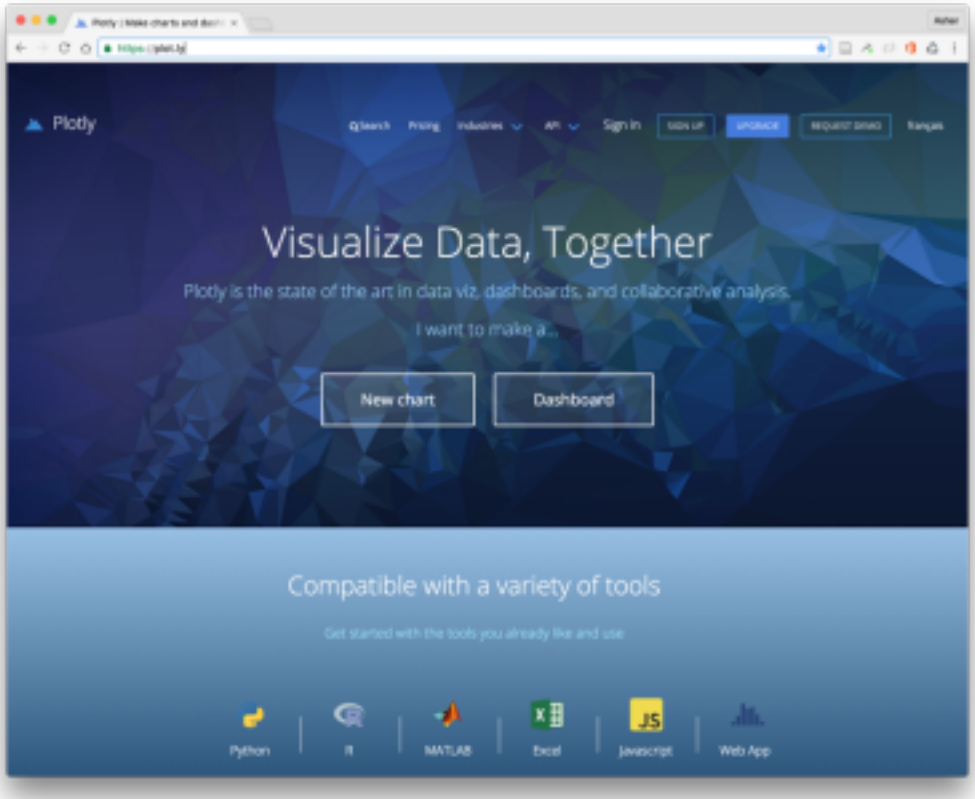
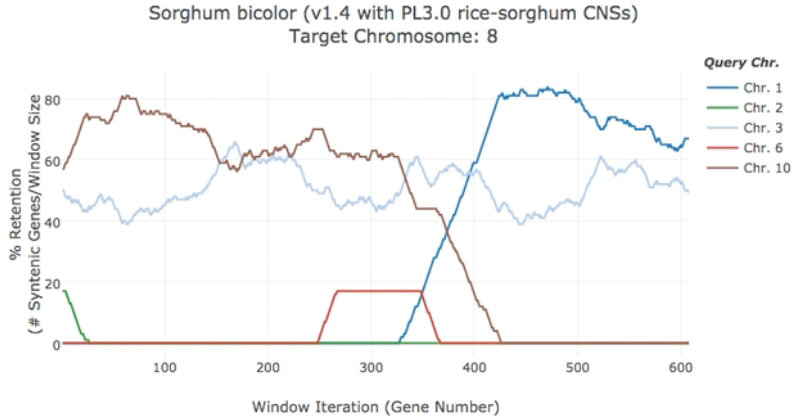
Getting Started with Plot.ly



What IS Plot.ly?

Plot.ly is an open-source* data visualization tool.

… was built using **Python** (Django) & JavaScript.
… offers a web application for **visualization** & **analysis**.
… provides plotting **APIs** for many popular languages.
… plots are **fully interactive**, and rendered with D3.js or WebGL (for 3D).
… free, paid, and on-site offerings.

