# Aero2Astro Panneerselvam N (25/08/2021)

I had trained Faster Rcnn model upto 36499 iterations. And also evaluated with both train and test dataset.

# Model -1 (PP-yolo v1)

ins = 1000bs = 8lr = 0.0002

**Training Data:** 

```
Accumulating evaluation results...
DONE (t=0.85s)
Average Precision
                               IoU=0.50:0.95 |
                                                                 maxDets=100
 Average Precision
                      (AP) @[
                               IoU=0.50
                                                                 maxDets=100
                                                                                 = 0.751
                                                 area=
Average Precision
                      (AP) @[
                               IoU=0.75
                                                 area=
                                                          all
                                                                 maxDets=100
                                                                                 = 0.499
Average Precision
                      (AP) @[
                               IoU=0.50:0.95
                                                 area= small
                                                                 maxDets=100
                                                                                = 0.359
Average Precision
                      (AP) @[
                               IoU=0.50:0.95
                                                 area=medium
                                                                 maxDets=100
                                                                                 = 0.588
Average Precision
                      (AP)
                               IoU=0.50:0.95
                                                                               ] = 0.579
                                                 area= large
                                                                 maxDets=100
                                                                 maxDets= 1
maxDets= 10
Average Recall
                      (AR)
                           ]
]
]
                               IoU=0.50:0.95
                                                                                 = 0.173
                                                 area=
                                                          all
Average Recall
                               IoU=0.50:0.95
                                                                               ] = 0.479
                      (AR)
                                                 area=
                                                          all
                                                                               ] = 0.580
] = 0.498
Average Recall
                           ]
]
]
                               IoU=0.50:0.95
                                                                 maxDets=100
                      (AR)
                                                 area=
                                                          all
Average Recall
                               IoU=0.50:0.95
                                                 area= small
                      (AR)
                                                                 maxDets=100
                                                                               ] = 0.699
                      (AR) @[ IoU=0.50:0.95
(AR) @[ IoU=0.50:0.95
                                               | area=medium
| area= large
Average Recall
                                                 area=medium
                                                               | maxDets=100
| maxDets=100
Average Recall
[08/15 07:11:53] ppdet.metrics.coco_utils INFO: Per-category of bbox AP:
                     | category | AP |
 category | AP
                                          | category | AP
                                 | 0.315 | bottle
| 0.616 | person
            | 0.451 | book
| 0.173 | chair
                                                     | 0.601
| 0.567
 bird
[08/15 07:11:53] ppdet.metrics.coco_utils INFO: per-category PR curve has output
.
[08/15 07:11:53] ppdet.engine INFO: Total sample number: 1093, averge FPS: 18.4354342262
```

#### **Test Data:**

```
ccumulating evaluation results...
DONE (t=0.15s).
 Average Precision (AP) @[ IoU=0.50:0.95 | area=
                                                      all | maxDets=100 ] = 0.056
 Average Precision (AP) @[ IoU=0.50
                                                           | maxDets=100
                                             area=
                                                                          ] = 0.113
 Average Precision (AP) @[ IoU=0.75
                                                                          ] = 0.049
                                              area=
                                                      all
                                                           maxDets=100
Average Precision
                                                                          1 = 0.044
                                              area= small
                                                           maxDets=100
                    (AP) @[ IoU=0.50:0.95
 Average Precision
                    (AP) @[ IoU=0.50:0.95
                                            | area=medium
                                                             maxDets=100
                                                                          ] = 0.066
                                                           | maxDets=100
 Average Precision
                    (AP) @[ IoU=0.50:0.95
                                            area= large
Average Recall
                     (AR) @[ IoU=0.50:0.95
                                                           maxDets= 1
                                            area=
                                                                          ] = 0.051
                                                    all
                                                           maxDets= 10
maxDets=100
                                                                         ] = 0.134
] = 0.179
                    (AR) @[ IoU=0.50:0.95
 Average Recall
                                              area=
 Average Recall
                     (AR) @[
                             IoU=0.50:0.95
                                              area=
Average Recall
                    (AR) @[ IoU=0.50:0.95
                                            | area= small
                                                                          ] = 0.144
                                                            maxDets=100
                    (AR) @[ IoU=0.50:0.95 | area=medium (AR) @[ IoU=0.50:0.95 | area= large
                                                           | maxDets=100
| maxDets=100
Average Recall
                                                                          1 = 0.231
 Average Recall
                                                                              0.201
[08/13 14:25:45] ppdet.metrics.coco utils INFO: Per-category of bbox AP:
 category | AP
                   | category | AP
                                        | category | AP
 bird
           | 0.146 | book
                               | 0.007 | bottle
           | 0.007 | person
                               | 0.000 | chair
                                                    0.000
 car
[08/13 14:25:45] ppdet.metrics.coco_utils INFO: per-category PR curve has output to bbox_pr_curve folder.
[08/13 14:25:45] ppdet.engine INFO: Total sample number: 177, averge FPS: 18.61171957113853
```

