

# Python introduction

Jupyter is an application which is essentially a python interface, similar to the Matlab interface.

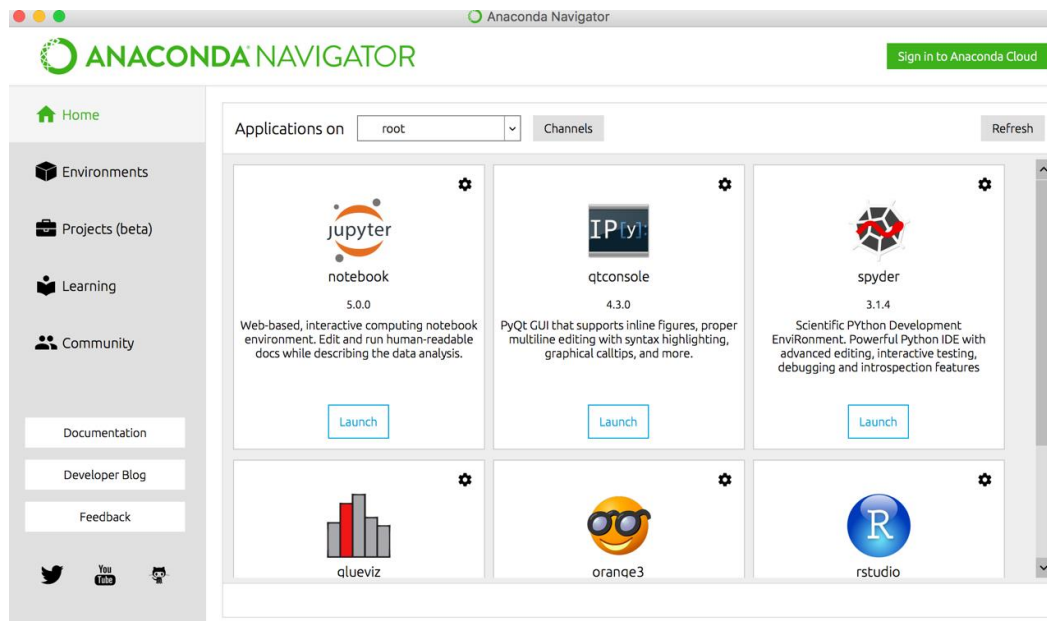
Python is a programming language and you can program python in many ways. You can for example just type python code on a notepad. BUT, to run a python program you need an application capable of turning the code into action.

Jupyter is one such application.

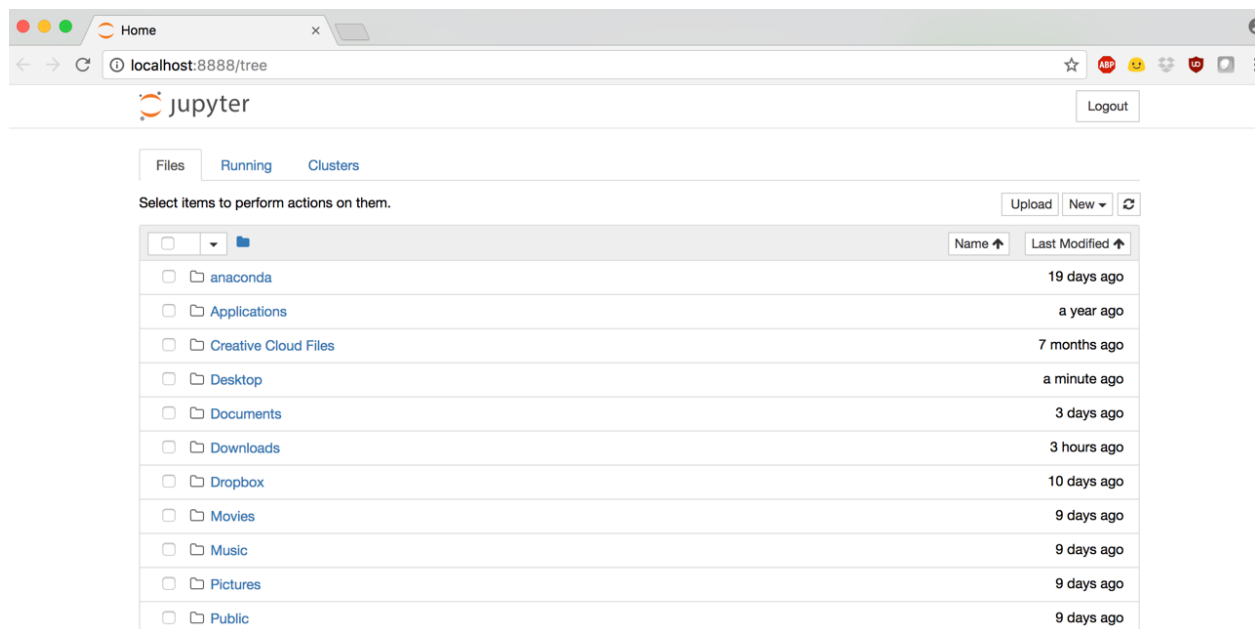
To install and run Jupyter you can download Anaconda python:

<https://www.anaconda.com/download/>

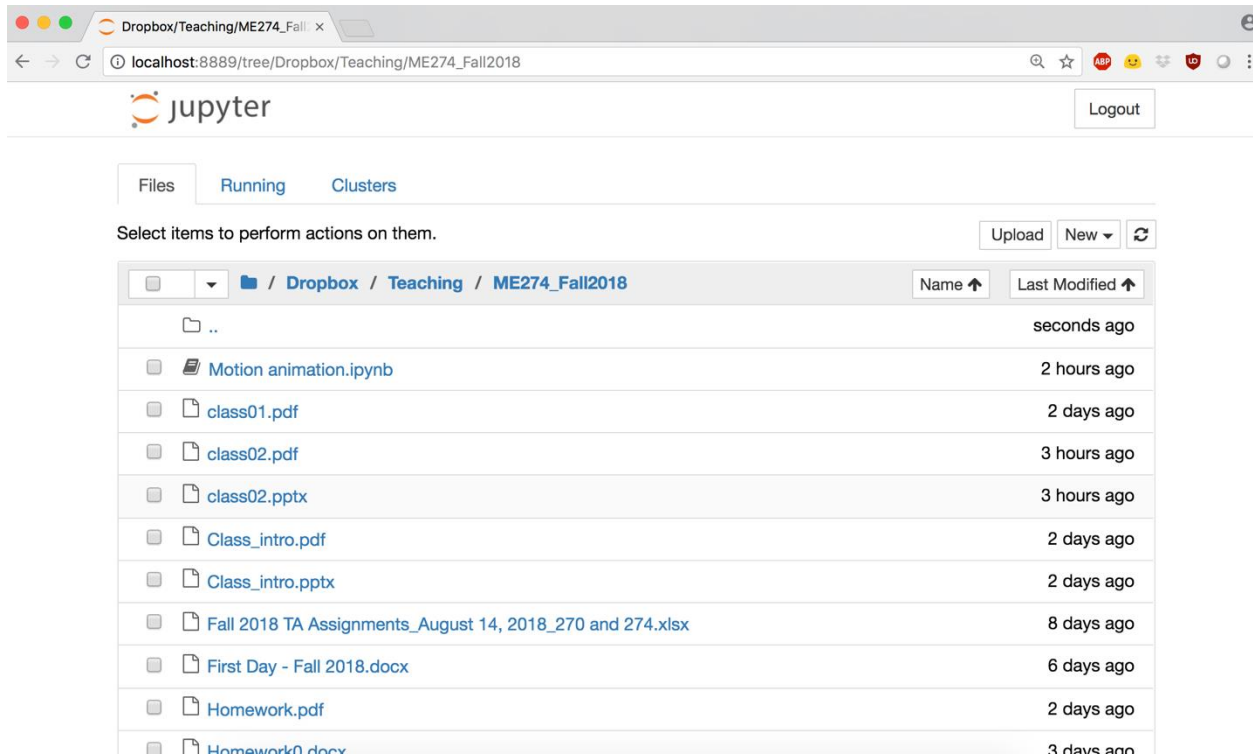
When you run Anaconda Navigator you'll see something like this:



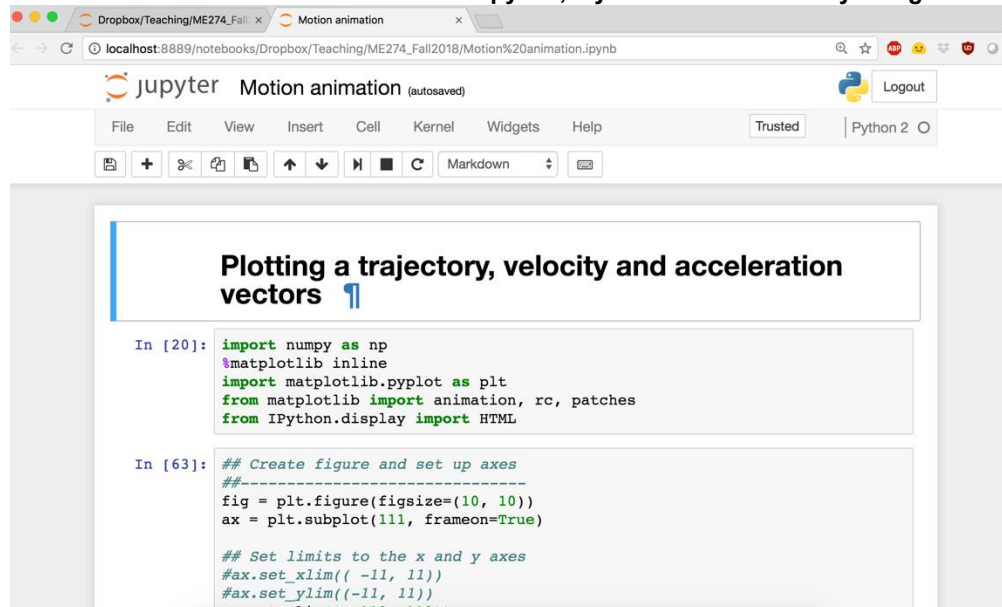
If you click on “Launch” below Jupyter a new browser tab will open looking like this



