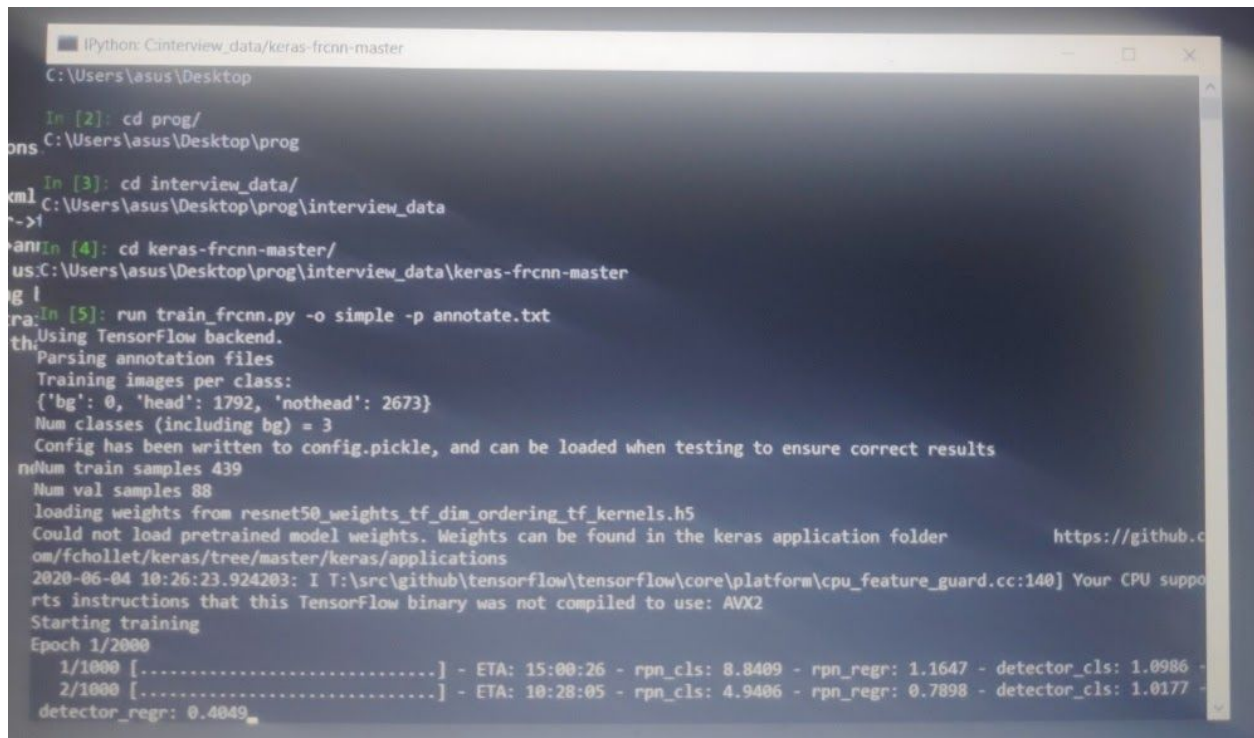


The following three are images of the engine training process.

