Getting Started with Python3 and Jupyter Notebooks

1 Introduction

This document will take you through the general steps required to install Python and the Jupyter notebook environment we will be using in ECE 311. If you are having any issues please ask your TA, post on the Piazza, or come to office hours. Do not worry if you have problems getting your environment set up, we will make sure you all get set up accordingly.

Note: we recommend you use your own machine due to the convenience and higher level of control you will have. Still, we will start with instructions for EWS Linux machines.

2 EWS Linux Machines

We will use Canopy on the EWS machines as our package manager since it is already installed and has a nice user interface. Start by opening a terminal and typing the following:

```
$ module load canopy/py35-2.1.3
$ canopy
```

Note that "canopy/py35-2.1.3" is all one word with no spaces. If this is your first time opening Canopy it will take a while (around 15 minutes) for the environment to set itself up. Once the set up screen are complete, the Canopy welcome page should open. Next, we need to install a package that is missing from the default install: scikit-image. Click on the "Package Manager" icon and once that opens, click the "Available" tab on the left sidebar. In the search bar at the top, type in "scikit". Click on the package named "scikits.image" and install on the bottom-right of the window. Installing this package will also take a while (around 10 minutes).

Once you have installed the package, you are ready to open a Jupyter notebook. Go to the course website and download the Lab 1 zip file. Unzip this folder to the location you prefer. Go back to the "Welcome to Canopy" page and click "Open an existing file". Navigate to where your Lab 1 is saved and open the "Lab1.ipynb" file. Canopy will either open the file directly to your browser or ask you if you would like to do that (click "Ok" if it asks). Finally, click on the first code cell in the Lab 1 file that just opened in your browser and run the first code cell with Ctrl+Enter. If the cell successfully runs – no errors and a number should appear in the square brackets to the left – you're all good! In the future, you will need to do the following to open up your lab files. Open a terminal and type the same two lines:

```
$ module load canopy/py35-2.1.3
$ canopy
```

Find and open the lab file from the Canopy welcome screen and you should be back where you left off.

3 Windows

Download Anaconda and Python 3.7 from this link: Anaconda Download. Run the install file and follow the directions for a default installation. Make a new directory for ECE 311, download the Lab 1 zip file from the course website, and unzip it into your ECE 311 directory. Next, open an Anaconda prompt terminal (you may need to restart your machine for the Anaconda install to complete). You may do so by typing "anaconda prompt" in your menu's search bar. Now, in order to install the necessary modules (they may all already be installed) for this lab and open a Jupyter notebook, type:

```
$ pip install numpy
$ pip install scipy
$ pip install scikit-image
$ pip install matplotlib
$ pip install scikit-learn
$ jupyter notebook
```

You should now be able to navigate to your ECE 311 folder and open the "Lab1.ipynb" file. Open it up and try running the first code cell by hitting Ctrl+Enter. If the cell successfully runs, you are all good!

In the future, you will only need to open an Anaconda prompt terminal and type "jupyter notebook" to open up the Jupyter environment. Furthermore, all the previously installed libraries are still installed, there is no need to reinstall them.

4 Mac

Download Anaconda and Python 3.7 from this link: Anaconda Download. Run the install file and follow the directions for a default installation. Make a new directory for ECE 311, download the Lab 1 zip file from the course website, and unzip it into your ECE 311 directory. Now, in order to install the necessary modules (they may all already be installed) for this lab and open a Jupyter notebook, type:

```
$ pip install numpy
$ pip install scipy
$ pip install scikit-image
$ pip install matplotlib
$ pip install scikit-learn
$ jupyter notebook
```

You should now be able to navigate to your ECE 311 folder and open the "Lab1.ipynb" file. Open it up and try running the first code cell by hitting Ctrl+Enter. If the cell successfully runs, you are all good!

In the future, you will only need to open a terminal and type "jupyter notebook" to open up the Jupyter environment. Furthermore, all the previously installed libraries are still installed, there is no need to reinstall them.

5 Linux

Your machine should already have some Python3 distribution, but let's make sure you have all the right tools. Run the following commands in a terminal:

```
$ sudo apt-get update
$ sudo apt-get install python3-pip
$ python3 -m pip install jupyter
```

Next, create a new directory for ECE 311 and extract the Lab 1 zip file to this directory. The necessary packages are likely already installed. Still, try typing the following commands:

```
$ pip3 install numpy
$ pip3 install scipy
$ pip3 install scikit-image
$ pip3 install matplotlib
$ pip3 install scikit-learn
```

And finally, to open a Jupyter notebook:

```
$ jupyter notebook
```

You should now be able to navigate to your ECE 311 folder and open the "Lab1.ipynb" file. Open it up and try running the first code cell by hitting Ctrl+Enter. If the cell successfully runs, you are all good!

In the future, you will only need to open a terminal and type "jupyter notebook" to open up the Jupyter environment. Furthermore, all the previously installed libraries are still installed, there is no need to reinstall them.

6 Troubleshooting

If you have any issues please ask your TA, come to office hours, try googling your issue, or post on the course Piazza. Do not worry if you are having trouble, we will make sure you are all set up before you turn in your first lab.