PyConZa 2013

Cape Town

The IPython notebook and the Python science stack

IPython in action creating reproducible and publishable interactive work.

What is this

This repo contains the full talk at PyConZA2013

The Complete Talk GitHub Website can be accessed here

Description

IPython had become a popular choice for doing interactive scientific work. In addition to this IPython offers a web based Notebook that makes interactive work much easier. Notebooks have been used to write repeatable science papers and more recently a book has been published using this platform, the online Notebook Viewer and GitHub.

Combining the most common science packages with IPython makes it a formidable tool and serious competition to R. (R is still awesome!)

As a matter of fact you can run R in the notebook session, embed YouTube Videos, Images and lots more.

The science stack consists of (but not limited to):

package	description
pandas	`dataframe` implementation (based on numpy)
scipy	efficient numerical routines
sympy	`symbolic mathematics`
matplotlib	python standard `plotting` package
sci-kit learn	machine learning and `well documented!`

Talk contents

The talk will aim to introduce these tools and give some practical examples. Once completed it will be shown how easy it is to publish your work to :

item	description
ipython	quick intro to ipython and the notebook
setup	set up your environment / get the talk files
notebook basics	navigate the notebook
notebook magics	special notebook commands that can be very usefull
getting input	as from IPython 1.00 getting input from sdtin is possible
local files	how to link to local files in the notebook directory
plotting	how to create beautifull inline plots
symbolic math	quick demo of sympy model
pandas	quick intro to pandas dataframe

typsetting	include markdown, Latex via MathJax
loading code	how to load a remote .py code file
gist	paste some of your work to gist for sharing
js	some javascript examples
customising	loading a customer css and custom matplotlib config file
git cell	add code to a special cell that would commit to git
output formats	how to publish your work to html, pdf or jeveal.js presentation

Get the talk files here

format	description
IPython notebook	.ipynb file to run in browser
IPython html notebook	converted to HTML and served online
IPython pdf notebook	converted to PDF for download (to be added, needs pandoc)
IPython pdf book	converted to pdf and frontpage stitched to it)
Ipython reveal.js presentation	converted to a reveal.js presenation and served online
Online IPython NBveiwer	view on the ipython notebook viewer

Some interesting links

- A book written with IPython Notebook
- Notebook Viewer
- Anaconda - Installing almost everything you need

About the presenter

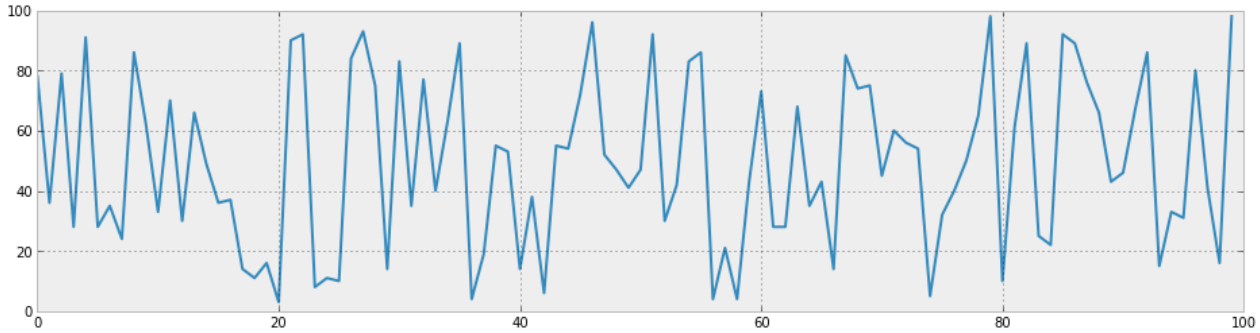
- I am an Electrical Engineer and is currently working for a consulting firm where I manage the Business Analytics and Quantitative Decision Support Services division.
- I use python in my day to day work as a practical alternative to the limitations of EXCEL in using large data sets.
- LinkedIn
- I am also a co-founder at House4Hack

```
#Some standard stuff. Also see last cell for custom css
%pylab inline
import json
s = json.load( open("static/matplotlibrc.json") )
matplotlib.rcParams.update(s)
figsize(16, 4)
```

```
Populating the interactive namespace from numpy and matplotlib
```

```
x = randint(1, 100, 100)
plot(x)
```

```
[<matplotlib.lines.Line2D at 0x5554ad0>]
```



```
from IPython.core.display import HTML
def css_styling():
    styles = open("static/custom.css", "r").read()
    return HTML(styles)
css_styling()
```

The End....

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