

## STROMA: Machine Learning Challenge

### Deep Learning Model Fine Tuning and Pruning

Generally, fine tuning is done with decreasing learning rate and increasing model weight update frequency (which is decreasing batch size). Batch size is 16, and learning rate is 0.00334 in this case.

The script of fine tuning:

```
python train.py --hyp ./data/hyps/hyp.VOC.yaml --batch 16 --epochs 20 --data cv_data.yaml --weights ./runs/train/exp/weights/best.pt --project runs_fine --name fine-tuning --cache --workers 2
```

In pruning, the final weights of the model which include sparsity are became unused. So model performance on running time has been developed. To do that, a couple of lines has to be added to the “val.py” code in yolov5 folder.

```
from utils.torch_utils import prune
prune(model,0.2)
```

The above codes have to be added before model evaluation in “val.py”. Then you will see the saved weights are pruned. 0.2 value is the pruning variable. If you increase it much, model detection performance decrease dramatically.

The script of pruning:

```
python val.py --weights ./runs/train/exp/weights/best.pt --batch 32 --data cv_data.yaml --task test --project runs_test --name validation_on_test_data --augment --workers 2
```

The fine tuning and pruning have to done respectively and sequentially.