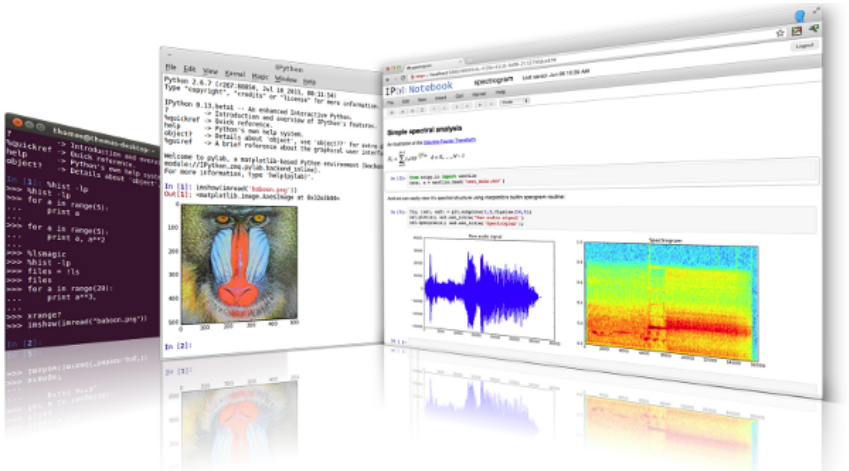


Datenanalyse mit IPython und Pandas

Dirk Loss, 2013-05-02

„**Data Scientist** is now
the hottest job title in Silicon Valley.“

Tim O'Reilly

http://upload.wikimedia.org/wikipedia/commons/thumb/d/d6/Tim_O%27Reilly.jpg/220px-Tim_O%27Reilly.jpg

Daten

Fokus: „Small/Medium Data“

- Performance-Messungen
- Logdateien
- Netzwerktraffic
- Source-Code Repositories
- …

Pandas

„Manipulation und Analyse mehrdimensionaler Daten“

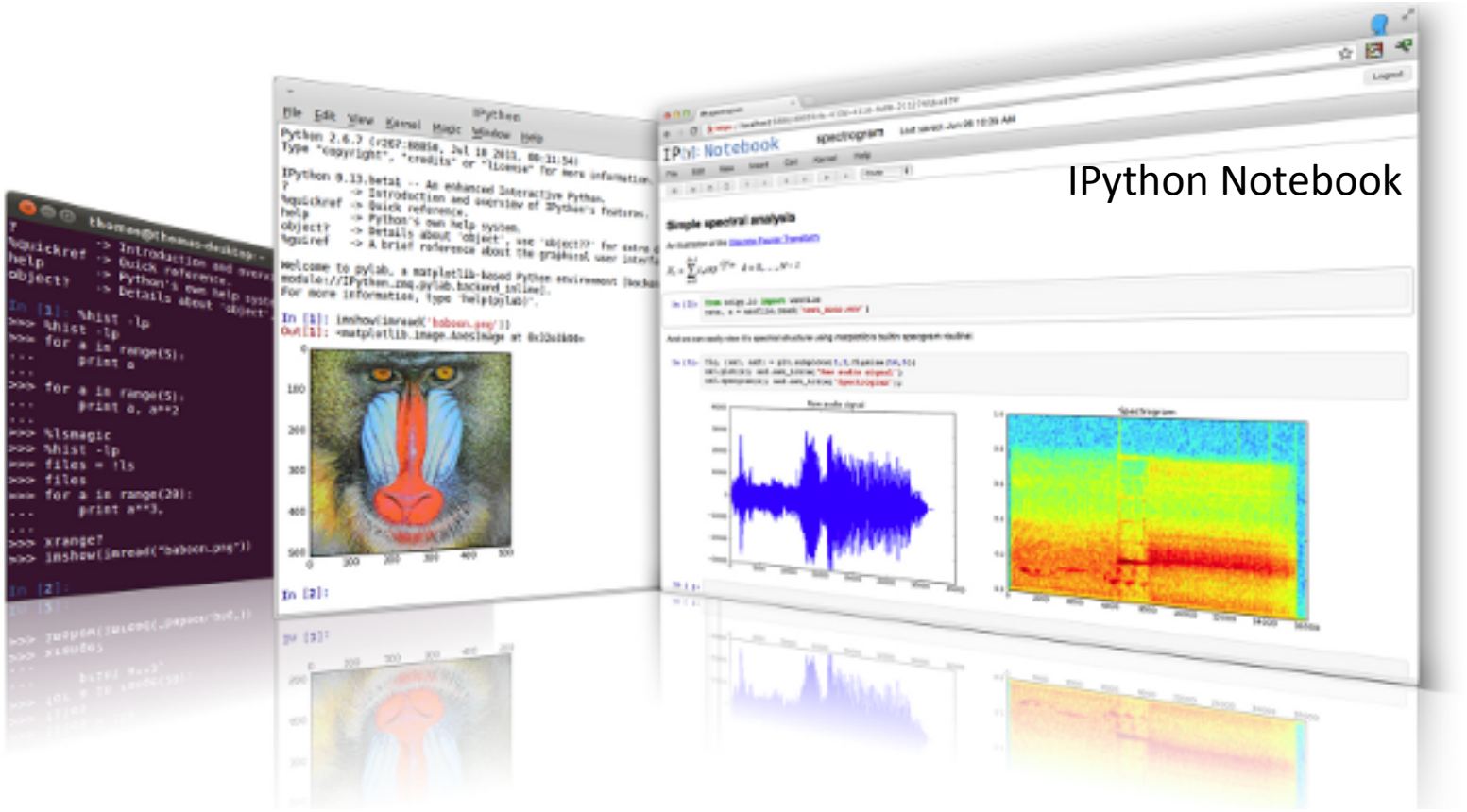
	A	B	C
2013-05-01	4	foo	0.40
2013-05-02	6	bar	1.23
2013-05-03	3	boost	0.20
2013-05-04	3	100	-6.20