## Model - 2 : (PP-Yolo v2)

```
ins = 500
bs = 8
lr = 0.0002
```

# **Training Data:**

#### Test data:

# **Current Model:(Faster Rcnn)**

```
Backbone = Faster\_rcnn\_X\_101\_32x8d\_FPN\_3x bs = 4 lr = 0.001 ins = 500
```

**Previous Checkpoint: 32500 its** 

Threshold = 0.65

Test:

```
[08/23 13:24:19 d2.evaluation.fast_eval_api]: COCOeval opt.accumulate() finished in 0.02 seconds.
Average Precision (AP) @[ IoU=0.50:0.95 | area=
                                                        maxDets=100 ]
                                                                      = 0.393
Average Precision (AP) @[ IoU=0.50
                                          area=
                                                         maxDets=100
                                                                     1 = 0.572
Average Precision (AP) @[ IoU=0.75
                                          area=
                                                   all
                                                         maxDets=100
                                                                     ] = 0.424
Average Precision (AP) @[ IoU=0.50:0.95 | area= small
                                                         maxDets=100
                                                                      = 0.245
Average Precision
                   (AP) @[
                           IoU=0.50:0.95
                                         | area=medium
                                                         maxDets=100
                                                                       = 0.512
Average Precision (AP) @[ IoU=0.50:0.95 | area= large
                                                         maxDets=100
                                                                      = 0.596
Average Recall
                   (AR) @[ IoU=0.50:0.95 | area=
                                                         maxDets= 1
                   (AR) @[ IoU=0.50:0.95
                                                        maxDets= 10
Average Recall
                                         | area=
                                                                      = 0.554
                   (AR) @[ IoU=0.50:0.95 | area=
Average Recall
                                                  all
                                                         maxDets=100
Average Recall
                   (AR) @[ IoU=0.50:0.95 | area= small
                                                                      = 0.439
                                                        maxDets=100
Average Recall
                   (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100
                                                                     ] = 0.706
Average Recall
                   (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.848
[08/23 13:24:19 d2.evaluation.coco evaluation]: Evaluation results for bbox:
                                  APm
        | AP50 | AP75 | APs
                                               APl
 39.259 | 57.161 | 42.414 | 24.473 | 51.185 | 59.607
08/23 13:24:19 d2.evaluation.coco evaluation]: Per-category bbox AP:
 category
             AP
                     category
                                             category
 aeroplane
              66.681
                                    26.725
                                             chair
                                                            32.219
                      car
              57.374
                       person
                                    23.005
                                             traffic light
                                                            29.550
```

```
13:28:16 d2.evaluation.fast_eval_api]: COCOeval opt.accumulate() finished in 0.04 seconds.
ge Precision (AP) @[ IoU=0.50:0.95
                                                   maxDets=100 \ ] = 0.601
                                                   maxDets=100 ] = 0.811
ge Precision (AP) @[ IoU=0.50
                                     area=
ge Precision (AP) @[ IoU=0.75
                                     area=
                                             all
                                                  | maxDets=100 ] = 0.665
ge Precision (AP) @[ IoU=0.50:0.95
                                    | area= small
                                                   maxDets=100 ] = 0.504
ge Precision (AP) @[ IoU=0.50:0.95 | area=medium
                                                   maxDets=100
                                                                ] = 0.699
ge Precision (AP) @[ IoU=0.50:0.95 | area= large
                                                                ] = 0.780
                                                    maxDets=100
ge Recall
              (AR) @[ IoU=0.50:0.95
                                                   maxDets= 1
                                                                 = 0.300
                                     area=
                                              all
ge Recall
              (AR) @[ IoU=0.50:0.95
                                     area=
                                              all
                                                   maxDets= 10
                                                                 = 0.690
              (AR) @[ IoU=0.50:0.95
                                                   maxDets=100
ge Recall
                                      area=
                                              all
                                                                 = 0.733
ge Recall
              (AR) @[ IoU=0.50:0.95
                                      area= small
                                                    maxDets=100
                                                                  = 0.641
                     IoU=0.50:0.95
                                                    maxDets=100
ge Recall
              (AR) @[
                                      area=medium
                                                                 = 0.807
                                                                1 = 0.891
              (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100
ge Recall
 13:28:16 d2.evaluation.coco evaluation]: Evaluation results for bbox:
    AP50 | AP75 | APs | APm
                                         APl
12 | 81.069 | 66.455 | 50.441 | 69.893 | 78.028
 13:28:16 d2.evaluation.coco evaluation]: Per-category bbox AP:
                                                       AP
                               AP
gory
                category
                                       category
plane
        85.631
                               51.210
                                       chair
                                                        62.558
                 car
         71.646
                              45.255
                 person
                                       traffic light
                                                        44.373
```

