FOSS Python tools for Geospatial Analysis and Visualization (Basic)
Speakers: Nishadh.K.A. Powsiya H

Basic workshop requirement

The hands-on exercises are in Jupyter notebooks available here.

As workshop depends on multiple libraries which are time consuming to set up, there are two options to carry out hands-on.

Option 1

1. There will be Jupyterhub to have hands on with notebooks. Accessible to participants during workshop which requires github account to sign in.

2. Participants are requested to ensure good internet connectivity, personal data card/hotspot as a contingency.

3. There will be a Google form circulated short before workshop to collect participants github username. This is to whitelist participants github account to access the Jupyterhub. Participants are requested to check for the google form link before workshop

Option 2

1. The docker imagery for the workshop is in dockerhub

2. Use personal laptop and setup the docker with above image, use Jupyter notebook served from the docker, for a setup please go through this.

3. Have latest clone of workshop notebooks.

Demystifying Optimizers used in Deep Learning (Advanced)
Speakers: Falak Shah, Jayendra Parmar

Software prerequisites:

Participants would be required to have the following libraries installed and be familiar with their basic functionalities:

- Numpy (`pip install numpy`)
- Scipy (`pip install scipy`)
- Jupyter Notebook (Follow the steps given here)
- Matplotlib (`pip install matplotlib`)

Note: Basic familiarity with linear algebra and calculus is expected of the participants. Some knowledge about machine learning would be helpful but not mandatory.

Deployment automation for Data Scientists (Basic)
Speaker: Dhavan Vaidya

1. Hardware

- GNU/Linux machine

2. For Machine Learning example (optional)

1. Raspberry Pi 3
2. Movidius Neural Compute Stick
3. NCSDK (this installation takes **more than** 3 hours on RPi3, please do it beforehand). Installation steps can be found here.

3. Other

1. Access to a remote machine (GNU/Linux, Mac) that you can play with
2. If you don't have (1), virtualbox+vagrant is required.
3. If you are going with (2), have the vagrant setup with your choice of GNU/Linux system setup.

Reference:

https://www.virtualbox.org/
https://www.vagrantup.com/docs/

Deploying Machine Learning Models at the Edge (Advanced)
Speaker: Ankit Mahato

Software Requirements

- Install Python 2.7.x from Python's official website here
- For Ubuntu users, follow the steps to install **pip** given here.
- Follow steps given here to install **virtualenv**. (Optional)
- **Jupyter Notebook** (Follow the steps given here)
- Python packages:

```
pip install titus
pip install pandas
pip install scikit-learn
```

- RStudio with base R (>= 3.0.1)
- R packages (**Open RStudio and then invoke install.packages() command in the console): aurelius, stats, forecast, rpart**

Time Series Analysis in Python (Advanced)
Speakers: Ramanathan R, Gurram Poorna Prudhvi

Software prerequisites:

- Python 3 (Follow steps given here to install Python3)
- pandas (`pip install pandas`)
- Matplotlib (`pip install matplotlib`)
- seaborn (`pip install seaborn`)
- Numpy (`pip install numpy`)
- Keras (`pip install keras`)
- Tensorflow (`pip install tensorflow`)
- Jupyter (Jupyter Notebook (Follow the steps given here)
- Anaconda this link for installing anaconda.
- Statsmodels (`pip install statsmodels`)
- PyFlux (`pip install pyflux`)
- Prophet (`pip install fbprophet`)
  Note: The major dependency that Prophet has is pystan. PyStan has its own installation instructions. Install pystan with pip before using pip to install fbprophet.
- sklearn (`pip install sklearn`)
- Scipy (pip install scipy)

An Introduction to Concurrency in Python Programming Language (Advanced)
Speaker: Tanmoy Bandyopadhyay

Software Installation

For Windows Users

You may install latest Anaconda distribution of Python from the URL given below. Python 3.7 is available there.
https://www.anaconda.com/download/#windows
Or from Python's official website
here
If you already have python installed, please check the version. and ensure that you have Python 3.5+ for this workshop.

For Linux Users

There should be some default Python interpreter already installed in Linux. However please ensure that you have Python 3.5+ for this workshop.

Open terminal and type python3 and press enter.

Prerequisites

Preferably please go through the following references before the workshop.

- https://en.wikipedia.org/wiki/Inter-process_communication
- https://en.wikipedia.org/wiki/Thread_(computing)
- https://stackoverflow.com/questions/1050222/what-is-the-difference-between-concurrency-and-parallelism
- https://en.wikipedia.org/wiki/Cooperative_multitasking
- https://en.wikipedia.org/wiki/Preemption_(computing)

Introduction to Python - Basics to plotting a graph (Basic)
Speaker Dr. Ajith Kumar

Software prerequisites:

- Numpy (`pip install numpy`)
- Matplotlib (`pip install matplotlib`)

Alternate way to install python packages

Install **Canopy** to get various python packages pre-installed like numpy, matplotlib, scipy, pandas etc.

Install instructions for Canopy:
Linux: http://docs.enthought.com/canopy/quick-start/install_linux.html
Windows: http://docs.enthought.com/canopy/quick-start/install_windows.html
Mac: http://docs.enthought.com/canopy/quick-start/install_macos.html

Details:
Prerequisite packages available in Canopy:
- numpy
- matplotlib
- scipy
- scikit-learn
- statsmodels
- pandas

Prerequisite packages **NOT** available in Canopy:
- titus
- seaborn
- tensorflow
- keras
- pyflux
- fbprophet
- pystan

How to install them in Canopy
1. Open canopy command prompt/terminal under Tools Menu
2. pip install <package-name>
Note: canopy is running as admin/sudo

Note:
1. jupyter is available with Canopy

2. You may face error in terminal while importing certain package(Will work fine in the editor)
Example: dependencies on pyqt
Solution:
edm install pyqt (in terminal)
3. Some pip install may need Microsoft Visual C++ 14 for Windows OS