Time series Statistics Aggregation

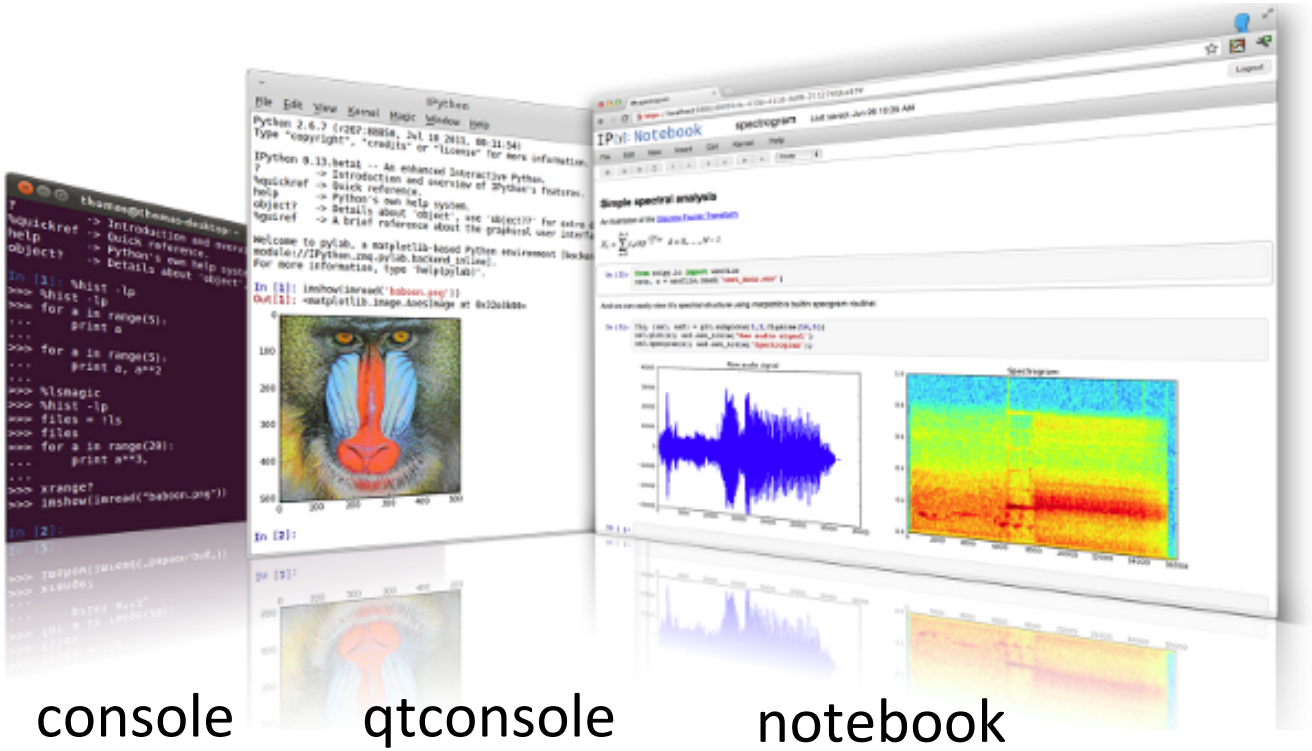
Missing values Hierarchical indexes

IPython

„Interaktive Python-Arbeitsumgebung“

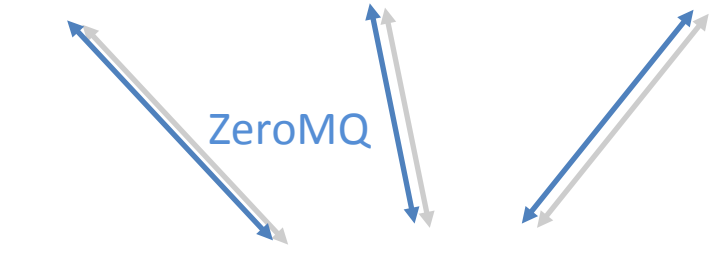


http://ipython.org



console qtconsole notebook