Threshold: 0.85

#### Test:

```
[08/23 13:33:02 d2.evaluation.fast eval api]: COCOeval opt.accumulate() finished in 0.02 secon
Average Precision (AP) @[ IoU=0.50:0.95 |
                                           area=
                                                    all | maxDets=100 ] = 0.393
Average Precision (AP) @[ IoU=0.50
                                                    all | maxDets=100 ] = 0.572
                                            area=
                                                    all | maxDets=100 ] = 0.424
Average Precision (AP) @[ IoU=0.75
                                           area=
Average Precision (AP) @[ IoU=0.50:0.95
                                           area= small | maxDets=100 ] = 0.245
Average Precision (AP) @[ IoU=0.50:0.95 |
                                           area=medium | maxDets=100 ] = 0.512
Average Precision (AP) @[ IoU=0.50:0.95
                                           area= large | maxDets=100 ] = 0.596
Average Recall
                                           area= all | maxDets= 1 ] = 0.223
                   (AR) @[ IoU=0.50:0.95
                (AR) @[ IoU=0.50:0.95
(AR) @[ IoU=0.50:0.95
(AR) @[ IoU=0.50:0.95
(AR) @[ IoU=0.50:0.95
(AR) @[ IoU=0.50:0.95
                   (AR) @[ IoU=0.50:0.95
                                                  all | maxDets= 10 ] = 0.554
Average Recall
                                           area=
                                                  all | maxDets=100 ] = 0.601
Average Recall
                                           area=
Average Recall
                                           area= small | maxDets=100 ] = 0.439
Average Recall
                                          | area=medium | maxDets=100 ] = 0.706
Average Recall
                   (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.848
[08/23 13:33:02 d2.evaluation.coco evaluation]: Evaluation results for bbox:
                                           | APl
  AP | AP50 | AP75 | APs | APm
 39.259 | 57.161 | 42.414 | 24.473 | 51.185 | 59.607
[08/23 13:33:02 d2.evaluation.coco evaluation]: Per-category bbox AP:
            | AP | category
                                   | AP | category
                                                        | AP
 category
                                   aeroplane
            | 66.681 | car
              57.374 | person
```

```
[08/23 13:37:59 d2.evaluation.fast_eval_api]: COCOeval_opt.accumulate() finished in 0.04 seconds.
Average Precision (AP) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.601
Average Precision (AP) @[ IoU=0.50
                                                       all | maxDets=100 | = 0.811
                                             area=
                                             | area= all | maxDets=100 | = 0.665
Average Precision (AP) @[ IoU=0.75
Average Precision (AP) @[ IoU=0.50:0.95
                                             | area = small | maxDets = 100 | = 0.504
Average Precision (AP) @[ IoU=0.50:0.95
                                             | area=medium | maxDets=100 ] = 0.699
Average Precision (AP) @[ IoU=0.50:0.95
                                             | area= large | maxDets=100 ] = 0.780
                    (AR) @[ IoU=0.50:0.95
                                             | area= all | maxDets= 1 ] = 0.300
Average Recall
                                                       all | maxDets= 10 | = 0.690
Average Recall
                    (AR) @[ IoU=0.50:0.95
                                             area=
                (AR) @[ IoU=0.50:0.95 | area

(AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.807

(AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.807

(AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.891

-lustice coco evaluation]: Evaluation results for bbox:
Average Recall
Average Recall
Average Recall
Average Recall
[08/23 13:37:59 d2.evaluation.coco evaluation]: Evaluation results for bbox:
60.112 | 81.069 | 66.455 | 50.441 | 69.893 | 78.028
[08/23 13:37:59 d2.evaluation.coco evaluation]: Per-category bbox AP:
             | AP
                                                                AP
                                            category
 category
                       category
                                      |:-----
 aeroplane
               85.631 | car
                                      | 51.210 | chair
                                                                 62.558
                                     | 45.255 | traffic light | 44.373
               71.646 | person
```

