

## Mountain Bike and Road Bike Classifier

Referring to this GitHub repository and YouTube video:

[https://github.com/MicrocontrollersAndMore/TensorFlow\\_Tut\\_2\\_Classification\\_Walk-through](https://github.com/MicrocontrollersAndMore/TensorFlow_Tut_2_Classification_Walk-through)

<https://www.youtube.com/watch?v=oXpsAiSajE0>

The images are here (the images are the same, two download options provided for redundancy):

Google Drive:

<https://drive.google.com/drive/folders/1ywyfiAEI0ql81gMy58UeamWvV7u9xGn9?usp=sharing>

OneDrive:

[https://1drv.ms/f/s!AoYpNs\\_C1pusgxvM3sOU5Wn9yJm5](https://1drv.ms/f/s!AoYpNs_C1pusgxvM3sOU5Wn9yJm5)

This project uses a moderately refactored version of Google's retrain.py:

[https://github.com/tensorflow/tensorflow/blob/master/tensorflow/examples/image\\_retraining/retrain.py](https://github.com/tensorflow/tensorflow/blob/master/tensorflow/examples/image_retraining/retrain.py)

This script uses Google's Inception model and retrains the last layer (the fully connected layer) only.

Re-do this task with making your own CNN from scratch (i.e. do not use Inception or any other pre-trained model). Most likely your own CNN will not get as good results as Inception does as shown in the video, which is ok. The results do not have to be perfect.

The following stipulations apply:

- Your finished repo should include a file "train.py" (not retrain.py since it will be your own CNN) and a separate file "test.py"
- You may copy the "test.py" from the above repo entirely or copy it as a starting point and make minor changes, or make your own "test.py" entirely. However, the presentation should be similar to the "test.py" in the repo above, i.e. show the images with OpenCV or similar and have standard output state the classification and confidence.
- Your "train.py" should be your own work. You can use something else as a starting point such as [https://github.com/tensorflow/tensorflow/blob/master/tensorflow/examples/tutorials/mnist/mnist\\_deep.py](https://github.com/tensorflow/tensorflow/blob/master/tensorflow/examples/tutorials/mnist/mnist_deep.py) however you will have to work out how to read in the images and make changes for the images being different sizes and various other changes.

Your finished GitHub repo should include at least the following:

- Your "train.py" and your "test.py"
- Try to make running your program, both training and test phases, as obvious as possible; for any steps to run your program that are not obvious, include applicable documentation in a readme.md
- A screenshot of TensorBoard showing your CNN graph