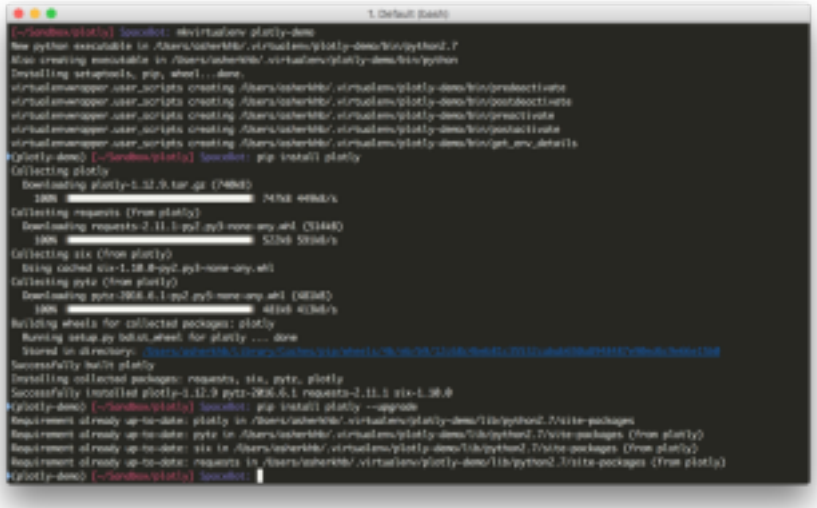


* well, *mostly* open-source.

Step 1: *Install Plotly Python Package*

Installing is easy...just use PIP!

```
(sudo) pip install plotly
```



Updating is also easy...YAY!

```
(sudo) pip install plotly --upgrade
```

Sidenote...BOO!

Plot.ly recommends “frequently updating” the package, as they tend to release new features/bug fixes ~1x per week.

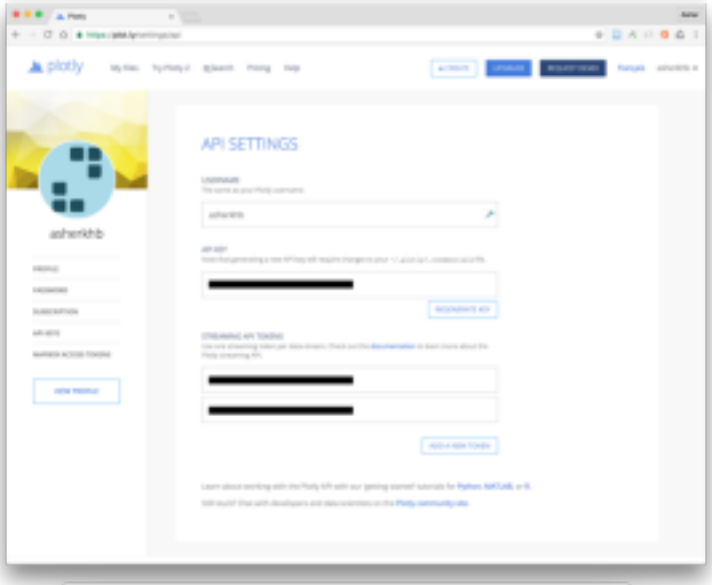
Personally, I recommend doing this in a virtual environment, just in case one of these updates would break your code.

Step 2: *Setup your API keys*

...these are necessary for communicating with Plot.ly's servers.

Question: *What is an API?*
Answer: *An "Application Programming Interface"*

Question: *…?*
Slightly More Useful Answer: *A way to interact with someone else's program, using programming languages rather than a graphical user interface*




```
In [1] import plotly
In [2] plotly.tools.set_credentials_file( \
         username='YourAccount', \
         api_key='YourKey')
```

NOTE: *You only need to do this once on your computer account, even if you use different virtual environments.*

Step 3: *Compose a Plot*

Figure() - The Plotly "Plot" Object

Composed of two parts: 'Data' and 'Layout'

Data()

Contains the information to be plotted.

