

## Getting Started

### Overview

Our first goal should be getting you familiar with some of the tools we will be using throughout this project. Primarily these will be:

- **Docker:** This will allow us to work in the exact same environment and should reduce compatibility issues between the two of us.
- **TensorFlow:** This is the powerful API that allows for relatively easy use of the tools used in Machine Learning and Deep Neural Networks. (**note:** There are a number of higher level API that use TensorFlow as a backend, you may want to do a little research on these as you may find them easier to learn and adequate for your purposes, specifically check out **Keras**)
- **git:** This is how we will share code. It is basically industry standard. I have set up this up as a public repository on my account, but we will likely want to set up something more secure on your side in the future. For the time being this will be fine.

At the end of this document I am going to include some sources (articles and videos) that will help familiarize yourself with these tools, use them as you see fit.

### Instructions

If any of these instructions are confusing or you can't get one of these components to work (which is likely, this is always the most annoying part), send me an email or contact me on skype and we will work it out.

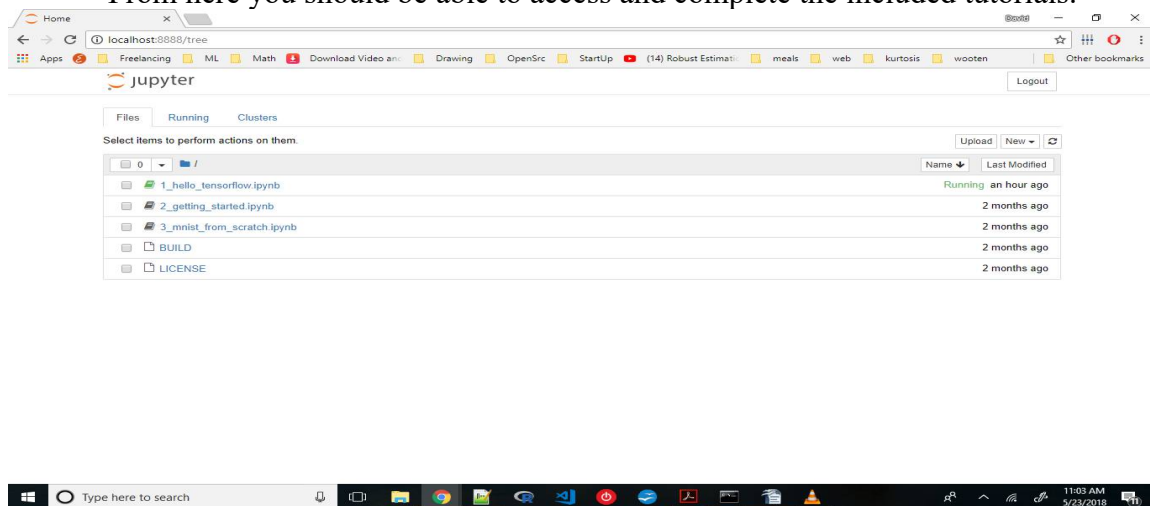
**Note:** Let me know which computer you end up using the Mac or Windows machine, I'll try to tailor my instructions to that. Although you should be able to get all this up and working on either.

1. Install git onto your computer (if you do not already have it installed). Instructions to do this can be found: <https://git-scm.com/book/en/v2/Getting-Started-Installing-Git>
2. Copy the git repository locally onto your computer. I have setup the repository in: <https://github.com/Krebbet/ATA> In a terminal navigate to the directory you would like to use and then clone the repository with the command: `git clone https://github.com/Krebbet/ATA` **note:** let me know if you need some help navigating the terminal and learning that side of it. Youtube is a great source to get started with command line.
3. Install Docker on your computer, details on how to do this can be found in the below sources.
4. In your terminal, once Docker is running on your computer, run the command: `docker run -it -p 8888:8888 tensorflow/tensorflow` This command will start up a docker container with the packages needed to run

tensorflow from python. From this you will be able to run python scripts we build in the future. For a little clarity this is what the command is doing:

- `docker run`: this tells docker you wish to run a container
- `-it` : is an argument given to run the container interactively in the terminal, this means the container can be accessed through the terminal.
- `-p 8888:8888` : is an argument to expose the docker container to your local machine through the specified port. This means you can access a the containers port by addressing it to your local machines port in this case: the containers port 8888 is sent to local machine port 8888. If this doesn't make much sense it isn't that important right now.
- `tensorflow/tensorflow`: This identifies the container you want to run. One of the big advantages of using Docker is there is a multitude of prebuild images available, this one is the official image created by google. You can see detailed instructions for it here: <https://hub.docker.com/r/tensorflow/tensorflow/>

5. This image is built to start a **jupyter notebook** with a few how to tutorials built into it. Open your favourite internet browser and input the address **localhost:8888** . You will notice we are directing the browser towards the port named in the previous command. From here you should be able to access and complete the included tutorials.



If you are unfamiliar with Jupyter notebooks and how to use them, I have left some links below. But essentially these allow you to run portions of python script incrementally by executing each 'cell' individually.

We will leave there for now. Go through the tutorials and let me know what you think where you are at. In the mean time I will put together a few more meaningful tutorials and tasks to get you familiar with TensorFlow and how to run your scripts through the terminal.

## Additional Materials

For all these materials use them as you see fit, you probably don't need a masters level of understanding in most these tools, just enough to use them. So just browse them and take what you think is useful.

## Docker

Installation instructions: <https://docs.docker.com/install/>

This is an introduction video that I think will help you understand what Docker is doing and some basic commands: <https://www.youtube.com/watch?v=YFl2mCHdv24>

## **Computer Vision**

When I started out in computer vision I went through this course (2016):

<https://www.youtube.com/watch?v=g-PvXUjD6qg&list=PLIJy-eBtNFt6EuMxFYRiNRS07MCWN5UIA&index=1>

The 2017 lectures are here: <https://www.youtube.com/watch?v=vT1JzLTH4G4&list=PL3FW7Lu3i5JvHM8ljYj-zLfQRF3EO8sYv>

Just listening to the lectures will get your feet wet in many of the concepts that you will need. Going through there assignments and modules would also be a great help in the long run. These can be found online.

## **git**

basic: <https://www.youtube.com/watch?v=HVsySz-h9r4>

txt basics: <https://git-scm.com/book/en/v1/Git-Basics-Getting-a-Git-Repository>

## **Navigating a Terminal**

## **jupyter notebook**

Just a walkthrough: <https://www.youtube.com/watch?v=HW29067qVWk&t=946s>