**Current Checkpoints: 36500** 

Threshold: 0.65

Test:

```
08/25 15:11:05 d2.evaluation.fast_eval_api]: COCOeval opt.accumulate() finished in 0.02 seconds.
Average Precision (AP) @[ IoU=0.50:0.95 | area=
                                                  all | maxDets=100 | = 0.392
Average Precision (AP) @[ IoU=0.50
                                                        maxDets=100 l = 0.569
                                          area=
                                                  all
Average Precision (AP) @[ IoU=0.75
                                                  all | maxDets=100 | = 0.426
                                          area=
Average Precision (AP) @[ IoU=0.50:0.95
                                         | area = small | maxDets = 100 | = 0.246
Average Precision (AP) @[ IoU=0.50:0.95
                                         | area=medium | maxDets=100 ] = 0.511
Average Precision (AP) @[ IoU=0.50:0.95
                                                        maxDets=100 | = 0.593
                                          area= large |
Average Recall
                   (AR) @[ IoU=0.50:0.95
                                                        maxDets= 1 = 0.224
                                          area=
                                                  all |
Average Recall
                   (AR) @[ IoU=0.50:0.95
                                          area=
                                                  all |
                                                        maxDets= 10
                                                                    ] = 0.554
                   (AR) @[ IoU=0.50:0.95
Average Recall
                                          area=
                                                  all
                                                        maxDets=100
                                                                    ] = 0.600
Average Recall
                   (AR) @[ IoU=0.50:0.95
                                          area= small
                                                        maxDets=100
                                                                    ] = 0.438
                  (AR) @[ IoU=0.50:0.95
Average Recall
                                          area=medium
                                                        maxDets=100
                                                                    ] = 0.701
                                          area= large | maxDets=100 ] = 0.847
                   (AR) @[ IoU=0.50:0.95 |
Average Recall
08/25 15:11:05 d2.evaluation.coco evaluation]: Evaluation results for bbox:
 AP | AP50 | AP75 | APs | APm
                                             APl
39.228 | 56.910 | 42.639 | 24.581 | 51.138 | 59.315
08/25 15:11:05 d2.evaluation.coco evaluation]: Per-category bbox AP:
             AP
                                   AP
                                            category
category
                     category
             66.712
 aeroplane
                      car
                                   26.778
                                            chair
                                                            32.140
             57.641
                                   22.527
                                            traffic light
                                                            29.573
                      person
```

```
[08/25 15:15:10 d2.evaluation.fast_eval_api]: COCOeval opt.accumulate() finished in 0.04 seconds.
Average Precision (AP) @[ IoU=0.50:0.95 |
                                           area=
                                                         maxDets=100 ] = 0.604
Average Precision (AP) @[ IoU=0.50
                                                   all
                                                         maxDets=100 ] = 0.814
                                           area=
Average Precision (AP) @[ IoU=0.75
                                           area=
                                                   all
                                                         maxDets=100 | = 0.667
Average Precision (AP) @[ IoU=0.50:0.95 | area= small |
                                                         maxDets=100 1 = 0.506
Average Precision (AP) @[ IoU=0.50:0.95 | area=medium |
                                                         maxDets=100 1 = 0.702
Average Precision (AP) @[ IoU=0.50:0.95 | area= large
                                                         maxDets=100 ] = 0.783
                   (AR) @[ IoU=0.50:0.95 | area=
                                                         maxDets= 1 = 0.300
Average Recall
                                                   all
                   (AR) @[ IoU=0.50:0.95 |
                                                         maxDets = 10 ] = 0.691
Average Recall
                                           area=
                                                   all
                   (AR) @[ IoU=0.50:0.95
Average Recall
                                           area=
                                                   all
                                                         maxDets=100 \ ] = 0.734
Average Recall
                   (AR) @[ IoU=0.50:0.95
                                           area= small
                                                         maxDets=100 \mid = 0.640
Average Recall
                   (AR) @[ IoU=0.50:0.95
                                           area=medium |
                                                         maxDets=100 ] = 0.809
Average Recall
                   (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.893
[08/25 15:15:10 d2.evaluation.coco evaluation]: Evaluation results for bbox:
 AP | AP50 | AP75 | APs
                                   | APm
                                              APl
 60.351 | 81.365 | 66.654 | 50.648 | 70.243
                                             78.320
08/25 15:15:10 d2.evaluation.coco evaluation]: Per-category bbox AP:
                                             category
 category
              AP
                      category
                                    AP
                                                             AP
 aeroplane
              85.878
                                    51.500
                                                             62.730
                                             chair
                       car
              71.936
                                    45.568
                                             traffic light
                                                             44.495
 COW
                       person
```