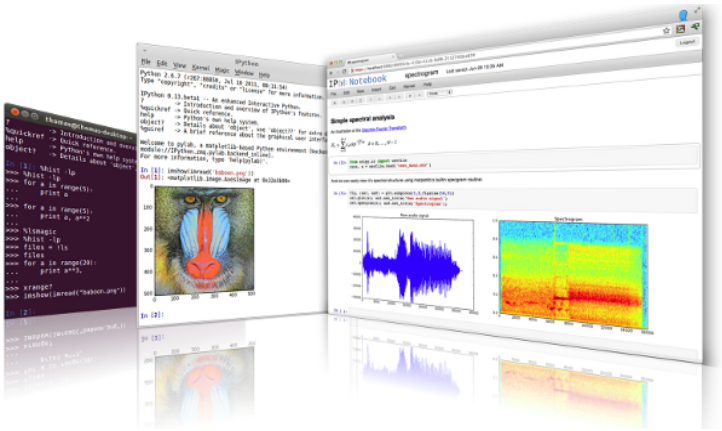
IPython

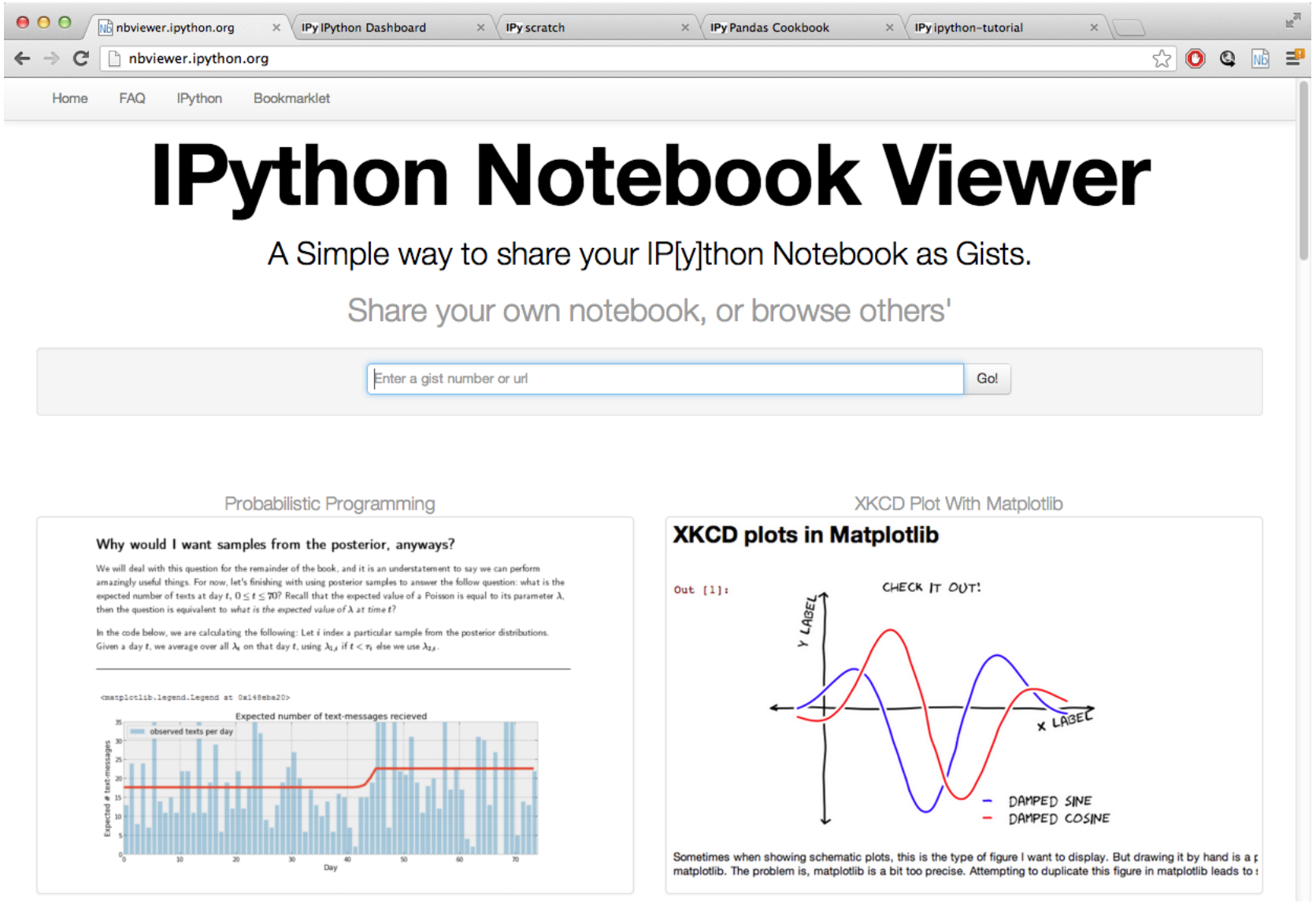


python™

Demo

IPython





http://nbviewer.ipython.org

IP[y]: IPython
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Sloan Foundation Grant

