

Introducing Jupyter Notebook for Python and R

Three questions: <http://goo.gl/forms/uYRvebcJkD>

Try Jupyter

<https://try.jupyter.org/>

Install Jupyter

- Get Python
(suggested: Anaconda, Py3, 64-bit, <https://www.continuum.io/downloads>)
- Manually install (if necessary), <http://jupyter.readthedocs.org/en/latest/install.html>

```
pip3 install jupyter
```

Install R for Jupyter

- Get R, <https://cran.cnr.berkeley.edu/>
(suggested: RStudio, <https://www.rstudio.com/products/RStudio/#Desktop>)
- Open R console and follow: <http://irkernel.github.io/installation/>

Start a Notebook

- Open terminal/command prompt

```
jupyter notebook
```

- Notebook will open at <http://127.0.0.1:8888>
- Exit by closing the browser, then typing Ctrl+C in the terminal window

Create Slides

- Open terminal/command prompt

```
jupyter nbconvert slideshow.ipynb --to slides --post  
serve
```

- Note: "--post serve" locally serves the file so you can give a presentation in your browser. If you only want to convert, leave this option off. The resulting HTML file must be served to render correctly. Slides use Reveal.js, <http://lab.hakim.se/reveal-js/>

Reference

- Jupyter docs, <http://jupyter.readthedocs.org/en/latest/index.html>
- IPython docs, <http://ipython.readthedocs.org/en/stable/index.html>
- List of kernels, <https://github.com/ipython/ipython/wiki/IPython-kernels-for-other-languages>
- A gallery of interesting IPython Notebooks, <https://github.com/ipython/ipython/wiki/A-gallery-of-interesting-IPython-Notebooks>
- Markdown basics, <https://daringfireball.net/projects/markdown/basics>

Jupyter Related Projects

- nbviewer (utility to render ipynb as HTML for easy sharing), <https://nbviewer.jupyter.org/> on GitHub, <http://blog.jupyter.org/2015/05/07/rendering-notebooks-on-github/>
- binder (project to serve live notebooks from GitHub), <http://mybinder.org/>
- JuliaBox (Julia language in hosted Jupyter for free), <https://www.juliabox.org/> (lessons from MIT, <https://github.com/stevengj/julia-mit/>)

Other Notebook-style Software

- R Markdown (RStudio allows you to create Rmd, a mix of R code and markdown text that is then rendered with output as HTML), <http://rmarkdown.rstudio.com/> shared at <http://www.rpubs.com/>
- SageMath (open source mathematics focused programming with notebook style interface), <http://www.sagemath.org/>
- Beaker Notebook (polyglot: multilingual notebooks), <http://beakernotebook.com/>

Check MD5 hash!

- Windows

```
CertUtil -hashfile C:\filetocheck.exe MD5
```

- Linux

```
md5sum filename
```

- Mac

```
md5 filename
```

Interesting Examples

Publishing

Helen Shen, "Interactive notebooks: Sharing the code", Nature 515 (2014),
doi:10.1038/515151a

<http://www.nature.com/news/interactive-notebooks-sharing-the-code-1.16261>

Rackspace blog about it,

<https://developer.rackspace.com/blog/how-did-we-serve-more-than-20000-ipython-notebooks-for-nature/>

Yoav Ram, "The probability of improvement in Fisher's geometric model: A probabilistic approach", Theoretical Population Biology 99 (2015), doi:10.1016/j.tpb.2014.10.004

<http://www.sciencedirect.com/science/article/pii/S0040580914000811>

Notebook as supporting material:

http://nbviewer.jupyter.org/url/www.sciencedirect.com/science/MiamiMultiMediaURL/1-s2_0-S0040580914000811/1-s2_0-S0040580914000811-mmc1.txt/272364/FULL/S0040580914000811/471cf02085a52c248dc76ae65ad4409d/mmc1.txt

Brian Keegan, "The Need for Openness in Data Journalism", (2014),

<http://www.brianckeegan.com/2014/04/the-need-for-openness-in-data-journalism/>

Full article in notebook with code,

http://nbviewer.jupyter.org/github/brianckeegan/Bechdel/blob/master/Bechdel_test.ipynb

Teaching

"Aerodynamics-Hydrodynamics with Python", Lorena A. Barba (course at George Washington University), <https://github.com/barbagroup/AeroPython>

"Python for Data Scientists", Patrick Varilly (supporting files for conference meet up at European Data Innovation Hub), <https://github.com/patvarilly/dihub-python-for-data-scientists-2015>

Bryn Mawr College JupyterHub (server for CS education),

<http://jupyter.cs.brynmawr.edu/hub/dblank/public>

Visualizing

XKCD plots, <http://jakevdp.github.io/blog/2013/07/10/XKCD-plots-in-matplotlib/>

Bokeh-notebooks tutorials,

<http://nbviewer.jupyter.org/github/bokeh/bokeh-notebooks/blob/master/index.ipynb>