Lecture #7 | Matplotlib

SE377 Introduction to Big Data Analysis and Visualization (2017)

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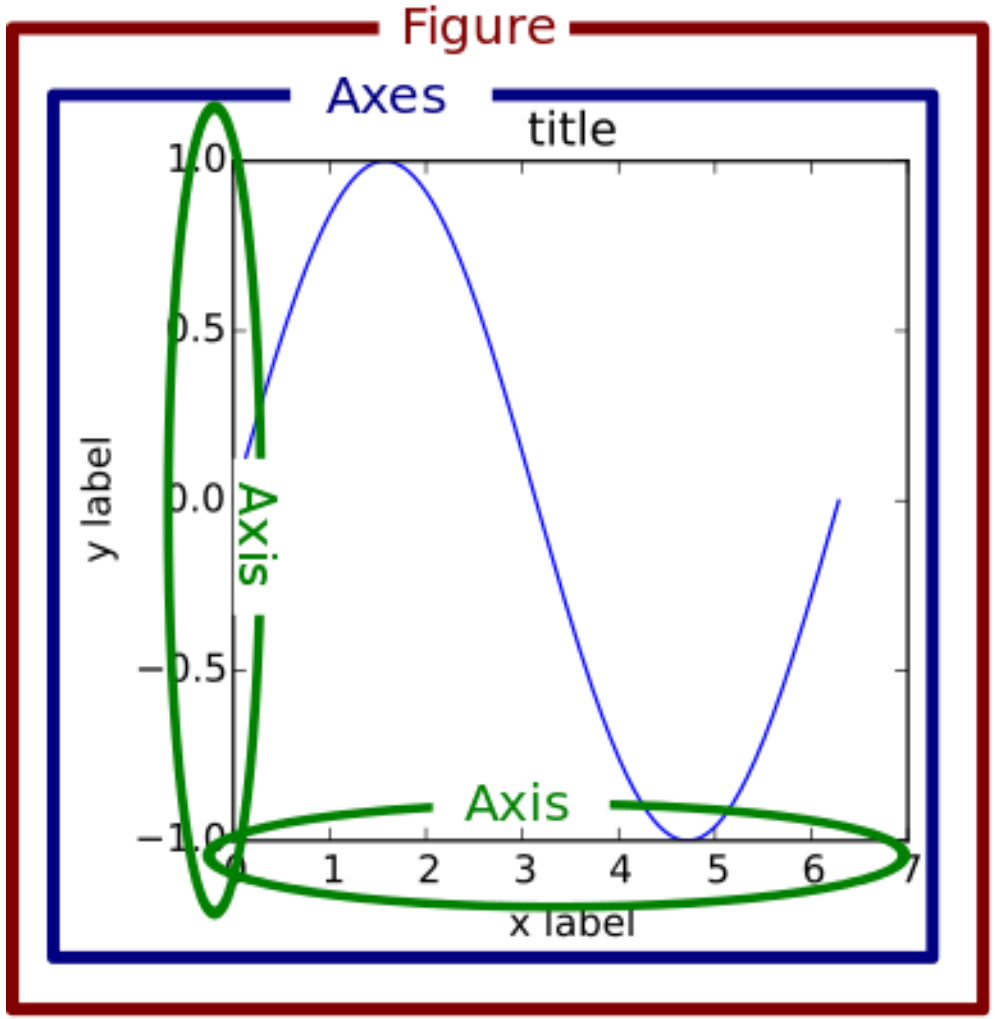
matplotlib

- matplotlib is a python 2D/3D plotting library which produces publication quality figures with the following features
  - Compatibility: work with python script, python/IPython shell, the jupyter notebook, web servers and GUI toolkits
  - MATLAB-like interface with `pyplot` module
  - Flexible graph production
    - numerous types of graphs
    - highly configurable
  - File format support: jpg, png, pdf, svg, epg, etc.
  - LaTeX equation support

See: https://matplotlib.org

Internal Hierarchy of `matplotlib` graphs

- To have subgraphs, you need to understand internal hierarchy of `matplotlib` graphs
  - `Figure`: the whole image, has one or more axes
  - `Axes`: one graph
  - `Axis`: number-line-object
    - x axis, y axis, ticker, etc.
  - `Artist`
    - Text, Line2D



Materials on matplotlib

- Official site: http://matplotlib.org
- Gallery: https://matplotlib.org/gallery.html
- Tutorials
  - http://www.labri.fr/perso/nrougier/teaching/matplotlib/
  - http://nbviewer.jupyter.org/github/jrjohansson/scientific-python-lectures/blob/master/Lecture-4-Matplotlib.ipynb
- matplotlib tweaks for different styles
  - xkcd style: https://matplotlib.org/examples/showcase/xkcd.html
  - fivethirtyeight style: https://matplotlib.org/examples/style_sheets/plot_fivethirtyeight.html

Materials on latex

- In Jupyter notebook, you can use latex equations (math mode)
- Tutorials/references
  - Help on wikipedia: https://en.wikipedia.org/wiki/Help:Displaying_a_formula#Formatting_using_TeX
  - The Not So Short Introduction to LATEX2ε: https://tobi.oetiker.ch/lshort/lshort.pdf
- Cheatsheet
  - https://users.dickinson.edu/~richesod/latex/latexcheatsheet.pdf
  - https://wch.github.io/latexsheet/latexsheet.pdf

ANY QUESTIONS?