Creating a Machine Learning Environment on your local machine

The following instructions will enable you to install a Machine Learning Environment suitable for this course on your local machine.

- We strongly suggest that you don't deviate from the instructions
- The more you stray from the suggestions, the more likely it will be that you encounter problems

Install the basic Machine Learning Environment

We will be installing Anaconda Individual Edition, a complete environment for Machine Learning.

It works on a variety of operating systems.

Click on the link to begin the installation on your local machine.

[Download link (https://www.anaconda.com/products/individual#Downloads)](https://www.anaconda.com/products/individual#Downloads)

- Easiest choice: Choose the "64 bit graphical installer"
- If prompted for any choices during installation
    - Accept the default choice, by simply pressing the Enter key
    - Allow the `.bashrc` file to be modified

Install Jupyter extensions (optional)

Although this step is not strictly necessary, installing the following extensions to Jupyter will make you more productive.

Enter the following commands from a terminal:

Install contributed extensions conda install -y -c conda-forge jupyter_contrib_nbextensions # Activate extensions jupyter nbextension enable toc2/main jupyter nbextension enable collapsible_headings/main jupyter nbextension enable livemdpreview/livemdpreview # Extension for slides conda install -y -c conda-forge rise jupyter nbextension enable rise

Jupyter security (optional)

If you run the Jupyter server on a machine that is connected to a network

- It is possible to allow remote users to connect to your server
- This **will not** happen by default

Should you decide to let remote users connect, it is strongly advised that you protect the notebook server with a password.

See [Public Jupyter Server (https://jupyter-notebook.readthedocs.io/en/stable/public_server.html)](https://jupyter-notebook.readthedocs.io/en/stable/public_server.html) for details.

Create a directory for your notebooks

We will refer to this directory as the *notebooks directory*.

- It can be anywhere on your machine
- My convention is to have a directory called "Notebooks" in my home directory.
    - The instructions below will use `Notebooks` as the notebooks directory; modify the instructions if you choose a different location

This is the location to which the course materials will be downloaded.

Enter the following commands from a terminal:

Create directory for notebooks cd mkdir Notebooks cd Notebooks

Download the course material

We are using a tool called `git` to manage our code.

`git` defines the notion of a *repository* as a collection of material related to a project.

The following will

- Install `git`
- Download the course material from a repository we have created
    - Into the current directory
    - Which is the `Notebooks` directory if you followed the previous step
- Download material from the recommend text books

Enter the following commands from a terminal:

```
In [ ]:  # Install git
         conda install -y git

         # Clone git repositories
         REPO="MachineLearning_and_Finance_Student"

         git clone https://github.com/nyutandononline/$REPO.git
         git clone https://github.com/jakevdp/PythonDataScienceHandbook.git
         git clone https://github.com/ageron/handson-ml.git
```

You should verify that your notebooks directory has the following subdirectories

- `MachineLearning_and_Finance_Student`
    - The course material
    - This is where you will find the lectures
- `handson-ml`
    - Notebooks associated with the recommended textbook by Geron.
- `PythonDataScienceHandbook`
    - The *complete text* and associated notebooks of the recommended textbook by VanderPlas

Deep Learning Course: Install additional packages for Deep Learning

You have installed the "basic" Machine Learning Environment, which suffices for the Classical Machine Learning part of the course.

When you are ready for the Deep Learning part of the course (or want to play with Neural Networks/Deep Learning) you will need to install additional packages.

