

Aero2Astro
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Today i had trained Yolo v4 model upto 7200 epochs. And also evaluated with both training and test dataset.

Threshold = 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 = 1394, unique_truth_count = 663
class_id = 0, name = tower_lattice, ap = 99.82%      (TP = 271, FP = 12)
class_id = 1, name = tower_tucohy, ap = 97.64%      (TP = 165, FP = 27)
class_id = 2, name = tower_wooden, ap = 98.56%      (TP = 210, FP = 9)

for conf_thresh = 0.25, precision = 0.93, recall = 0.97, F1-score = 0.95
for conf_thresh = 0.25, TP = 646, FP = 48, FN = 17, average IoU = 77.45 %

IoU threshold = 20 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.20) = 0.986738, or 98.67 %
Total Detection Time: 50 Seconds

Set _points flag:
```

Test:

```
calculation mAP (mean average precision)...
Detection layer: 139 - type = 28
Detection layer: 150 - type = 28
Detection layer: 161 - type = 28
124
detections_count = 444, unique_truth_count = 202
class_id = 0, name = tower_lattice, ap = 89.81%      (TP = 79, FP = 5)
class_id = 1, name = tower_tucohy, ap = 80.51%      (TP = 38, FP = 14)
class_id = 2, name = tower_wooden, ap = 61.40%      (TP = 39, FP = 9)

for conf_thresh = 0.25, precision = 0.85, recall = 0.77, F1-score = 0.81
for conf_thresh = 0.25, TP = 156, FP = 28, FN = 46, average IoU = 64.92 %

IoU threshold = 20 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.20) = 0.772368, or 77.24 %
Total Detection Time: 15 Seconds
```

Threshold = 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 = 1394, unique_truth_count = 663
class_id = 0, name = tower_lattice, ap = 98.32%      (TP = 269, FP = 14)
class_id = 1, name = tower_tucohy, ap = 92.57%      (TP = 158, FP = 34)
class_id = 2, name = tower_wooden, ap = 94.26%      (TP = 201, FP = 18)

for conf_thresh = 0.25, precision = 0.90, recall = 0.95, F1-score = 0.93
for conf_thresh = 0.25, TP = 628, FP = 66, FN = 35, average IoU = 76.31 %

IoU threshold = 60 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.60) = 0.950502, or 95.05 %
Total Detection Time: 52 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 = 444, unique_truth_count = 202
class_id = 0, name = tower_lattice, ap = 75.36%      (TP = 67, FP = 17)
class_id = 1, name = tower_tucohy, ap = 75.81%      (TP = 36, FP = 16)
class_id = 2, name = tower_wooden, ap = 44.61%      (TP = 30, FP = 18)

for conf_thresh = 0.25, precision = 0.72, recall = 0.66, F1-score = 0.69
for conf_thresh = 0.25, TP = 133, FP = 51, FN = 69, average IoU = 59.82 %

IoU threshold = 60 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.60) = 0.652602, or 65.26 %
Total Detection Time: 16 Seconds
```

Evaluation result:

Ground_truth:

Lattice – Pink
Tucohy – Yellow
Wodden - Green

<https://drive.google.com/drive/folders/1Y6KF3wSg9jABPTOlW0pDW5hcgWaytrm0?usp=sharing>

Predicted :

Threshold = 0.2

Lattice – Blue
Tucohy – Green
Wodden – Red

<https://drive.google.com/drive/folders/1pOu-viT6r1kFFQb1XdW1G3nNeM7SjTeo?usp=sharing>