Composed of 'trace's

Layout()

Contains information about the plot

i.e. title, labels, fonts, annotations, etc.

Figure()

Combines Data() and Layout()

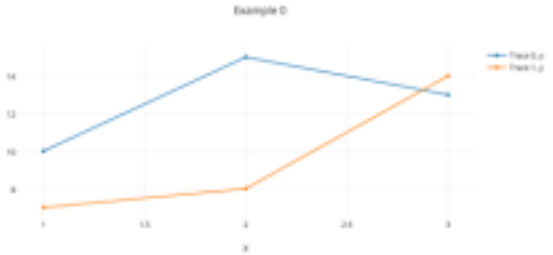
```
import plotly.plotly as py
from plotly.graph_objs import *

trace0 = Scatter(x=[1, 2, 3],y=[10, 15, 13])
trace1 = Scatter(x=[1, 2, 3],y=[7, 8, 14])
my_data = Data([trace0, trace1])

my_layout = Layout(
    title="Example 0",
    xaxis=dict(title="X"))

my_figure = Figure(
    data=my_data, layout=my_layout)

py.plot(my_figure, filename='example0')
```



https://plot.ly/~asherkhb/462/example-0/

Step 4: *Let's Plot!!*

Online

```
import plotly.plotly as py
```

Python

```
py.plot()
```

iPython

```
py.iplot()
```

Offline

```
import plotly.offline as pyo
```

Python

```
pyo.plot()
```

iPython

```
pyo.iplot()
```

Online vs **Offline** Plotting

Online Plotting

- Data is sent to Plotly's servers, plots are generated and links are returned.
- Embedded plots can be returned to iPython.

Pros

- Ability to adjust look of plots using GUI.
- Easy to share plots with other users.

Cons

- Internet connection required, need to set up API keys.
- Data is public (unless Pro account).

Offline Plotting

- Data is bundled with Plotly's library locally, made available as local .html files or divs.
- Embedded plots are available when using iPython.

Pros

- No internet connection or keys required.
- Data remains private without paying.

Cons

- Must programmatically adjust all visual parameters to achieve desired looks
- Some of Plotly's functionality not available.

Other Features & Benefits of Plotly

➔ Matplotlib converter!

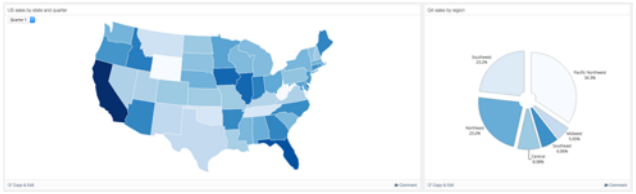
https://plot.ly/matplotlib/

`py.plot_mpl(<mpl_fig>)`

plotly

➔ Live & static dashboards!!

https://plot.ly/dashboards/

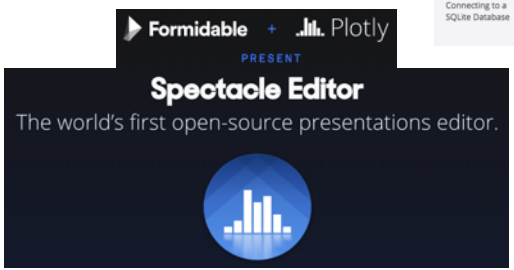


➔ Database connections!*

http://help.plot.ly/database-connectors/

➔ Presentations?!*

https://formidable.com/open-source/spectacle-editor/



➔ Mobile Ready!

* untested by me personally.

Getting more **help**...

Check out the docs for basics & examples...

https://plot.ly/python/

But for more info, use the docstrings...

Python: **help(**<*call*>**)**

iPython: ***call*?**

If you can't figure it out, post to the forums…

http://community.plot.ly/