**Retraining MobileNet V2**

We used [11] for Retraining MobileNet V2

There are a few things that should be kept in mind:

1. It uses the Object Detection API of Tensorflow and also loads pre-trained weights of MobileNet V2
2. TFRecord files are files that are needed for training. The training requires three things:

i. TFRecord file generated on images

ii. LabelMap that consists of the classes the model can classify

iii. Configuration file that has information about the number of classes and model

1. For generating TFRecord files, we used Roboflow [12] that has us import images. We can either self-annotate or add a .csv file. For our project, we used the csv file generated by YOLO v4 as its labels are needed to retrain MobileNet v2.
2. The above mentioned files can be found in our repo
3. The retraining works this way: It loads the pre-trained weights along with these configuration files and then, using previous checkpoints, the model just transfer learns to the new images rather than training from scratch
4. The model’s checkpoints are saved
5. We load the latest checkpoint to save the model in .pb format, which is basically a frozen graph (that can no longer be trained)
6. Then you create the model with that and then run the inference on the frame/image

You can refer to the notebook Final\_V2\_Retraining. Notebook PDFs are also given in Notebooks folder.

Best results: 1200-1800 steps