Hands-on 10

CIE5141 Computer Vision in Construction

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A. Object Detection

1. Hyperparameter tuning (70%)

The performance of an object detection model depends on various hyperparameters. Some of them are Learning Rate, learning rate changing pattern, Number of epochs, Batch size, and optimizers. Try to change at least two hyperparameters from the base model and report your results

a. Paste here some detection results
epoch=2
learning rate=0.005

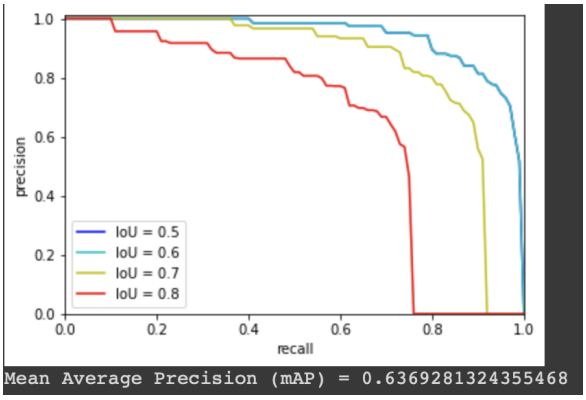
epoch=4

learning rate=0.01

b. Report mAP and paste here the PR Curves

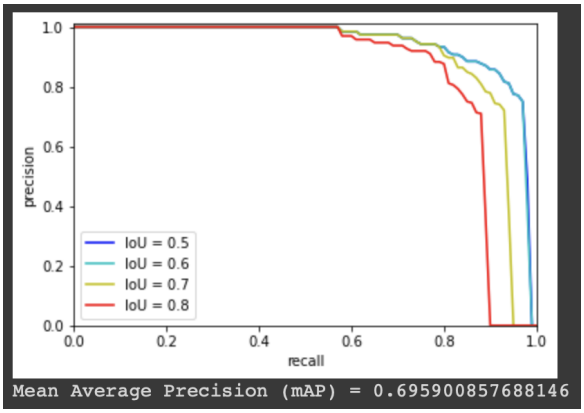
epoch=2

learning rate=0.005



epoch=4

learning rate=0.01



2. Evaluation Metric (F1 Score) calculation (30%)

The model's performance is assessed from various evaluation metrics such as precision, recall, F1 score, mean Average Precision, Precision-Recall (PR) curves etc.

In the hands-on, PR Curves and mAP are calculated already.

a. Try to write code for calculating the F1 score.

```
print("Mean F1 = ",np.mean(2*x* pr_array1/(x+pr_array1)))
```

b. Report the F1 score for the base model and your tuned model

base: epoch=1, learning rate=0.005

```
Mean F1 =  0.5448634752091172
```

tuned:epoch=4, learning rate=0.01

```
Mean F1 =  0.5752181729989785
```