Jupyter notebooks

Maree Carroll
Python Community of Practice
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1 Getting started

2 Useful for what?

3 Tips and tricks

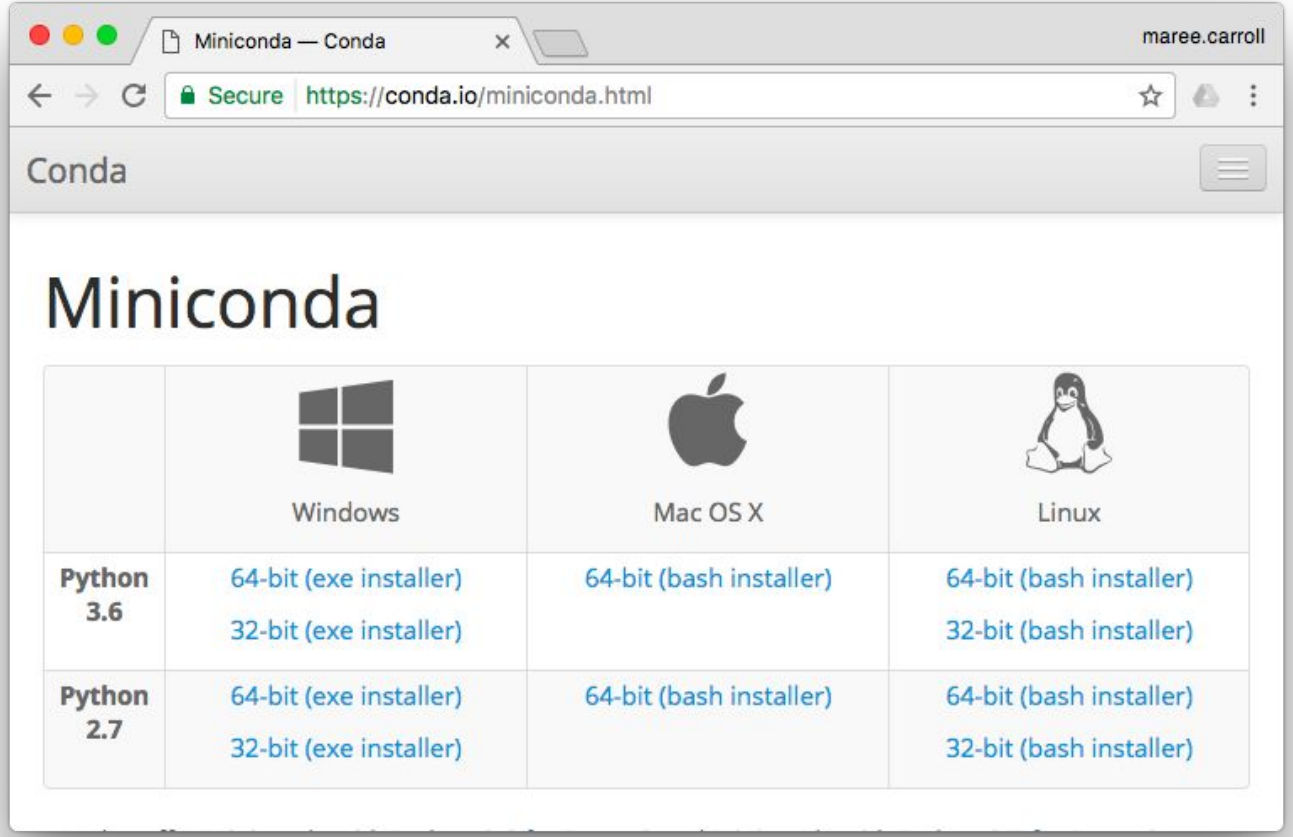
Getting started

(is easy)