Enter the following commands from a terminal:

Install Tensorflow conda install -y tensorflow
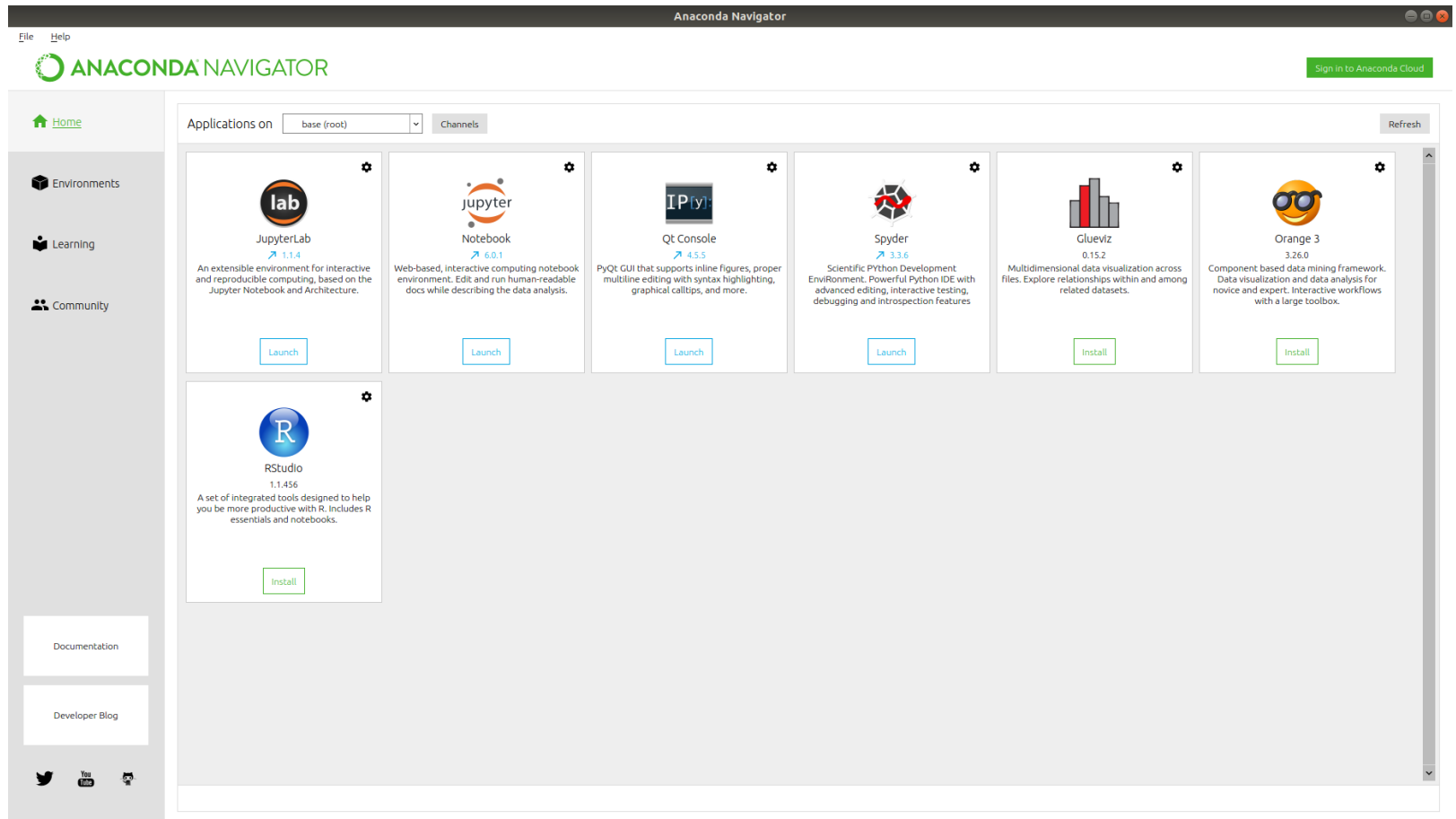
Start up a Jupyter Notebook server

As part of the installation of Anaconda, a tool called the Anaconda Navigator was installed.

Find and start it

- An icon may have been created on your desktop
- Otherwise, enter the following commands from a terminal:

```
cd
~/anaconda3/bin/anaconda-
navigator &
```

You will hopefully see something like this

- Click on the icon for `Jupyter Notebook` to start the Jupyter server.
- Navigate to the `edX_ML` directory to find the course material directory
- Find the `Index.ipynb` notebook and open it
    - This will take you to the "start page" for the lectures