Aero2Astro
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Today i had trained Yolo v4 model upto 14700 epochs with jitter = 0.45. And also evaluated with both training ,val 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 = 1100, unique_truth_count = 663
class_id = 0, name = tower_lattice, ap = 99.94%         (TP = 274, FP = 11)
class_id = 1, name = tower_tucohy, ap = 98.33%          (TP = 165, FP = 11)
class_id = 2, name = tower_wooden, ap = 99.70%          (TP = 214, FP = 8)

 for conf_thresh = 0.25, precision = 0.96, recall = 0.98, F1-score = 0.97
 for conf_thresh = 0.25, TP = 653, FP = 30, FN = 10, average IoU = 84.51 %

 IoU threshold = 20 %, used Area-Under-Curve for each unique Recall
 mean average precision (mAP@0.20) = 0.993246, or 99.32 %
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 = 420, unique_truth_count = 202
class_id = 0, name = tower_lattice, ap = 90.85%         (TP = 78, FP = 9)
class_id = 1, name = tower_tucohy, ap = 86.64%          (TP = 40, FP = 9)
class_id = 2, name = tower_wooden, ap = 63.01%          (TP = 40, FP = 10)

 for conf_thresh = 0.25, precision = 0.85, recall = 0.78, F1-score = 0.81
 for conf_thresh = 0.25, TP = 158, FP = 28, FN = 44, average IoU = 67.80 %

 IoU threshold = 20 %, used Area-Under-Curve for each unique Recall
 mean average precision (mAP@0.20) = 0.801677, or 80.17 %
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 = 188, unique_truth_count = 103
class_id = 0, name = tower_lattice, ap = 86.39%          (TP = 33, FP = 3)
class_id = 1, name = tower_tucohy, ap = 80.32%           (TP = 11, FP = 9)
class_id = 2, name = tower_wooden, ap = 66.60%           (TP = 23, FP = 5)

 for conf_thresh = 0.25, precision = 0.80, recall = 0.65, F1-score = 0.72
 for conf_thresh = 0.25, TP = 67, FP = 17, FN = 36, average IoU = 64.75 %

 IoU threshold = 20 %, used Area-Under-Curve for each unique Recall
 mean average precision (mAP@0.20) = 0.777728, or 77.77 %
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 = 1100, unique_truth_count = 663
  class_id = 0, name = tower_lattice, ap = 99.94%          (TP = 274, FP = 11)
  class_id = 1, name = tower_tucohy, ap = 96.40%           (TP = 163, FP = 13)
  class_id = 2, name = tower_wooden, ap = 97.21%           (TP = 209, FP = 13)

   for conf_thresh = 0.25, precision = 0.95, recall = 0.97, F1-score = 0.96
   for conf_thresh = 0.25, TP = 646, FP = 37, FN = 17, average IoU = 84.03 %

   IoU threshold = 60 %, used Area-Under-Curve for each unique Recall
   mean average precision (mAP@0.60) = 0.978473, or 97.85 %
  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 = 420, unique_truth_count = 202
class_id = 0, name = tower_lattice, ap = 74.72%          (TP = 67, FP = 20)
class_id = 1, name = tower_tucohy, ap = 80.86%           (TP = 38, FP = 11)
class_id = 2, name = tower_wooden, ap = 44.34%           (TP = 32, FP = 18)

 for conf_thresh = 0.25, precision = 0.74, recall = 0.68, F1-score = 0.71
 for conf_thresh = 0.25, TP = 137, FP = 49, FN = 65, average IoU = 62.91 %

 IoU threshold = 60 %, used Area-Under-Curve for each unique Recall
 mean average precision (mAP@0.60) = 0.666423, or 66.64 %
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 = 188, unique_truth_count = 103
class_id = 0, name = tower_lattice, ap = 78.62%          (TP = 30, FP = 6)
class_id = 1, name = tower_tucohy, ap = 64.23%           (TP = 10, FP = 10)
class_id = 2, name = tower_wooden, ap = 49.31%           (TP = 19, FP = 9)

 for conf_thresh = 0.25, precision = 0.70, recall = 0.57, F1-score = 0.63
 for conf_thresh = 0.25, TP = 59, FP = 25, FN = 44, average IoU = 60.50 %

 IoU threshold = 60 %, used Area-Under-Curve for each unique Recall
 mean average precision (mAP@0.60) = 0.640540, or 64.05 %
Total Detection Time: 7 Seconds
```

Now i am trying to find False Positive and False Negative in val dataset. (Comparing with Ground truth and Predicted txt file). After this evaluation , i will plot and submit another report.