1 Install miniconda

2 Install jupyter

3 Run jupyter


Miniconda — Conda
maree.carroll
Secure
https://conda.io/miniconda.html
Conda
Miniconda
Windows
Mac OS X
Linux
Python 3.6
64-bit (exe installer)
32-bit (exe installer)
64-bit (bash installer)
64-bit (bash installer)
32-bit (bash installer)
Python 2.7
64-bit (exe installer)
32-bit (exe installer)
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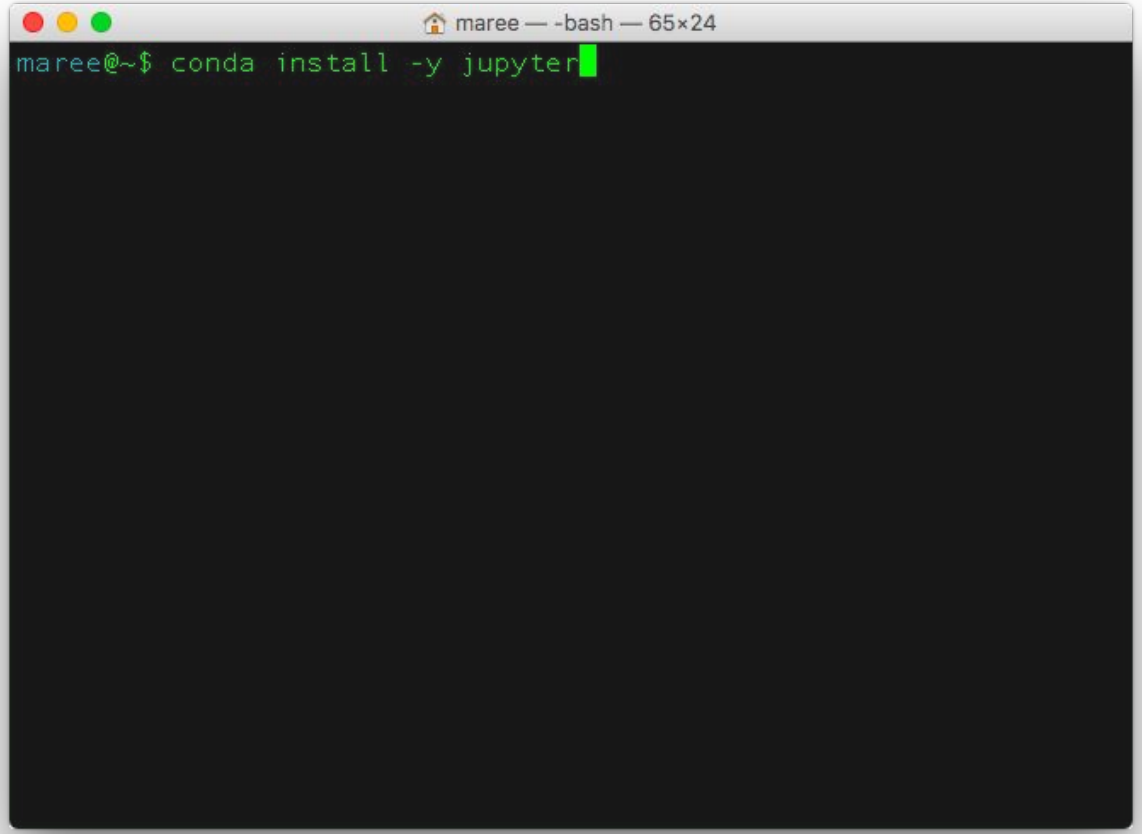
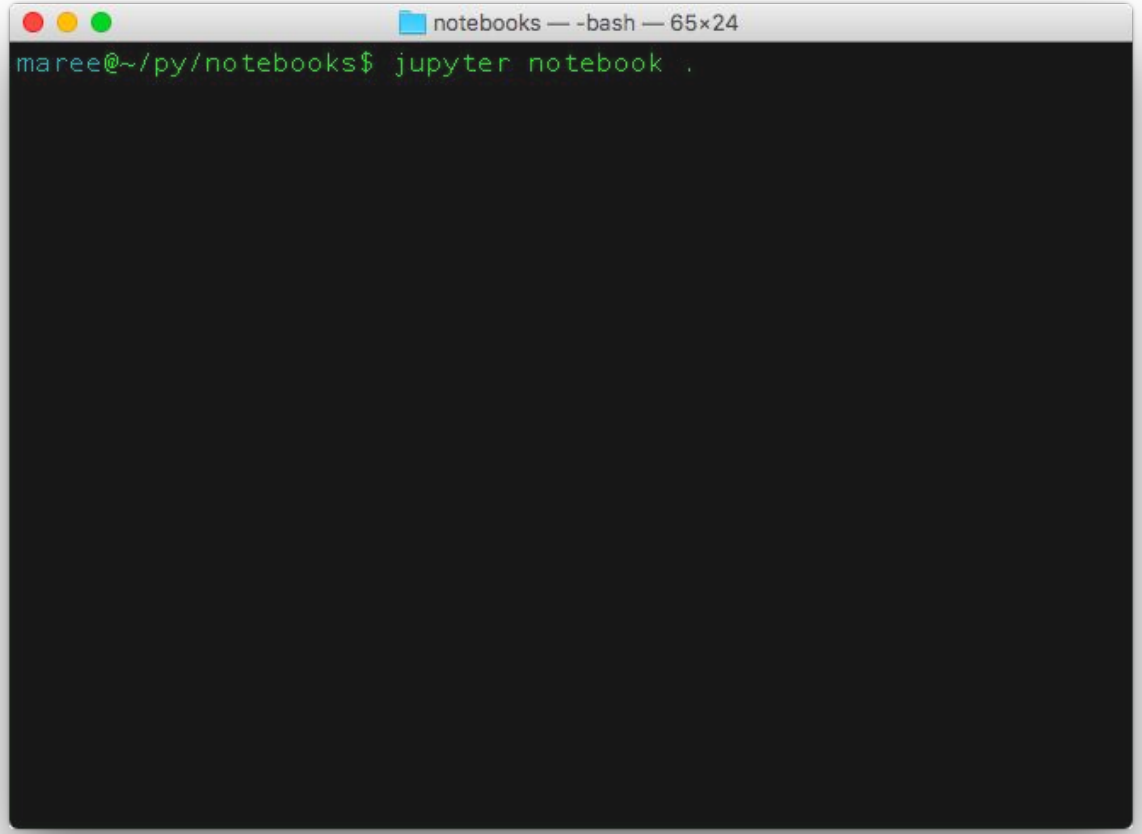
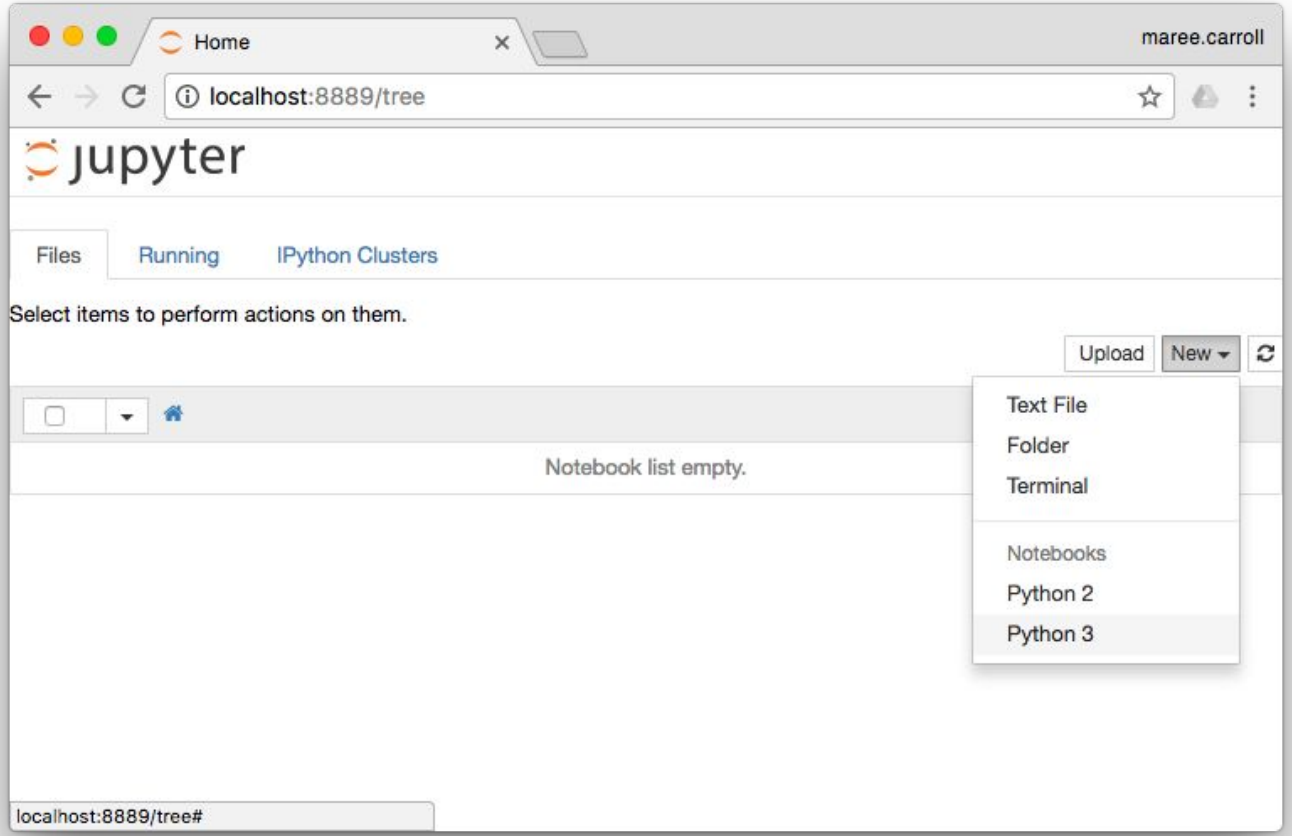
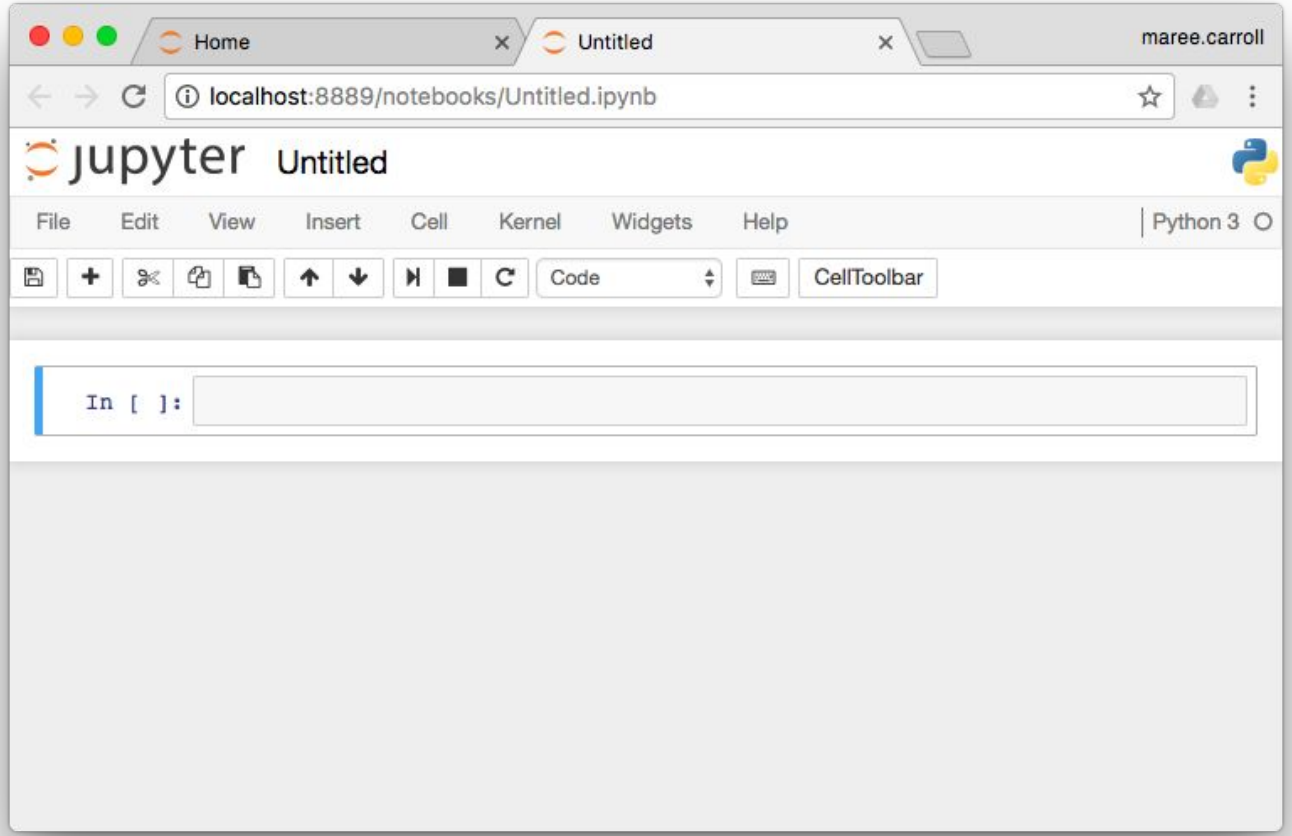
64-bit (bash installer)
32-bit (bash installer)