Image of training of Faster RCNN



```
IPython: C:\Interview_data\keras-frcnn-master
C:\Users\asus\Desktop

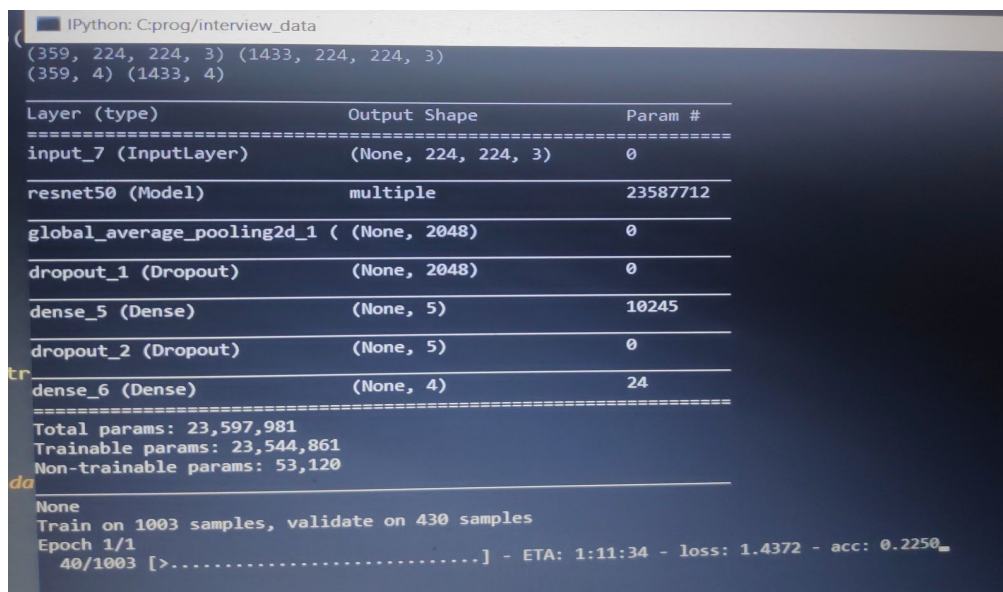
In [2]: cd prog/
C:\Users\asus\Desktop\prog

In [3]: cd interview_data/
C:\Users\asus\Desktop\prog\interview_data

In [4]: cd keras-frcnn-master/
C:\Users\asus\Desktop\prog\interview_data\keras-frcnn-master

In [5]: run train_frcnn.py -o simple -p annotate.txt
Using TensorFlow backend.
Parsing annotation files
Training images per class:
{'bg': 0, 'head': 1792, 'nohead': 2673}
Num classes (including bg) = 3
Config has been written to config.pickle, and can be loaded when testing to ensure correct results
Num train samples 439
Num val samples 88
loading weights from resnet50_weights_tf_dim_ordering_tf_kernels.h5
Could not load pretrained model weights. Weights can be found in the keras application folder https://github.com/fchollet/keras/tree/master/keras/applications
2020-06-04 10:26:23.924203: I T:\src\github\tensorflow\tensorflow\core\platform\cpu_feature_guard.cc:140] Your CPU supports instructions that this TensorFlow binary was not compiled to use: AVX2
Starting training
Epoch 1/2000
 1/1000 [.....] - ETA: 15:00:26 - rpn_cls: 8.8409 - rpn_regr: 1.1647 - detector_cls: 1.0986 -
 2/1000 [.....] - ETA: 10:28:05 - rpn_cls: 4.9406 - rpn_regr: 0.7898 - detector_cls: 1.0177 -
 detector_regr: 0.4049
```

Image of training of Mask classifier



```
IPython: C:\prog\interview_data
(359, 224, 224, 3) (1433, 224, 224, 3)
(359, 4) (1433, 4)

Layer (type)                Output Shape                Param #
=====
input_7 (InputLayer)         (None, 224, 224, 3)         0
resnet50 (Model)             multiple                    23587712
global_average_pooling2d_1 ( (None, 2048)                0
dropout_1 (Dropout)          (None, 2048)                0
dense_5 (Dense)              (None, 5)                   10245
dropout_2 (Dropout)          (None, 5)                   0
dense_6 (Dense)              (None, 4)                   24
=====
Total params: 23,597,981
Trainable params: 23,544,861
Non-trainable params: 53,120

None
Train on 1003 samples, validate on 430 samples
Epoch 1/1
 40/1003 [>.....] - ETA: 1:11:34 - loss: 1.4372 - acc: 0.2250
```

Image of training of Helmet classifier

```
IPython: C:\prog\interview_data
(1792, 224, 224, 3)
(359, 224, 224, 3) (1433, 224, 224, 3)
(359, 2) (1433, 2)
2020-06-04 05:33:33.621876: I T:\src\github\tensorflow\tensorflow\core\platform\cpu_feature_guard.cc:140] Your CPU supports instructions that this TensorFlow binary was not compiled to use: AVX2

Layer (type)                Output Shape                Param #
=====
input_1 (InputLayer)        (None, 224, 224, 3)        0
resnet50 (Model)            multiple                    23587712
global_average_pooling2d_1 ( (None, 2048)                0
dropout_1 (Dropout)         (None, 2048)                0
dense_1 (Dense)              (None, 5)                   10245
dropout_2 (Dropout)         (None, 5)                   0
dense_2 (Dense)              (None, 2)                   12
=====
Total params: 23,597,969
Trainable params: 23,544,849
Non-trainable params: 53,120

None
Train on 1003 samples, validate on 430 samples
Epoch 1/1
40/1003 [>.....] - ETA: 53:01 - loss: 0.7352 - acc: 0.4750
```