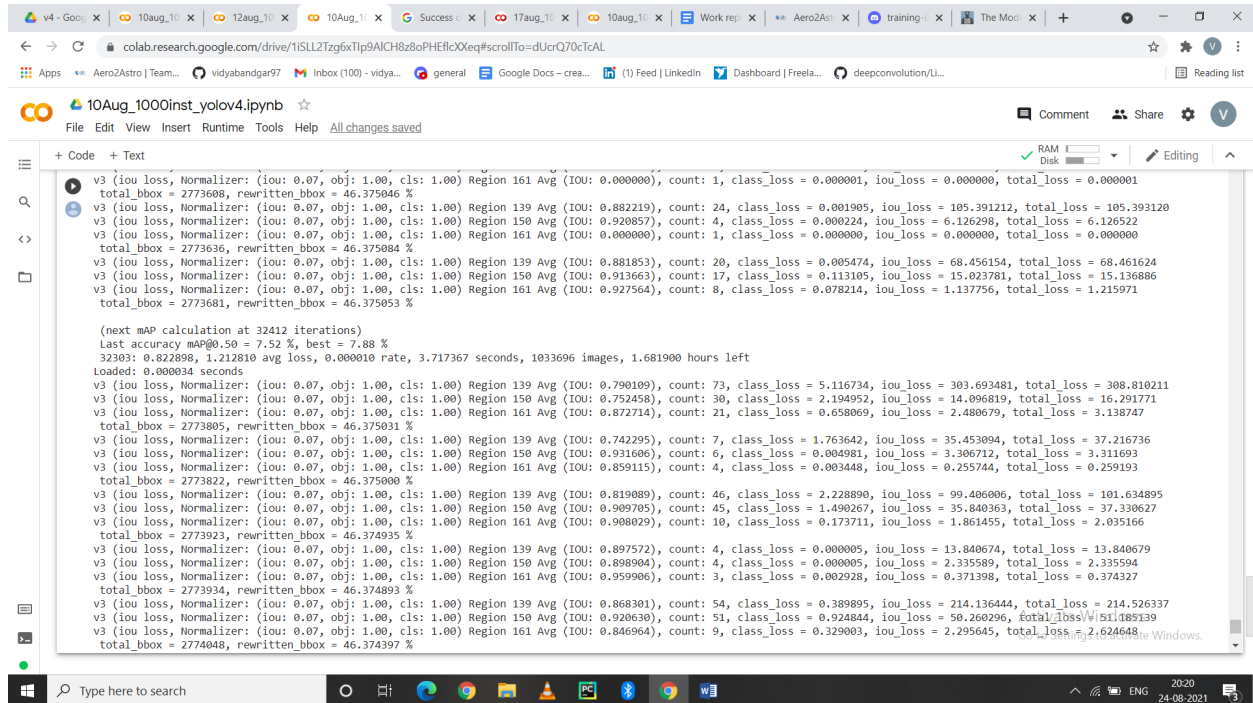


Work report

24 Aug 2021

yolov4 for 1000 instances.