We are pleased to announce that the IPython project has received a $1.15M grant from the Alfred P. Sloan foundation, that will support IPython development for the next two years (1/1/2013-12/31/2014). The grant, which is being made to the University of California, Berkeley and California Polytechnic State University, San Luis Obispo, will enable the project to focus on developing the IPython Notebook as a general tool for scientific and technical computing that is open, collaborative and reproducible.

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MEMORIAL

John Hunter
1968–2012
J. Hunter Memorial Fund

VERSIONS

Stable
0.13.2 – April 2013

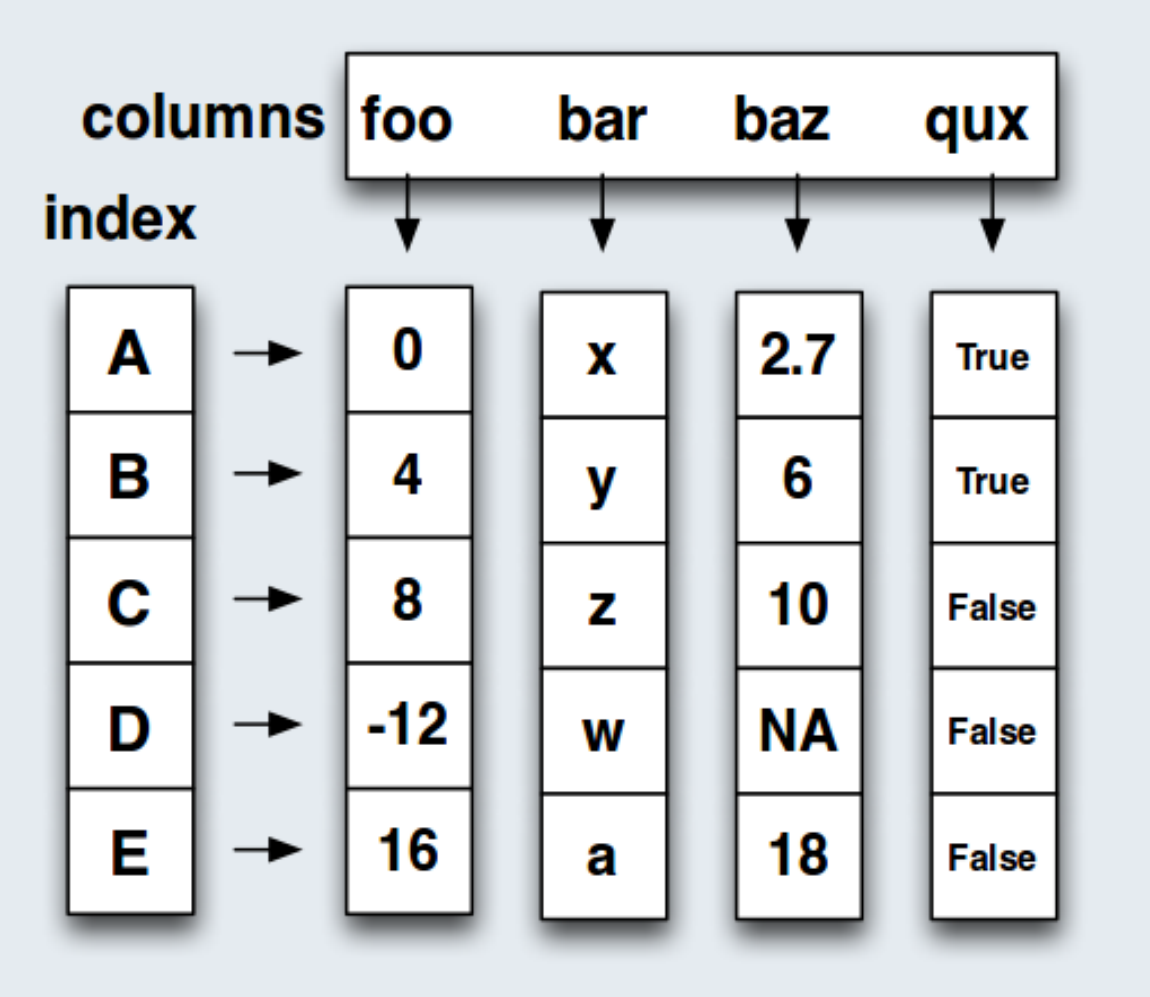
http://ipython.org/sloan-grant.html

Demo

Pandas

	A	B	C
2013-05-01	4	foo	0.40
2013-05-02	6	bar	1.23
2013-05-03	3	boost	0.20
2013-05-04	3	100	-6.20