Threshold: 0.85

#### Test:

```
eval api]: COCOeval opt.accumulate() finished in 0.02 seconds.
Average Precision (AP) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.392
Average Precision (AP) @[ IoU=0.50
                                                 area=
                                                                 maxDets=100 ] = 0.569
Average Precision (AP) @[ IoU=0.75
                                                 area=
                                                                 maxDets=100 ] = 0.426
Average Precision (AP) @[ IoU=0.50:0.95
                                                                 maxDets=100 ] = 0.246
                                                 area= small
Average Precision (AP) @[ IoU=0.50:0.95
Average Precision (AP) @[ IoU=0.50:0.95
                                                 area=medium
                                                                 maxDets=100 ] = 0.511
                                                 area= large
                                                                 maxDets=100 ] = 0.593
Average Recall
                     (AR) @[ IoU=0.50:0.95
                                                 area= all
                                                                 maxDets= 1 l = 0.224
Average Recall
                     (AR) @[ IoU=0.50:0.95
                                                 area= all | maxDets= 10 ] = 0.554
                   (AR) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.600 (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.438 (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.701 (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.847
Average Recall
Average Recall
Average Recall
Average Recall
[08/25 15:16:40 d2.evaluation.coco evaluation]: Evaluation results for bbox:
 AP | AP50 | AP75 | APs | APm | APl
 39.228 | 56.910 | 42.639 | 24.581 | 51.138 | 59.315
08/25 15:16:40 d2.evaluation.coco evaluation]: Per-category bbox AP:
              | AP
                                       | AP
 category
                        category
                                                   category
                                                                     AP
 aeroplane
                66.712 | car
                                        26.778
                                                   chair
                                                                      32.140
                57.641
                          person
                                       22.527
                                                    traffic light | 29.573
```

```
[08/25 15:20:49 d2.evaluation.fast_eval_api]: COCOeval opt.accumulate() finished in 0.04 seconds.
 Average Precision (AP) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.604
Average Precision (AP) @[ IoU=0.50 | area= all | maxDets=100 ] = 0.814
Average Precision (AP) @[ IoU=0.75 | area= all | maxDets=100 ] = 0.667
 Average Precision (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.506
 Average Precision (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.702
 Average Precision (AP) @[ IoU=0.50:0.95 | area= large |
                                                                                                                                                                                                     maxDets=100 ] = 0.783
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 1 ] = 0.300 Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 1 ] = 0.691 Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.734 Average Recall (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.640 Average Recall (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.803
Average Recall (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.0 | area= large | maxDets=100 ] | area= large | area= large | maxDets=100 ] | area= large | area= large | maxDets=100 ] | area= large | area= lar
                                                                 (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.893
 AP | AP50 | AP75 | APs | APm | APl
:----:|:----:|:----:
   60.351 | 81.365 | 66.654 | 50.648 | 70.243 | 78.320
[08/25 15:20:49 d2.evaluation.coco evaluation]: Per-category bbox AP:
category
                                           AP
                                                                          category
                                                                                                                       I AP
                                                                                                                                              category
|:----|:----|
                                                                                                                         |:-----|:----
   aeroplane | 85.878 | car
cow | 71.936 | person
                                                                                                                       | 51.500 | chair | 62.730
| 45.568 | traffic_light | 44.495
```