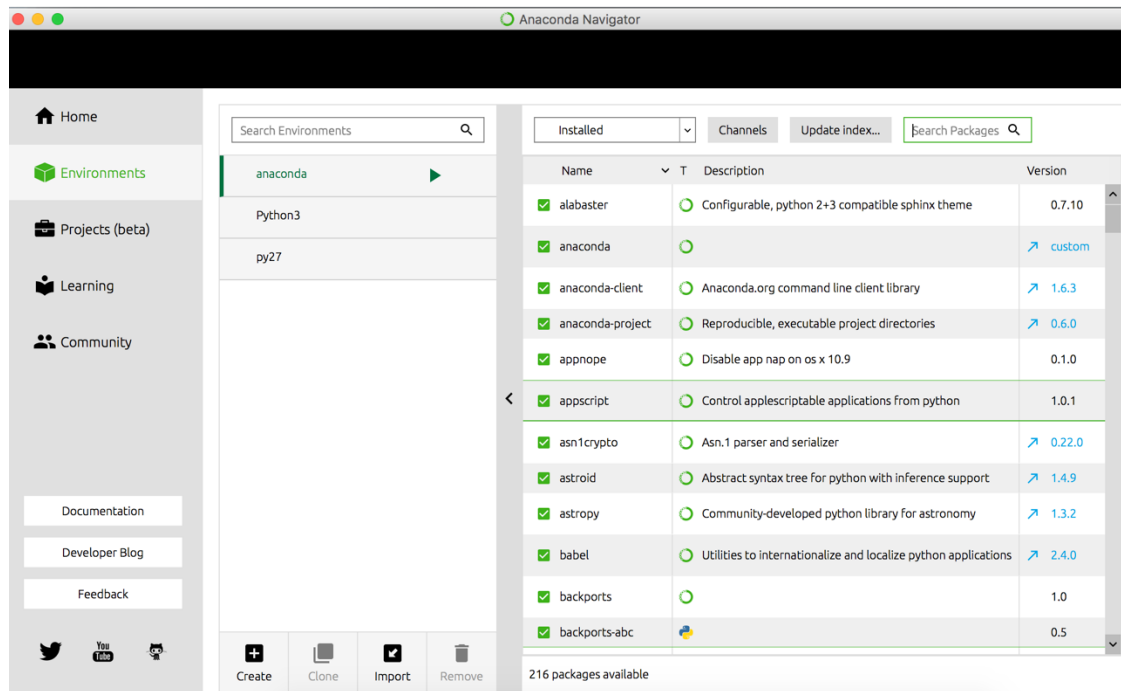
It is like a Finder window (in Mac) or a Documents window (in Windows). You can click on the folders to get to folder where you downloaded the code I used in class, in my case, if I go to that folder I see:



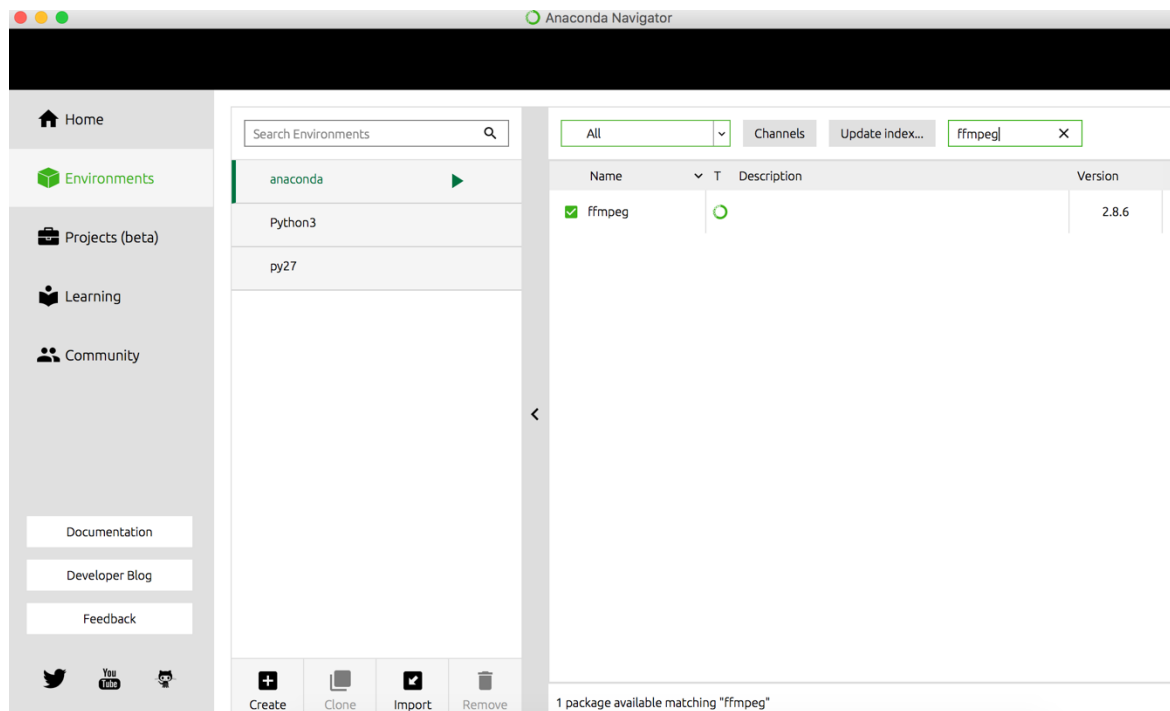
As you can see there it is the file “Motion animation.ipynb”, if you click on that one you’ll get