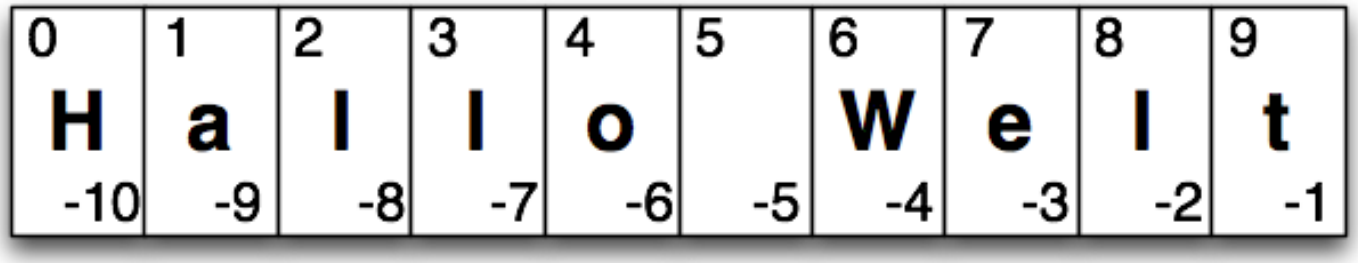
Pandas **DataFrame**



http://qwafafew.org/images/uploads/PANDAS_20120423.pdf

Indexing in Python

s =



s[0] == “H“

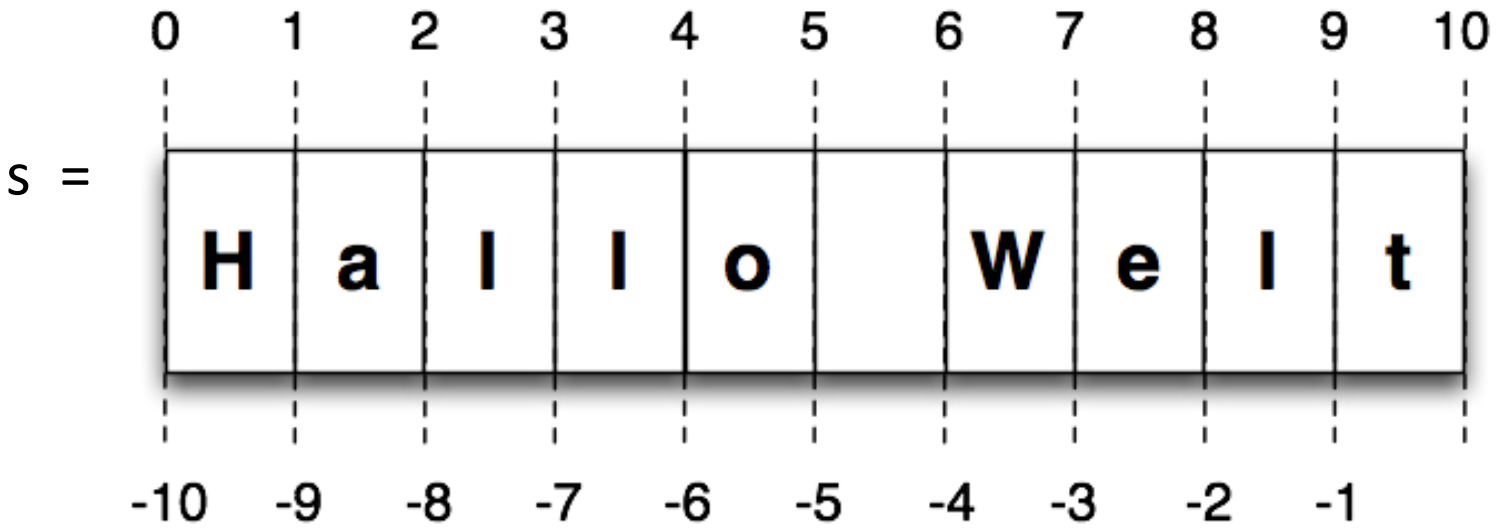
s[4] == “o“

s[-1] == “t“

s[41] => IndexError

s[-12] => IndexError

Slicing in Python



s[2:5] == “llo“

s[6:] == “Welt“

s[-3:] == “elt“

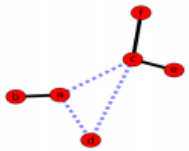
s[4:-5] == “o“

s[6:10000] == “Welt“

s[5:2] == ““

IPython

SymPy



NetworkX

http://www.sintef.no/project/eVITAmeeting/2013/1301_scipy_ipython.pdf

Weiterführende Infos

Agile Tools for Real World Data

Python for Data Analysis

O'REILLY®

Wes McKinney

IPython Videos

IPy Videos and Screencasts

ipython.org/videos.html

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Videos and Screencasts

Science And Python: retrospective of a (mostly) successful decade

A historical view of the co-evolution of IPython and the scientific Python stack (1h), that has been very well received. Delivered by Fernando Perez as a keynote presentation at the PyCon Canada 2012 conference in Toronto, it contains multiple demos of the workflows that IPython enables (PDF slides).

