# Jupyter Notebook Set up and Anaconda Installation

**Min Chen (chenmi22@msu.edu)**
**Last updated on May 25, 2019**

The goal of this tutorial is to set up Python program for your research projects. Jupyter Notebook, an interactive environment for python coding, will be used for this purpose. There are two ways you can run Jupyter Notebook with Python, by installing python on your personal computer or by connecting to the engineering JupyterHub server.

## Option 1: Install python on your personal computer

1. Go to the Anaconda Download webpage https://www.anaconda.com/distribution.
2. Choose your operating system (Windows, OS X, or Linux) and download Anaconda (Python 3.7 version, 64 bit recommended). Install Anaconda on your computer by double clicking on the package you downloaded and follow the instructions.
3. Open "Anaconda-Navigator", click on "Environments" tab and search the relevant packages that are not installed, which includes obspy, obspyck, obspandas, and geopandas. Select them and then click on the "Apply" button. You will also need to install the dependencies of geopandas in the way as installing the packages mentioned above. Required dependencies: numpy, pandas (version 0.19.1 or later), shapely (interface to GEOS), fiona (interface to GDAL), pyproj (interface to PROJ), six. Further, optional dependencies are: rtree (optional; spatial index to improve performance and required for overlay operations; interface to libspatialindex), psycopg2 (optional; for PostGIS connection), geopy (optional; for geocoding). For plotting, these additional packages may be used: matplotlib, descartes, mapclassify.
4. Open the command line program on your computer
    - On Windows, type CMD in the run box in the start menu.
    - On Mac, type "terminal" and hit enter in the Finder window, or double click to open the terminal application in the Utility folder.
    - On Linux, open up a console application.
5. Type "ipython notebook" or "jupyter notebook" in the command line and hit enter.

If everything goes correctly, a browser window should open up with the Jupyter interface running. If things don't work, don't worry, we will help you get started.

## Option 2: Connect to the engineering JupyterHub server

You can request an engineering computing account. If this is your first time using your Engineering account you will need to activate the account by going to the following website:

https://www.egr.msu.edu/decs/myaccount/?page=activate

Enter your MSU NetID. The initial password will be your APID with an @ at the end (example: A12345678@) and then you have to set a new password that meets the requirements listed on the page. Verify the password. Then agree to the terms and Activate.

Once your account is activated you can access the classroom Jupyterhub server using the following instructions:

1. Open up a web browser and go to the URL https://jupyterhub.egr.msu.edu.
2. Type your engineering login name, which is your MSU NetID.
3. Enter your engineering password.

If everything is working properly you will see the main "Files" windows in the Jupyter interface.

## Instructions for getting IPython notebook files into Jupyter

IPython notebooks, also known as Jupyter notebooks, are files that end with the .ipynb extension. We will give you two example files to work with, you can edit them for your own learning or research purpose. Please download the ipynb files from the our GitHub repository by using the following command line:

git clone https://github.com/msu-seismo/python-data-analysis-viz.git

You can load the ipynb files in the directory downloaded from our GitHub repository into Jupyter using the "upload" button on the main "Files" tab in the Jupyter web interface. Clicking on this button will cause a file browser window to open. Just navigate to your ipynb file, select it and hit the open button. Once you see your filename in the Jupyter window you can just click on that name to start using that file.