Aero2Astro
Panneerselvam N
(18/10/2021)

Today i had trained Yolo v4 model upto 10000 epochs with jitter = 0.45. And also evaluated with both training and test dataset.

Threshold_IOU = 0.2
Train :

```
 calculation mAP (mean average precision)...
 Detection layer: 139 - type = 28
 Detection layer: 150 - type = 28
 Detection layer: 161 - type = 28
396
 detections_count = 1600, unique_truth_count = 663
class_id = 0, name = tower_lattice, ap = 99.88%          (TP = 273, FP = 10)
class_id = 1, name = tower_tucohy, ap = 98.26%           (TP = 165, FP = 22)
class_id = 2, name = tower_wooden, ap = 99.34%           (TP = 216, FP = 14)

 for conf_thresh = 0.25, precision = 0.93, recall = 0.99, F1-score = 0.96
 for conf_thresh = 0.25, TP = 654, FP = 46, FN = 9, average IoU = 77.17 %

 IoU threshold = 20 %, used Area-Under-Curve for each unique Recall
 mean average precision (mAP@0.20) = 0.991590, or 99.16 %
Total Detection Time: 47 Seconds
```

Test:

```
 calculation mAP (mean average precision)...
 Detection layer: 139 - type = 28
 Detection layer: 150 - type = 28
 Detection layer: 161 - type = 28
124
 detections_count = 542, unique_truth_count = 202
class_id = 0, name = tower_lattice, ap = 89.59%          (TP = 78, FP = 8)
class_id = 1, name = tower_tucohy, ap = 83.26%           (TP = 38, FP = 14)
class_id = 2, name = tower_wooden, ap = 67.14%           (TP = 39, FP = 14)

 for conf_thresh = 0.25, precision = 0.81, recall = 0.77, F1-score = 0.79
 for conf_thresh = 0.25, TP = 155, FP = 36, FN = 47, average IoU = 62.32 %

 IoU threshold = 20 %, used Area-Under-Curve for each unique Recall
 mean average precision (mAP@0.20) = 0.799958, or 80.00 %
Total Detection Time: 15 Seconds

Set -points flag:
```

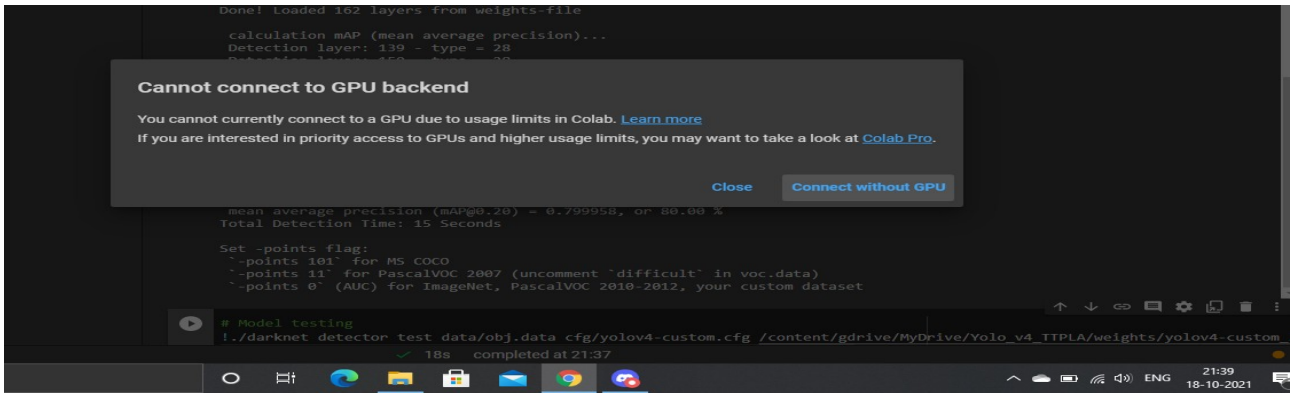
Threshold_IOU = 0.6

Train :

```
 calculation mAP (mean average precision)...
 Detection layer: 139 - type = 28
 Detection layer: 150 - type = 28
 Detection layer: 161 - type = 28
396
 detections_count = 1600, unique_truth_count = 663
class_id = 0, name = tower_lattice, ap = 98.66%          (TP = 271, FP = 12)
class_id = 1, name = tower_tucohy, ap = 94.38%           (TP = 161, FP = 26)
class_id = 2, name = tower_wooden, ap = 95.42%           (TP = 206, FP = 24)

 for conf_thresh = 0.25, precision = 0.91, recall = 0.96, F1-score = 0.94
 for conf_thresh = 0.25, TP = 638, FP = 62, FN = 25, average IoU = 76.17 %

 IoU threshold = 60 %, used Area-Under-Curve for each unique Recall
 mean average precision (mAP@0.60) = 0.961554, or 96.16 %
Total Detection Time: 48 Seconds
```

Test :

```
 calculation mAP (mean average precision)...
 Detection layer: 139 - type = 28
 Detection layer: 150 - type = 28
 Detection layer: 161 - type = 28
124
 detections_count = 542, unique_truth_count = 202
class_id = 0, name = tower_lattice, ap = 72.88%          (TP = 68, FP = 18)
class_id = 1, name = tower_tucohy, ap = 81.95%           (TP = 38, FP = 14)
class_id = 2, name = tower_wooden, ap = 49.31%           (TP = 33, FP = 20)

 for conf_thresh = 0.25, precision = 0.73, recall = 0.69, F1-score = 0.71
 for conf_thresh = 0.25, TP = 139, FP = 52, FN = 63, average IoU = 59.09 %

 IoU threshold = 60 %, used Area-Under-Curve for each unique Recall
 mean average precision (mAP@0.60) = 0.680470, or 68.05 %
Total Detection Time: 15 Seconds
```



Due to kernel disconnect , not able to perform False positives and False Negatives. Tomorrow i will perform detection.