maree — -bash — 65×24
maree@~$ conda install -y jupyter


notebooks — -bash — 65×24
maree@~/py/notebooks$ jupyter notebook .


Home
maree.carroll
localhost:8889/tree
jupyter
Files
Running
IPython Clusters
Select items to perform actions on them.
Upload
New
Text File
Folder
Terminal
Notebooks
Python 2
Python 3
Notebook list empty.
localhost:8889/tree#


Home
Untitled
maree.carroll
localhost:8889/notebooks/Untitled.ipynb
jupyter
Untitled
File
Edit
View
Insert
Cell
Kernel
Widgets
Help
Python 3
Code
CellToolbar
In [ ]:

Useful for what?

1 Literate programming
2 Reproducible research
3 Exploration
4 Demonstration

Literate programming:

A software development style pioneered by Stanford computer scientist Donald Knuth

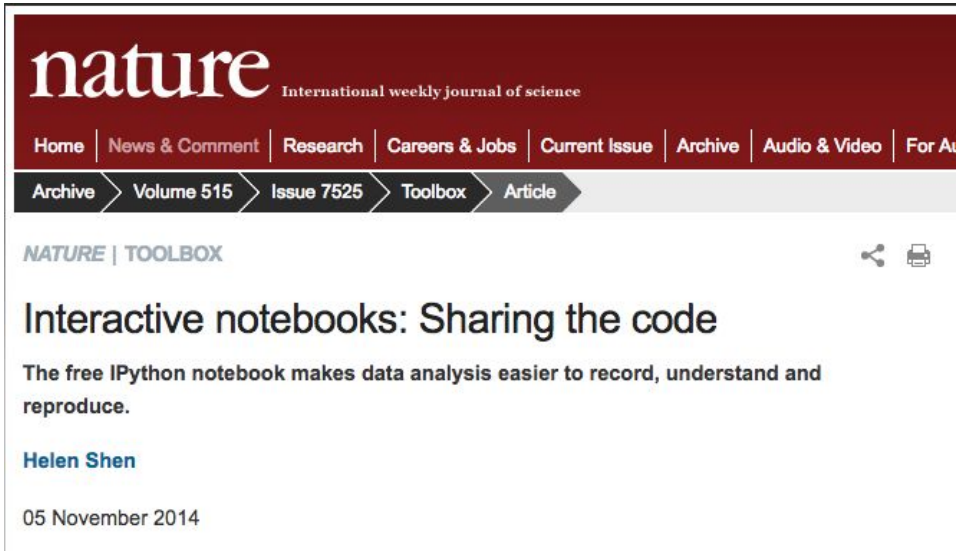
Human-friendly text is punctuated with code blocks