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MEMORIAL

John Hunter
1968–2012
J. Hunter Memorial Fund

VERSIONS

Stable
0.13.2 – April 2013
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Development
1.0.dev
Github

COMMUNITY

Help Chat Room
Stack Overflow
Mailing list
Wiki
File a bug

IPython Beispiel-Notebooks

A gallery of interesting IPy

GitHub, Inc. [US] https://github.com/ipython/ipython/wiki/A-gallery-of-interesting-IPython-Notebooks

ipython / ipython

Star 1,839 Fork 564

Code | Network | Pull Requests 12 | Issues 540 | Wiki | Graphs

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A gallery of interesting IPython Notebooks

Page History

This page is a curated collection of IPython notebooks that are notable for some reason. Feel free to add new content here, but please try to only include links to notebooks that include interesting visual or technical content; this should *not* simply be a dump of a Google search on every ipynb file out there.

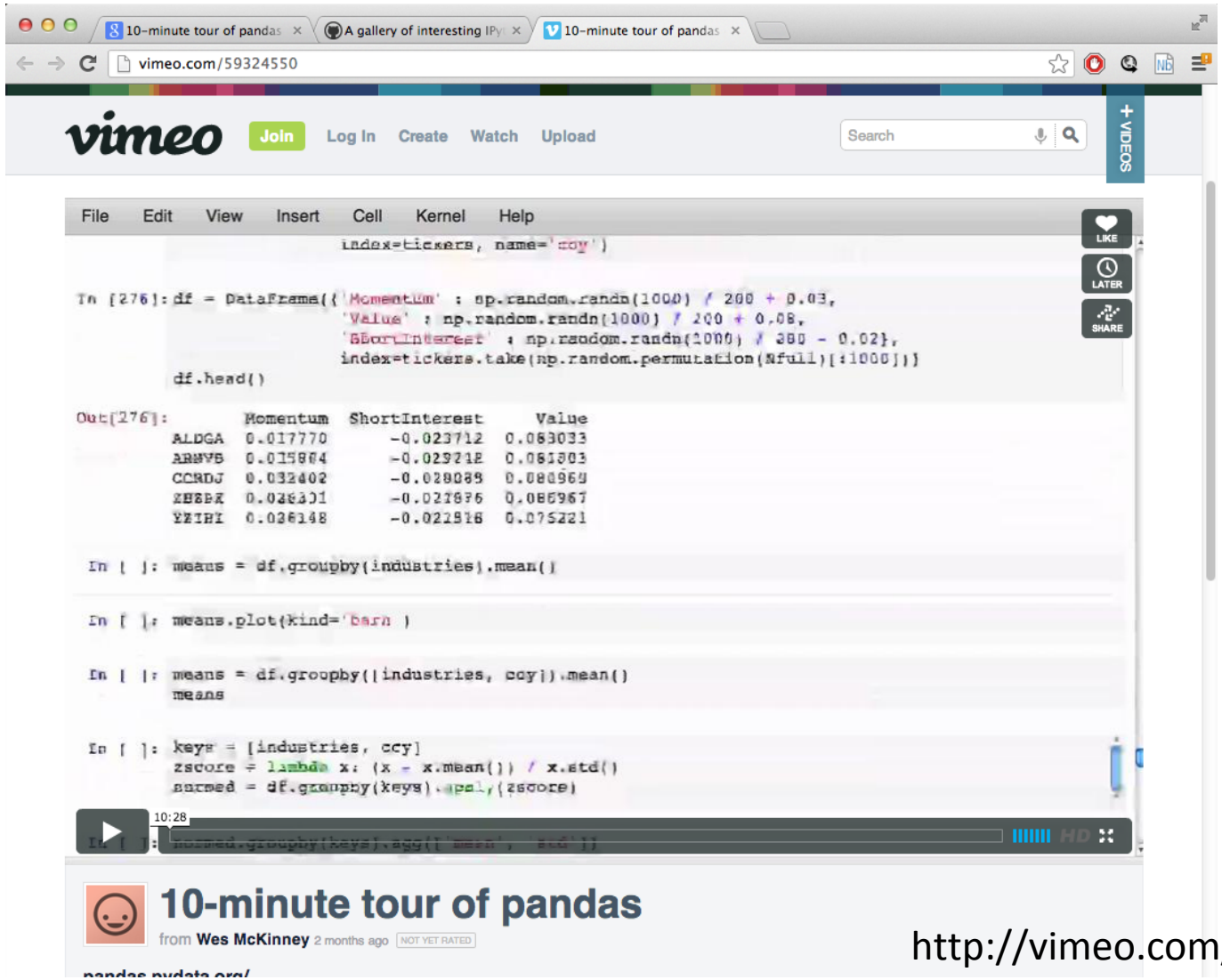
Important contribution instructions: If you add new content, please ensure that for any notebook you link to, the link is to the rendered version using nbviewer, rather than the raw file. Simply paste the notebook URL in the nbviewer box and copy the resulting URL of the rendered version. This will make it much easier for visitors to be able to immediately access the new content.