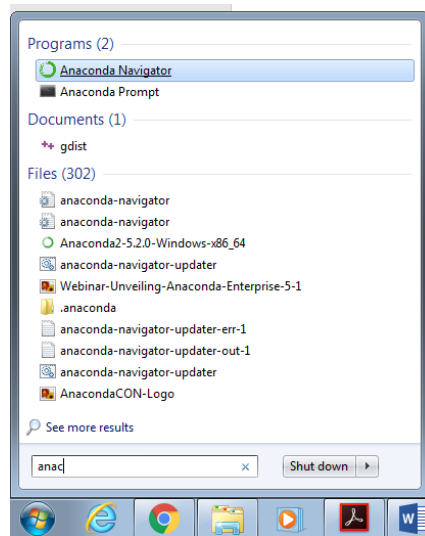
This finally the place where you can edit the code and run the code. If you want to run a cell you can either get your cursor in the cell and press “shift+Enter” or you can select the option "Cells -> Run Cells" in the menu. Within each cell the code has to have the proper python syntax. The code I provided should run without problem if you follow all the steps above. Just run cell by cell. **There is a slight chance that you’ll get some error with the video generation, it depends on whether or not your computer has some preinstalled packages for video processing.** In that case, please use the internet to trouble shoot! My best guess is that you need an additional package. In the Anaconda Navigator click on Environment



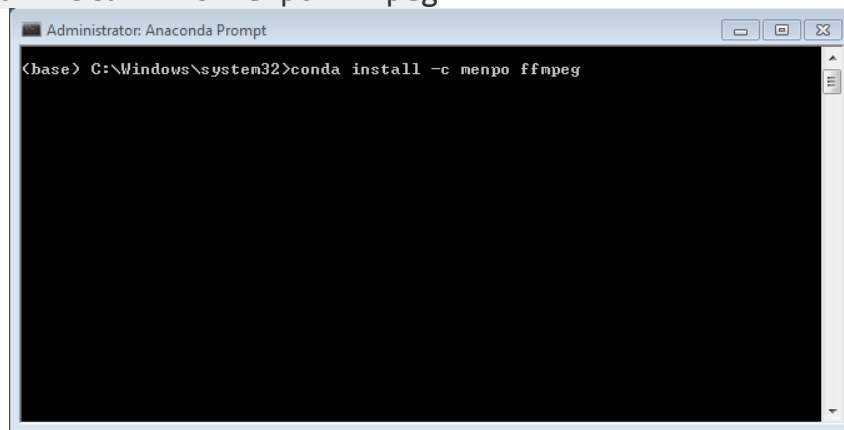
In the tab that says “Installed” select “All” and in Search packages type “ffmpeg”



Install ffmpeg and reboot the Jupyter notebook and try again to see if you can generate the movie. Hopefully it works this time. **If ffmpeg doesn't show up on the list, then you'll have to install it using the command line.** In Windows, you can go to the Start button, and type anaconda, you'll get something like



Right-click on the Anaconda Prompt and select “Run as administrator”. In the anaconda prompt type the following: `conda install -c menpo ffmpeg`



At some point you’ll be asked whether or not you want to install, it will look something like `<y,n>?` type `y` and hit Enter. The package will be installed. Now you can run the Anaconda navigator and it should have ffmpeg. One thing that I haven’t been able to solve is that now I have to start the Anaconda navigator also right-clicking and selecting “Run as administrator” or otherwise, if I just click on it, I get an “Access denied” error. However, if you run the Anaconda navigator as administrator then everything is fine.