

Aero2Astro
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Today i had trained Yolov4(modified anchor box) model upto 1900 epochs.And also evaluated with train , test and val 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 = 3596, unique_truth_count = 663
class_id = 0, name = tower_lattice, ap = 97.69%          (TP = 231, FP = 7)
class_id = 1, name = tower_tucohy, ap = 90.17%          (TP = 142, FP = 37)
class_id = 2, name = tower_wooden, ap = 93.31%          (TP = 182, FP = 17)

for conf_thresh = 0.25, precision = 0.90, recall = 0.84, F1-score = 0.87
for conf_thresh = 0.25, TP = 555, FP = 61, FN = 108, average IoU = 62.93 %

IoU threshold = 20 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.20) = 0.937212, or 93.72 %
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 = 1136, unique_truth_count = 202
class_id = 0, name = tower_lattice, ap = 92.05%          (TP = 68, FP = 5)
class_id = 1, name = tower_tucohy, ap = 87.64%          (TP = 33, FP = 5)
class_id = 2, name = tower_wooden, ap = 58.97%          (TP = 35, FP = 13)

for conf_thresh = 0.25, precision = 0.86, recall = 0.67, F1-score = 0.75
for conf_thresh = 0.25, TP = 136, FP = 23, FN = 66, average IoU = 57.06 %

IoU threshold = 20 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.20) = 0.795525, or 79.55 %
Total Detection Time: 15 Seconds
```

Val:

```
calculation mAP (mean average precision)...
Detection layer: 139 - type = 28
Detection layer: 150 - type = 28
Detection layer: 161 - type = 28
56
detections_count = 550, unique_truth_count = 103
class_id = 0, name = tower_lattice, ap = 83.25%          (TP = 27, FP = 4)
class_id = 1, name = tower_tucohy, ap = 68.40%          (TP = 12, FP = 11)
class_id = 2, name = tower_wooden, ap = 54.81%          (TP = 16, FP = 5)

for conf_thresh = 0.25, precision = 0.73, recall = 0.53, F1-score = 0.62
for conf_thresh = 0.25, TP = 55, FP = 20, FN = 48, average IoU = 47.80 %

IoU threshold = 20 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.20) = 0.688199, or 68.82 %
Total Detection Time: 7 Seconds
```

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 = 3596, unique_truth_count = 663
class_id = 0, name = tower_lattice, ap = 69.39%      (TP = 191, FP = 47)
class_id = 1, name = tower_tucohy, ap = 62.17%      (TP = 105, FP = 74)
class_id = 2, name = tower_wooden, ap = 69.48%      (TP = 152, FP = 47)

for conf_thresh = 0.25, precision = 0.73, recall = 0.68, F1-score = 0.70
for conf_thresh = 0.25, TP = 448, FP = 168, FN = 215, average IoU = 54.61 %

IoU threshold = 60 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.60) = 0.670121, or 67.01 %
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 = 1136, unique_truth_count = 202
class_id = 0, name = tower_lattice, ap = 61.82%      (TP = 54, FP = 19)
class_id = 1, name = tower_tucohy, ap = 51.51%      (TP = 22, FP = 16)
class_id = 2, name = tower_wooden, ap = 28.49%      (TP = 21, FP = 27)

for conf_thresh = 0.25, precision = 0.61, recall = 0.48, F1-score = 0.54
for conf_thresh = 0.25, TP = 97, FP = 62, FN = 105, average IoU = 44.96 %

IoU threshold = 60 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.60) = 0.472738, or 47.27 %
Total Detection Time: 16 Seconds
```

Val:

```
calculation mAP (mean average precision)...
Detection layer: 139 - type = 28
Detection layer: 150 - type = 28
Detection layer: 161 - type = 28
56
detections_count = 550, unique_truth_count = 103
class_id = 0, name = tower_lattice, ap = 59.45%      (TP = 22, FP = 9)
class_id = 1, name = tower_tucohy, ap = 53.77%      (TP = 10, FP = 13)
class_id = 2, name = tower_wooden, ap = 32.79%      (TP = 12, FP = 9)

for conf_thresh = 0.25, precision = 0.59, recall = 0.43, F1-score = 0.49
for conf_thresh = 0.25, TP = 44, FP = 31, FN = 59, average IoU = 43.02 %

IoU threshold = 60 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.60) = 0.486691, or 48.67 %
Total Detection Time: 7 Seconds
```