Good for demonstration, research, & teaching == science!

Describe thinking with prose, sprinkle with equations, as you prepare to write code blocks

Reproducible research:

Data analyses, and more generally, scientific claims, are published with their data and software code so that others may verify the findings and build upon them



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Archive > Volume 515 > Issue 7525 > Toolbox > Article

NATURE | TOOLBOX

Interactive notebooks: Sharing the code

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

Helen Shen

05 November 2014

Exploration:

Exploratory data analysis is an approach to analyzing data sets to summarize their main characteristics, often with visual methods

Demonstration:

Handy for tutorials and demonstrating ideas

Tips and Tricks

Keyboard shortcuts

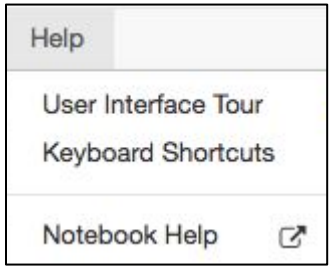
Magics!

Extensions

Pixiedust

mybinder.org

Keyboard shortcuts



Command mode

Esc

In [ ]:

⌘⇧P : open the command palette

⇧↩ : run cell, select below

Z : undo cell deletion

D , D : delete selected cells

⌘S : Save and Checkpoint

H : show keyboard shortcuts

I , I : interrupt kernel

Edit mode

Enter

In [ ]:

⇥ : code completion or indent

⇧⇥ : tooltip

⌘Z : undo

⌘⇧Z : redo

⌘Y : redo

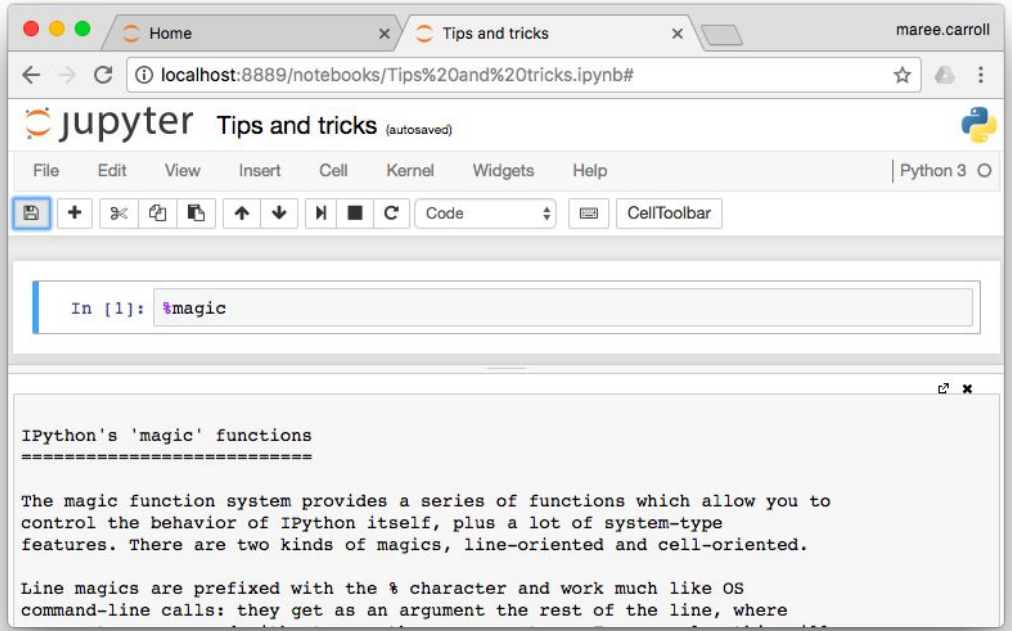
⌘⇧P : open the command palette

⇧↩ : run cell, select below

Baaack to reproducible...

Reproducible data analysis in Jupyter is a great set of videos

Magics!



`%matplotlib inline` `%pdb` `%pdoc` `%env`

`%debug` `!command` `%load myscript.py`

Magics

A closer look

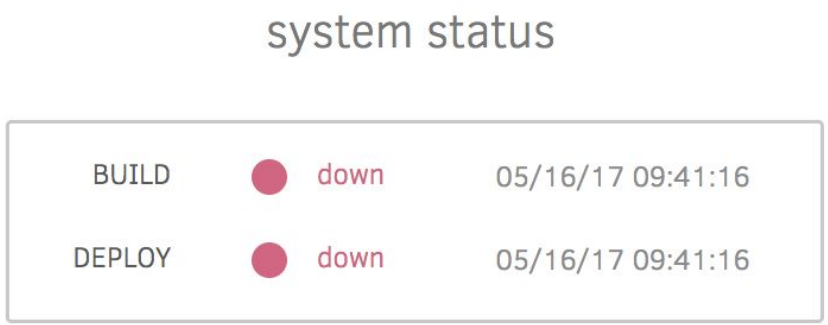
See link

mybinder.org

In *theory*, this is a site that lets you enter a public github url e.g.

https://github.com/AustralianSynchrotron/intro-numpy-seminar

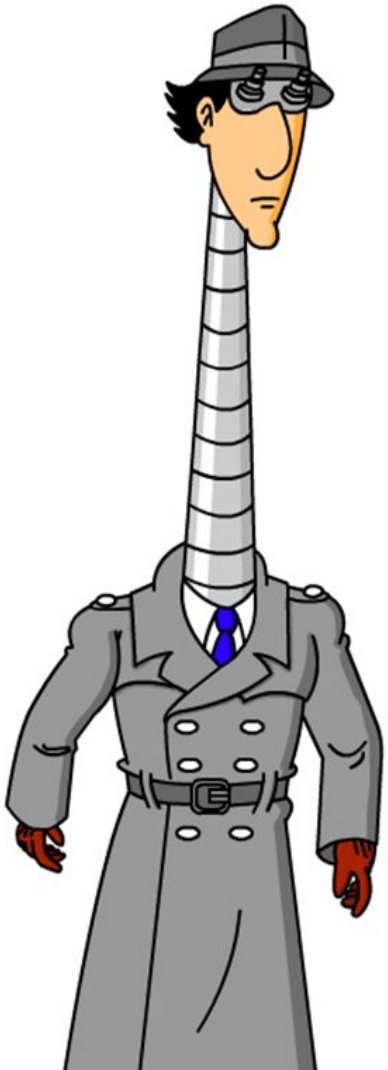
It will load the requirements.txt and run the jupyter notebook/s



But BinderHub sounds exciting… and might be one to watch

Extensions

- Extensions user guide
- Unofficial extensions
- You may be already familiar with Jupyter dashboards



Pixiedust

PixieDust is an open source helper library that works as an add-on to Jupyter notebooks to improve the user experience of working with data.

It hooks into Apache Spark (which has an advanced DAG execution engine that supports acyclic data flow and in-memory computing)


Thanks!