Note that Matt Davis has conveniently written a set of bookmarklets and extensions to make it a one-click affair to load a Notebook URL into your browser of choice, directly opening into nbviewer.

Entire books or other large collections of notebooks on a topic

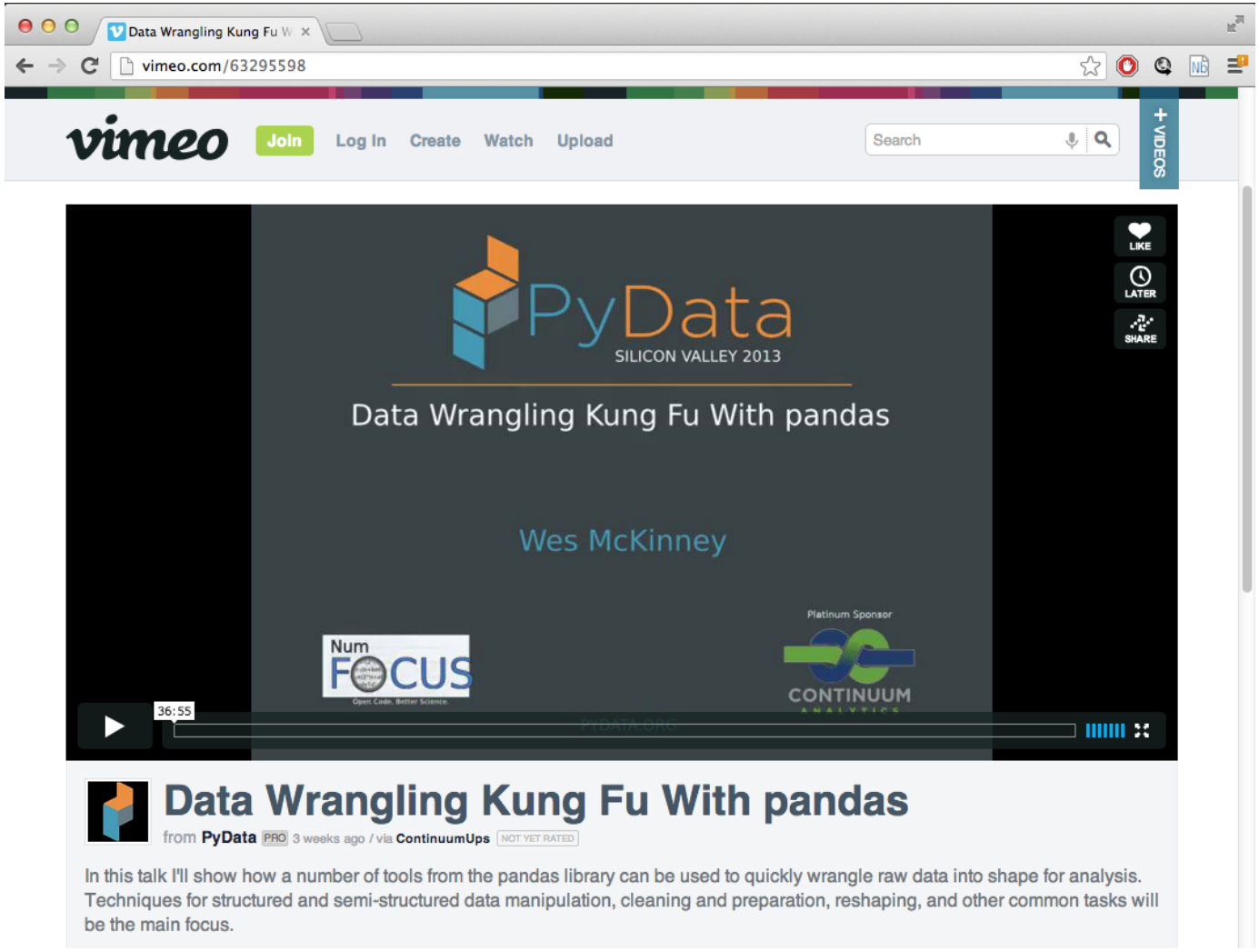
- First things first, how to run code in the IPython Notebook, this is one of IPython's official notebook example collection. Another useful one from this group, an explanation of our rich display system.
- A beautiful matplotlib tutorial, part of the fantastic Lectures on Scientific Computing with Python by J.R. Johansson.
- A single-atom laser model. This is one of a complete set of lectures on quantum mechanics and quantum optics using QuTiP by J.R. Johansson.
- An introduction to Compressed Sensing, part of Python for Signal Processing: an entire book (and blog) on the subject by Jose Unpingco.
- An introduction to Bayesian inference, this is just chapter 1 in an ongoing book titled Probabilistic Programming and Bayesian Methods for

