Matplotlib

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Ubuntu

```
sudo apt-get install tk-dev python3-tk
sudo apt-get install libblas-dev liblapack-dev # Fo
pip3 install numpy six tornado pytz pyparsing nose
pip3 install matplotlib
```

Minimal Working Example

```
>>> import matplotlib
>>> from pylab import *
>>> plot([1, 2, 3, 2, 1])
[<matplotlib.lines.Line2D object at 0x7f4bf8ad14a8>
>>> show()
```

Seriously Annoying; Probably indispensable

The call to `show()` is very often a no-op.
This occurs whenever `Matplotlib` doesn't have access to system
graphics libraries (happens in virtualenvs all the time . . .)
`show()` is a blocking call; `Matplotlib` scripts can be run in
batch-mode by setting the *backend* to `agg`

Matplotlib Backend

```
>>> import matplotlib
>>> matplotlib.get_backend()
'TkAgg'
```

The backend is useful for embedding Matplotlib in other
applications; unsurprisingly TkAgg is for embedding in Tkinter
GUIs.

Setting Matplotlib Backend

Direct editing of `matplotlibrc`:

```
>>> import matplotlib
>>> matplotlib.matplotlib_fname()
'/home/nthompson/matplotlib_talk/lib/python3.4/site-

$ head -40 /home/nthompson/matplotlib_talk/lib/pyth
#### CONFIGURATION BEGINS HERE

# The default backend; one of GTK GTKAgg GTKCairo G
# CocoaAgg MacOSX Qt4Agg Qt5Agg TkAgg WX WXAgg Agg
# Template.
# You can also deploy your own backend outside of m
# referring to the module name (which must be in th
# 'module://my_backend'.
backend      : tkagg
```

Setting Matplotlib Backend

Choose backend at runtime:

```
>>> import matplotlib
>>> matplotlib.use('agg')
>>> from pylab import *
>>> plot([1, 2, 3, 2, 1])
>>> show()
```

What is the Matplotlib backend?

The backend chooses the rendering engine (vector or raster).
The most common is the anti-grain geometry library.
More backends are described in the Matplotlib FAQs.