**First time setup:**

* I recommend using Anaconda as it will make a lot less headaches and I will be using anaconda in this process
* Create a new anaconda environment:
* conda create -n ‘name of new env’python=3.7
* conda activate ‘name of new env’
* Run this command to download needed packages : pip install TensorFlow==1.15 lxml pillow matplotlib jupyter contextlib2 cython tf\_slim
  + (only TensorFlow 1.x.x works so I use 1.15)
* If you have git installed, go to where you want to download the repository and run: git clone <https://github.com/tensorflow/models.git>
  + If you don’t have git go to the website part of the git command and download the zip
* Next go [here](https://github.com/protocolbuffers/protobuf/releases/download/v3.20.1/protoc-3.20.1-win64.zip) to download protoc 3.2 (version 3.4 is recommended)
  + Extract the zip and open the bin folder. Move protoc.exe into the ‘research’ folder of the cloned repository
  + From the ‘research’ directory run this command to compile protoc:
* protoc object\_detection/protos/\*.proto --python\_out=.
* If we want to run the object\_detection scripts on a local machine, we need to go to the ‘research’ directory and run these two commands:
  + Python setup.py build
  + Python setup.py install
* For the jupyter notebook script to work and to work on our local machine we also need pycocotools. Run pip install pycocotools
  + If this does not work, instead run this command which grabs the wheel file needed pip install git+https://github.com/philferriere/cocoapi.git#egg=pycocotools^&subdirectory=PythonAPI
* To run the object detection online run jupyter notebook
  + If this command gives you errors try running conda install jupyter and try again
  + This will open a web page in your browser. Navigate to object\_detection/colab\_tutorials/object\_detection\_tutorial.py
  + When the new page opens, click on ‘Run All’ under the cells tab
* To run it on local PC we have to make a few changes. We will use the old version of the object detection tutorial with some modifications due to the current version not working correctly yet. You can grab the files I used [here](https://github.com/MysticScripter/TF_Custom_Object_Detection)
* To use our webcam instead of detecting images we will need to download cv2. We have to download the wheel file from [here](https://www.lfd.uci.edu/~gohlke/pythonlibs/#opencv)
  + Download the wheel version that matches your version of python
  + To install it you have to move to the directory where it is downloaded and run pip install ‘name of file’
  + Next you can grab the script we will run from my [GitHub](https://github.com/MysticScripter/TF_Custom_Object_Detection)
* Training commands:
* python train.py --train\_dir=training/ --pipeline\_config\_path=training/ssd\_mobilenet\_v1\_pets.config –logtostderr (replace the config file name with the name of the model you are using)
* python export\_inference\_graph.py --input\_type image\_tensor --pipeline\_config\_path training/ssd\_mobilenet\_v1\_pets.config --trained\_checkpoint\_prefix training/model.ckpt-3207 --output\_directory new\_graph