10-Minuten pandas Überblick



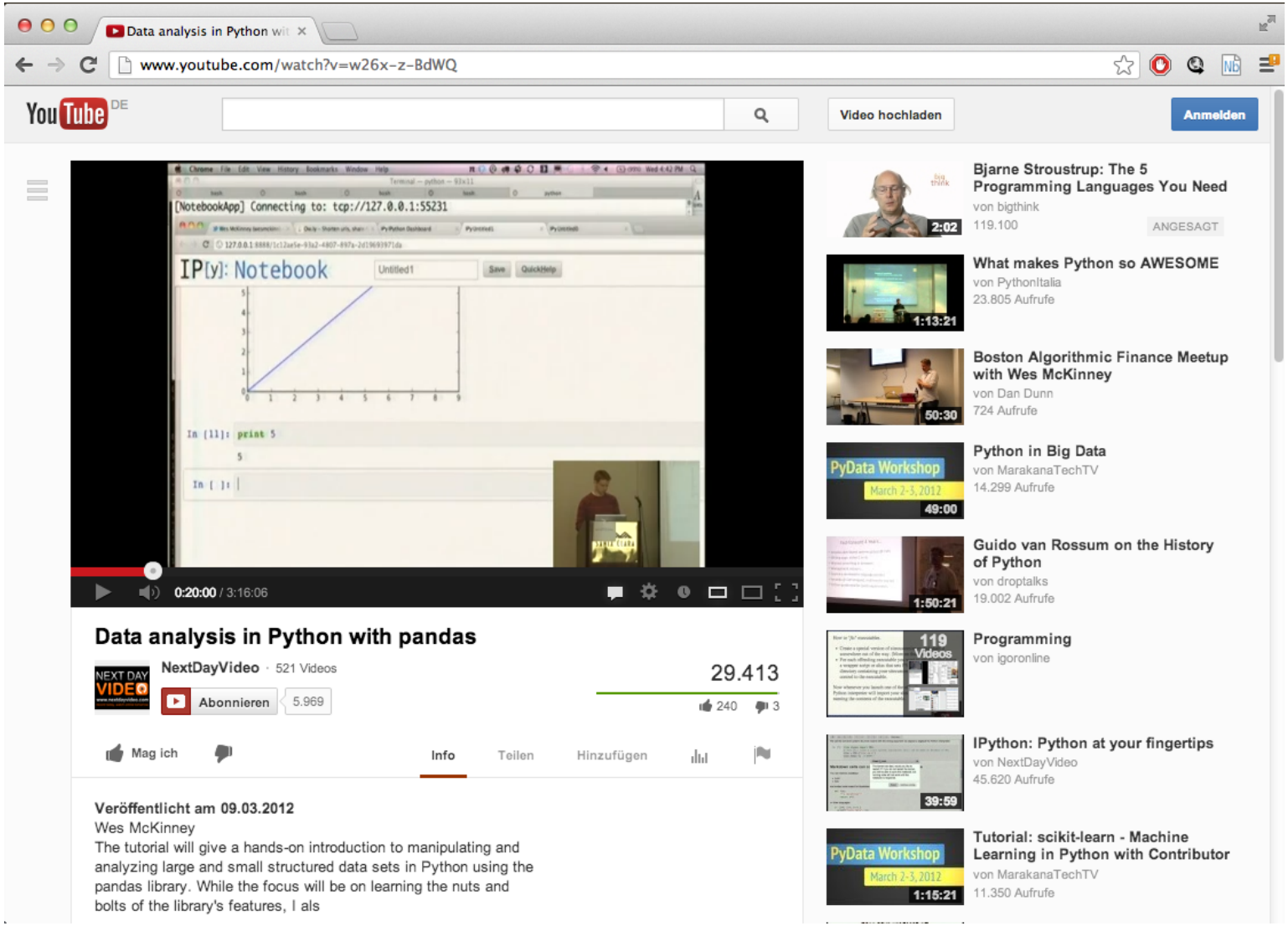
http://vimeo.com/59324550

35-Minuten pandas Vortrag



http://vimeo.com/63295598

3-Stunden IPython und Pandas



http://www.youtube.com/watch?v=w26x-z-BdWQ

Fazit

- IPython als Arbeitsumgebung

(nicht nur für Python)

- Pandas für die Datenanalyse

(insbesondere für Zeitreihen)

Dokumentation

ipython.org

pandas.pydata.org

nbviewer.ipython.org

matplotlib.org

sympy.org

Installation unter Ubuntu

- sudo apt-get install
  ipython-notebook

- sudo apt-get install
  python-pandas
  python-matplotlib
  python-scipy
  python-sympy
  python-nose