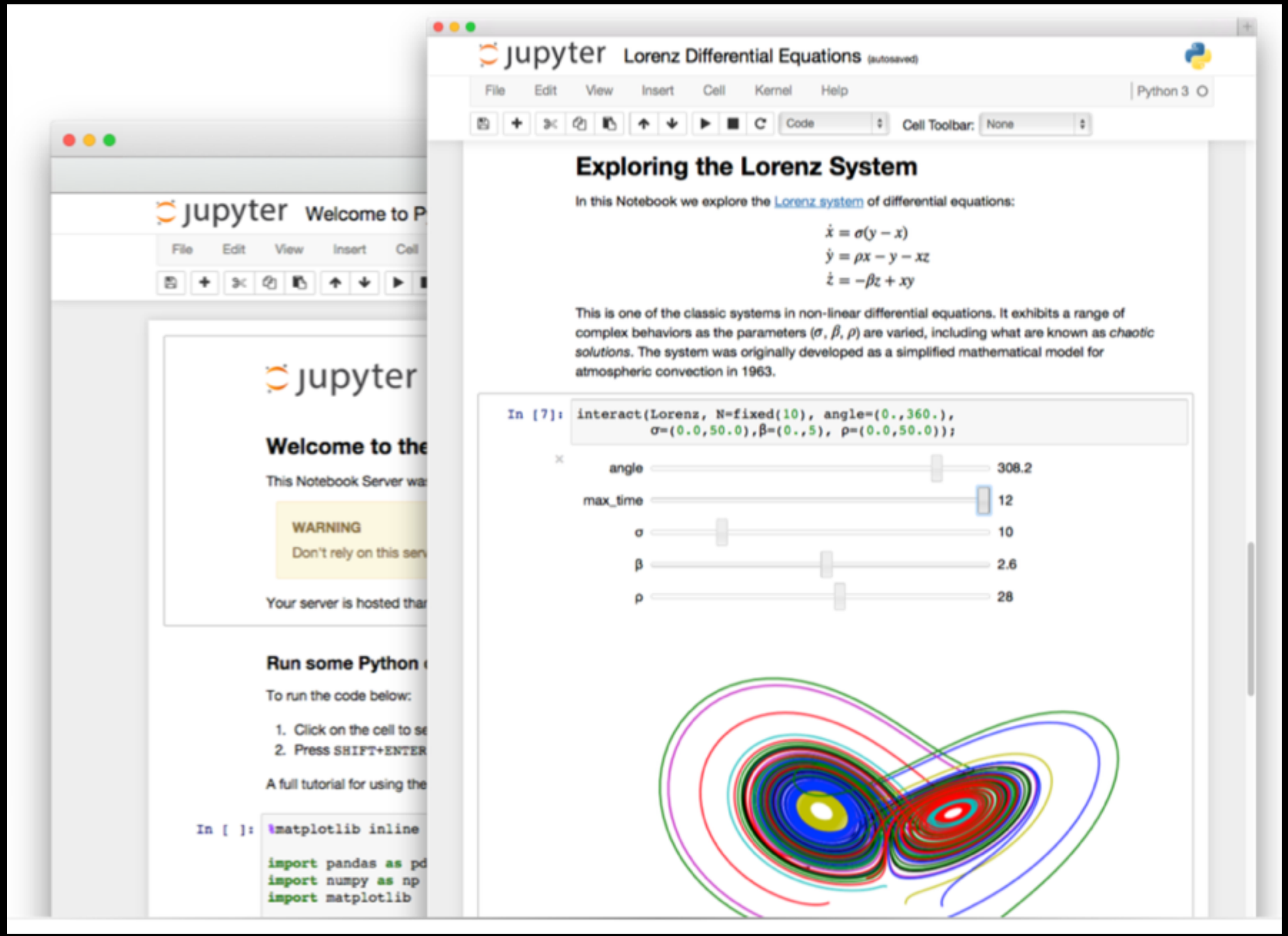
Type ‘python’ in your terminal

```
nadnaps-2:~ python
Python 3.5.2 |Anaconda custom (x86_64)| (default, Jul  2 2016, 17:52:12)
[GCC 4.2.1 Compatible Apple LLVM 4.2 (clang-425.0.28)] on darwin
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

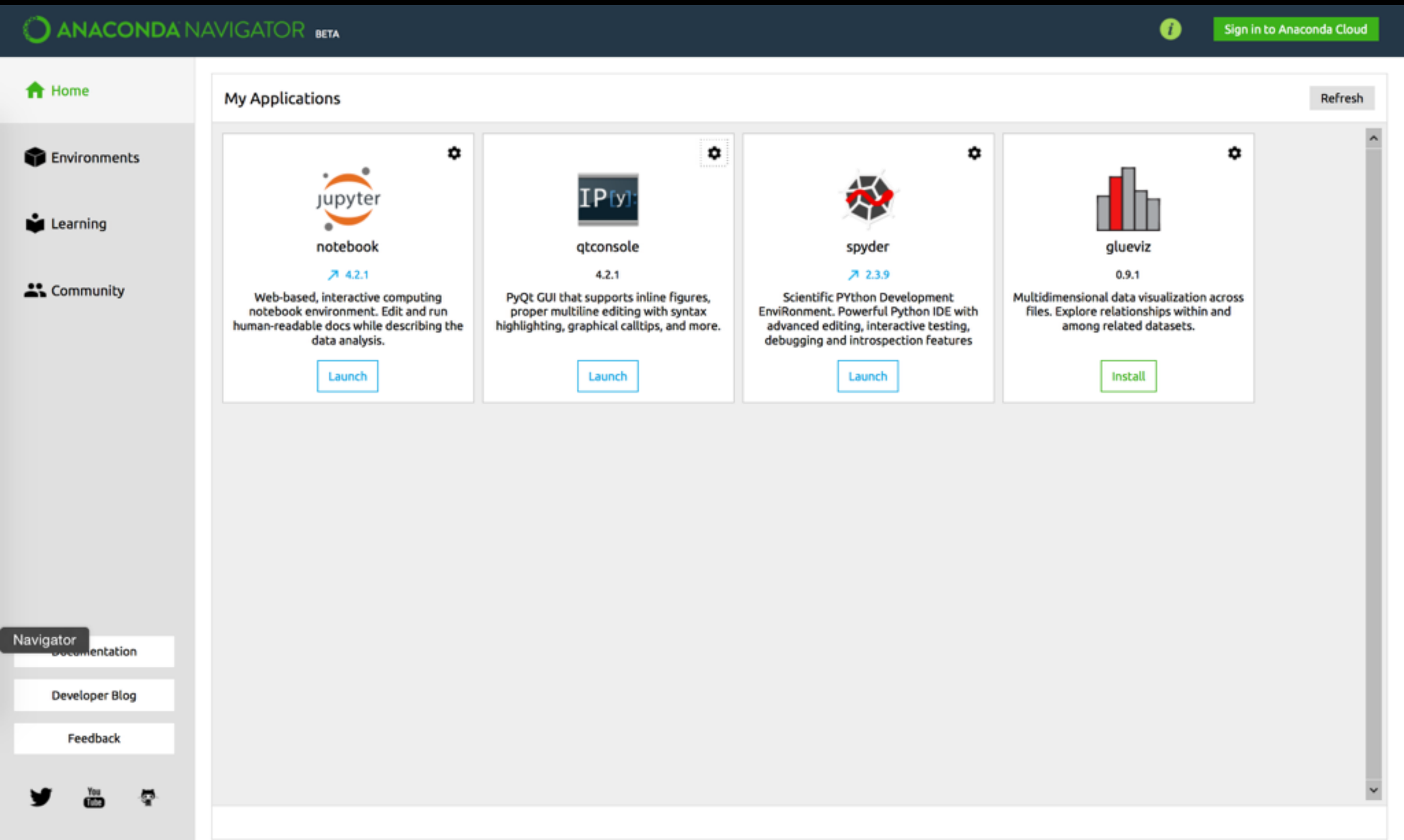
iPython console

```
nadnaps-2:~ ipython
WARNING: Attempting to work in a virtualenv. If you encounter problems, please install
 IPython inside the virtualenv.
Python 3.5.2 |Anaconda custom (x86_64)| (default, Jul  2 2016, 17:52:12)
Type "copyright", "credits" or "license" for more information.

IPython 4.2.0 -- An enhanced Interactive Python.
?         -> Introduction and overview of IPython's features.
%quickref -> Quick reference.
help      -> Python's own help system.
object?   -> Details about 'object', use 'object??' for extra details.

