

Aero2Astro
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Today i had trained Yolo v4 model upto 20800 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 = 1054, unique_truth_count = 663
class_id = 0, name = tower_lattice, ap = 99.97%      (TP = 274, FP = 8)
class_id = 1, name = tower_tucohy, ap = 98.72%      (TP = 166, FP = 4)
class_id = 2, name = tower_wooden, ap = 99.80%      (TP = 217, FP = 9)

for conf_thresh = 0.25, precision = 0.97, recall = 0.99, F1-score = 0.98
for conf_thresh = 0.25, TP = 657, FP = 21, FN = 6, average IoU = 86.35 %

IoU threshold = 20 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.20) = 0.994961, or 99.50 %
Total Detection Time: 50 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 = 385, unique_truth_count = 202
class_id = 0, name = tower_lattice, ap = 88.97%      (TP = 77, FP = 13)
class_id = 1, name = tower_tucohy, ap = 78.95%      (TP = 37, FP = 11)
class_id = 2, name = tower_wooden, ap = 64.54%      (TP = 41, FP = 10)

for conf_thresh = 0.25, precision = 0.82, recall = 0.77, F1-score = 0.79
for conf_thresh = 0.25, TP = 155, FP = 34, FN = 47, average IoU = 64.49 %

IoU threshold = 20 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.20) = 0.774860, or 77.49 %
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 = 177, unique_truth_count = 103
class_id = 0, name = tower_lattice, ap = 84.89%      (TP = 33, FP = 6)
class_id = 1, name = tower_tucohy, ap = 84.95%      (TP = 12, FP = 7)
class_id = 2, name = tower_wooden, ap = 67.53%      (TP = 27, FP = 4)

for conf_thresh = 0.25, precision = 0.81, recall = 0.70, F1-score = 0.75
for conf_thresh = 0.25, TP = 72, FP = 17, FN = 31, average IoU = 65.94 %

IoU threshold = 20 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.20) = 0.791214, or 79.12 %
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 = 1054, unique_truth_count = 663
class_id = 0, name = tower_lattice, ap = 99.58%      (TP = 274, FP = 8)
class_id = 1, name = tower_tucohy, ap = 97.55%      (TP = 166, FP = 4)
class_id = 2, name = tower_wooden, ap = 98.88%      (TP = 215, FP = 11)

for conf_thresh = 0.25, precision = 0.97, recall = 0.99, F1-score = 0.98
for conf_thresh = 0.25, TP = 655, FP = 23, FN = 8, average IoU = 86.25 %

IoU threshold = 60 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.60) = 0.986691, or 98.67 %
Total Detection Time: 49 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 = 385, unique_truth_count = 202
class_id = 0, name = tower_lattice, ap = 72.66%      (TP = 64, FP = 26)
class_id = 1, name = tower_tucohy, ap = 75.21%      (TP = 36, FP = 12)
class_id = 2, name = tower_wooden, ap = 41.70%      (TP = 31, FP = 20)

for conf_thresh = 0.25, precision = 0.69, recall = 0.65, F1-score = 0.67
for conf_thresh = 0.25, TP = 131, FP = 58, FN = 71, average IoU = 59.28 %

IoU threshold = 60 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.60) = 0.631886, or 63.19 %
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 = 177, unique_truth_count = 103
class_id = 0, name = tower_lattice, ap = 74.73%      (TP = 30, FP = 9)
class_id = 1, name = tower_tucohy, ap = 77.64%      (TP = 12, FP = 7)
class_id = 2, name = tower_wooden, ap = 50.28%      (TP = 23, FP = 8)

for conf_thresh = 0.25, precision = 0.73, recall = 0.63, F1-score = 0.68
for conf_thresh = 0.25, TP = 65, FP = 24, FN = 38, average IoU = 61.99 %

IoU threshold = 60 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.60) = 0.675469, or 67.55 %
Total Detection Time: 7 Seconds
```