In [1]: 1 + 2
Out[1]: 3

In [2]: print('Hello')
Hello

In [3]:
```

Jupyter notebook



Everything under one roof
Navigator



spyder

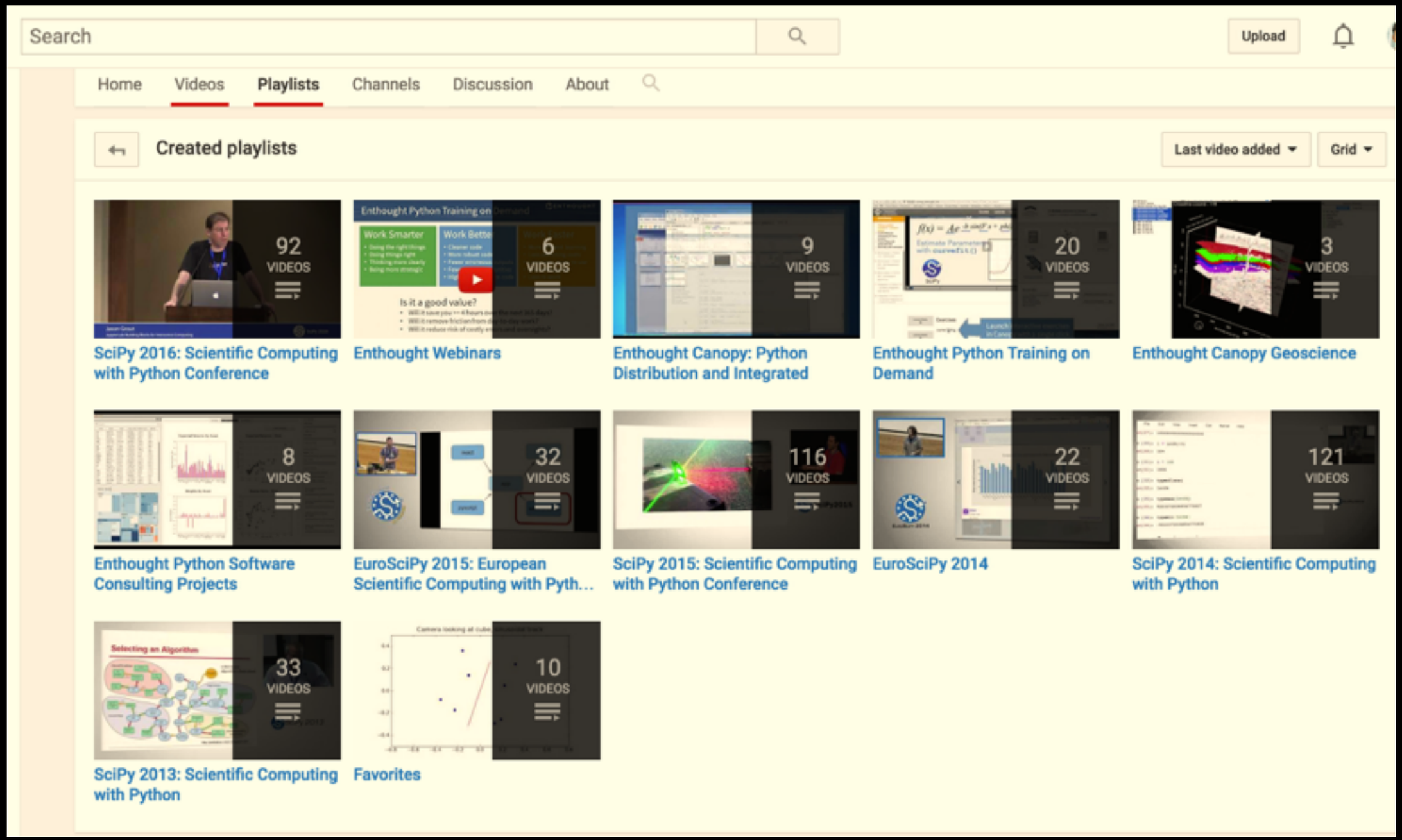
matlab like development environment

Next steps

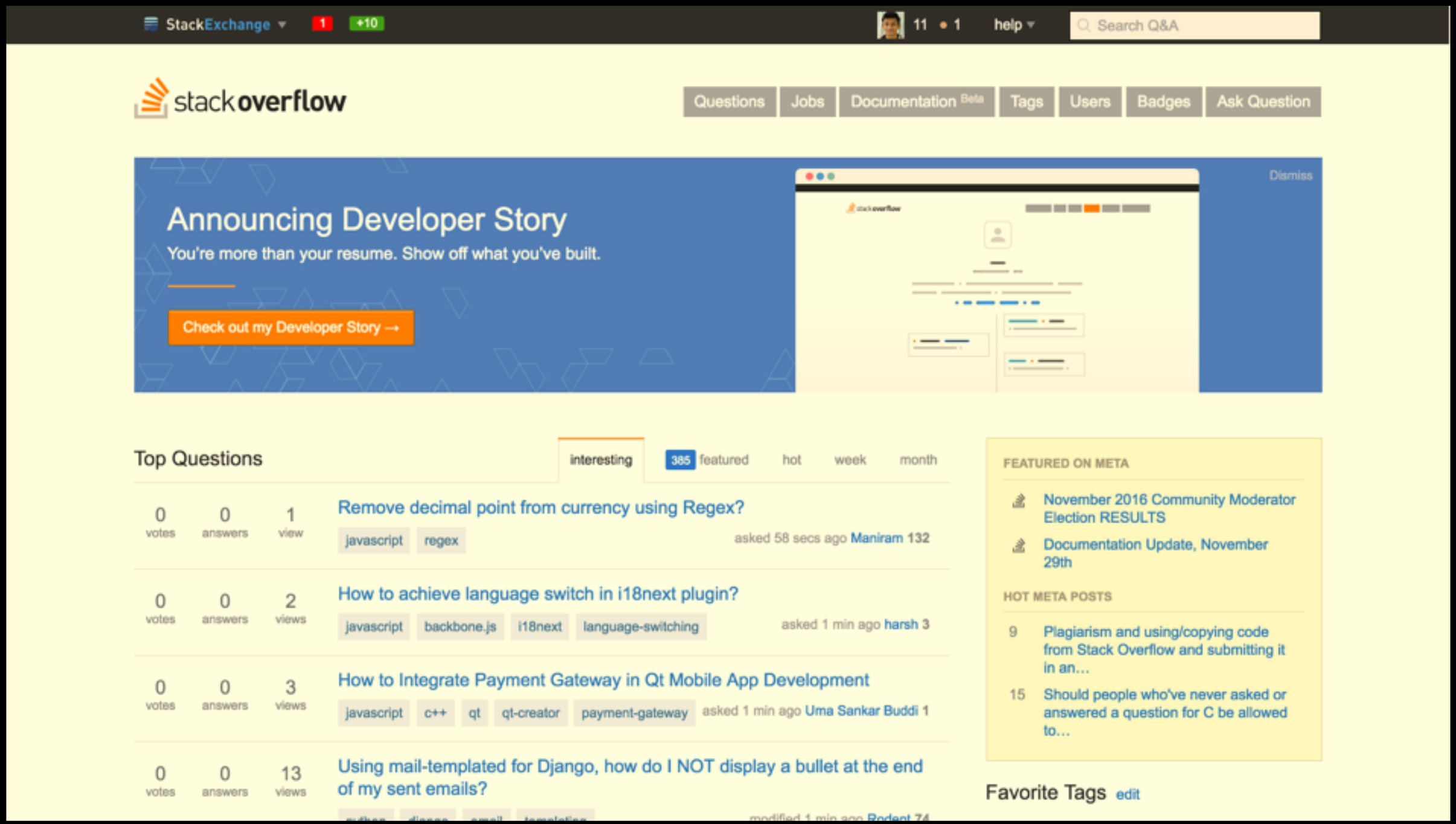
Excellent tutorials online

Numpy, Sci-Py, Matplotlib, Sci-Kit-Image, Machine Learning and many more

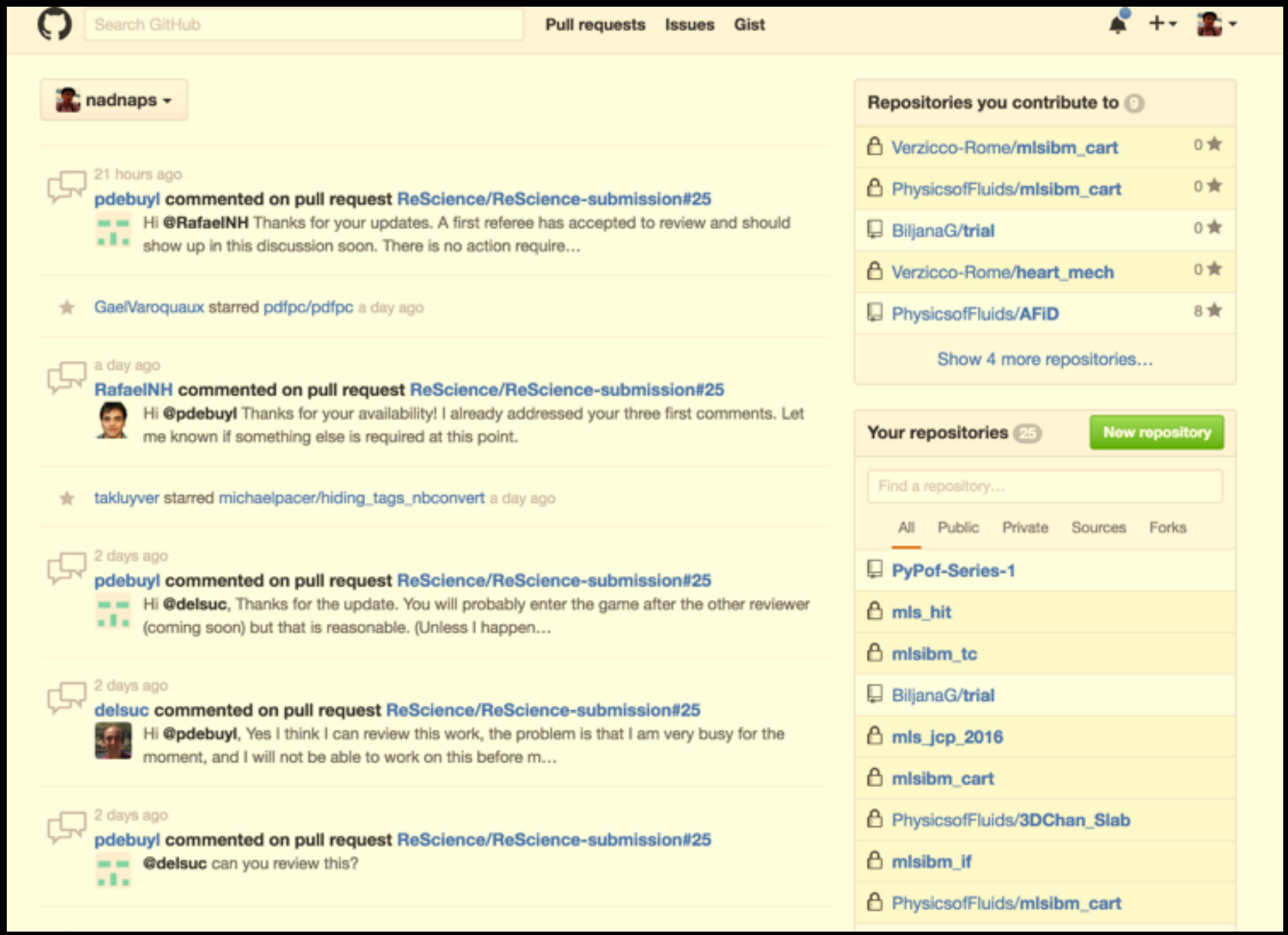
Youtube channel of ‘Enthought'



Use stack overflow



Use Github


Search GitHub
Pull requests
Issues
Gist
nadnaps
21 hours ago
pdebuyl commented on pull request ReScience/ReScience-submission#25
Hi @RafaelNH Thanks for your updates. A first referee has accepted to review and should show up in this discussion soon. There is no action require…
GaelVaroquaux starred pdfpc/pdfpc a day ago
a day ago
RafaelNH commented on pull request ReScience/ReScience-submission#25
Hi @pdebuyl Thanks for your availability! I already addressed your three first comments. Let me known if something else is required at this point.
takluyver starred michaelpacer/hiding_tags_nbconvert a day ago
2 days ago
pdebuyl commented on pull request ReScience/ReScience-submission#25
Hi @delsuc, Thanks for the update. You will probably enter the game after the other reviewer (coming soon) but that is reasonable. (Unless I happen…
2 days ago
delsuc commented on pull request ReScience/ReScience-submission#25
Hi @pdebuyl, Yes I think I can review this work, the problem is that I am very busy for the moment, and I will not be able to work on this before m…
2 days ago
pdebuyl commented on pull request ReScience/ReScience-submission#25
@delsuc can you review this?
Repositories you contribute to
Verzicco-Rome/mlsibm_cart 0
PhysicsofFluids/mlsibm_cart 0
BiljanaG/trial 0
Verzicco-Rome/heart_mech 0
PhysicsofFluids/AFiD 8
Show 4 more repositories…
Your repositories 25
New repository
Find a repository…
All
Public
Private
Sources
Forks
PyPof-Series-1
mls_hit
mlsibm_tc
BiljanaG/trial
mls_jcp_2016
mlsibm_cart
PhysicsofFluids/3DChan_Slab
mlsibm_if
PhysicsofFluids/mlsibm_cart

References

Books

Effective Computation in Physics, Anthony Scopatz, Kathryn Huff, O'Reilly Media.

Python for Scientists, John Stewart, Cambridge.

Links

https://www.youtube.com/channel/UCkhm72fuzkS9fYGlGpEmj7A

http://pyvideo.org/events.html

http://www.scipy-lectures.org/

https://github.com/ipython/ipython/wiki/A-gallery-of-interesting-IPython-Notebooks

http://jrjohansson.github.io/