Epochs 32303



```
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 161 Avg (IOU: 0.000000), count: 1, class_loss = 0.000001, iou_loss = 0.000000, total_loss = 0.000001
total_bbox = 2773688, rewritten_bbox = 46.375046 %
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 139 Avg (IOU: 0.882219), count: 24, class_loss = 0.001905, iou_loss = 105.391212, total_loss = 105.393120
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 150 Avg (IOU: 0.920857), count: 4, class_loss = 0.000224, iou_loss = 6.126298, total_loss = 6.126522
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 161 Avg (IOU: 0.000000), count: 1, class_loss = 0.000000, iou_loss = 0.000000, total_loss = 0.000000
total_bbox = 2773636, rewritten_bbox = 46.375084 %
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 139 Avg (IOU: 0.881853), count: 20, class_loss = 0.005474, iou_loss = 68.456154, total_loss = 68.461624
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 150 Avg (IOU: 0.913663), count: 17, class_loss = 0.113105, iou_loss = 15.023781, total_loss = 15.136886
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 161 Avg (IOU: 0.927564), count: 8, class_loss = 0.078214, iou_loss = 1.137756, total_loss = 1.215971
total_bbox = 2773681, rewritten_bbox = 46.375053 %

(next mAP calculation at 32412 iterations)
Last accuracy mAP@0.50 = 7.52 %, best = 7.88 %
32303: 0.822898, 1.212810 avg loss, 0.000010 rate, 3.717367 seconds, 1033696 images, 1.681900 hours left
Loaded: 0.000034 seconds
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 139 Avg (IOU: 0.790189), count: 73, class_loss = 5.116734, iou_loss = 303.693481, total_loss = 308.810211
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 150 Avg (IOU: 0.752458), count: 30, class_loss = 2.194952, iou_loss = 14.096819, total_loss = 16.291771
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 161 Avg (IOU: 0.872714), count: 21, class_loss = 0.658069, iou_loss = 2.480679, total_loss = 3.138747
total_bbox = 2773805, rewritten_bbox = 46.375031 %
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 139 Avg (IOU: 0.742295), count: 7, class_loss = 1.763642, iou_loss = 35.453094, total_loss = 37.216736
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 150 Avg (IOU: 0.931606), count: 6, class_loss = 0.004981, iou_loss = 3.306712, total_loss = 3.311693
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 161 Avg (IOU: 0.859115), count: 4, class_loss = 0.003448, iou_loss = 0.255744, total_loss = 0.259193
total_bbox = 2773822, rewritten_bbox = 46.375000 %
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 139 Avg (IOU: 0.819089), count: 46, class_loss = 2.228890, iou_loss = 99.406006, total_loss = 101.634895
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 150 Avg (IOU: 0.909705), count: 45, class_loss = 1.490267, iou_loss = 35.840363, total_loss = 37.330627
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 161 Avg (IOU: 0.908029), count: 10, class_loss = 0.173711, iou_loss = 1.861455, total_loss = 2.035166
total_bbox = 2773923, rewritten_bbox = 46.374935 %
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 139 Avg (IOU: 0.897572), count: 4, class_loss = 0.000005, iou_loss = 13.840674, total_loss = 13.840679
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 150 Avg (IOU: 0.898904), count: 4, class_loss = 0.000005, iou_loss = 2.335589, total_loss = 2.335594
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 161 Avg (IOU: 0.959906), count: 3, class_loss = 0.002928, iou_loss = 0.371398, total_loss = 0.374327
total_bbox = 2773934, rewritten_bbox = 46.374893 %
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 139 Avg (IOU: 0.868301), count: 54, class_loss = 0.389895, iou_loss = 214.136444, total_loss = 214.526337
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 150 Avg (IOU: 0.920630), count: 51, class_loss = 0.924844, iou_loss = 50.260296, total_loss = 51.185139
v3 (iou loss, Normalizer: (iou: 0.07, obj: 1.00, cls: 1.00) Region 161 Avg (IOU: 0.846964), count: 9, class_loss = 0.329003, iou_loss = 2.295645, total_loss = 2.624648
total_bbox = 2774048, rewritten_bbox = 46.374397 %
```

Map

1.train

calculation mAP (mean average precision)...

Detection layer: 139 - type = 28

Detection layer: 150 - type = 28

Detection layer: 161 - type = 28

1192

detections_count = 17173, unique_truth_count = 9852

class_id = 0, name = bird, ap = 85.69% (TP = 359, FP = 106)

class_id = 1, name = book, ap = 78.50% (TP = 788, FP = 199)

class_id = 2, name = bottle, ap = 95.00% (TP = 946, FP = 80)

class_id = 3, name = car, ap = 90.15% (TP = 4847, FP = 512)

class_id = 4, name = person, ap = 98.29% (TP = 976, FP = 40)

class_id = 5, name = chair, ap = 96.68% (TP = 960, FP = 50)

for conf_thresh = 0.25, precision = 0.90, recall = 0.90, F1-score = 0.90

for conf_thresh = 0.25, TP = 8876, FP = 987, FN = 976, average IoU = 77.70 %

IoU threshold = 50 %, used Area-Under-Curve for each unique Recall

mean average precision (mAP@0.50) = 0.907192, or 90.72 %

Total Detection Time: 683 Seconds

2. Test

```
calculation mAP (mean average precision)...
Detection layer: 139 - type = 28
Detection layer: 150 - type = 28
Detection layer: 161 - type = 28
180
detections_count = 2164, unique_truth_count = 1995
class_id = 0, name = bird, ap = 12.87%      (TP = 31, FP = 25)
class_id = 1, name = book, ap = 0.09%      (TP = 1, FP = 72)
class_id = 2, name = bottle, ap = 12.56%   (TP = 39, FP = 50)
class_id = 3, name = car, ap = 4.83%      (TP = 126, FP = 294)
class_id = 4, name = chair, ap = 11.40%    (TP = 27, FP = 59)
class_id = 5, name = person, ap = 4.13%    (TP = 12, FP = 63)

for conf_thresh = 0.25, precision = 0.30, recall = 0.12, F1-score = 0.17
for conf_thresh = 0.25, TP = 236, FP = 563, FN = 1759, average IoU = 24.12 %

IoU threshold = 50 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.50) = 0.076448, or 7.64 %
Total Detection Time: 103 Seconds
```

MAP(23.08.2021)

1. train :

```
calculation mAP (mean average precision)...
Detection layer: 139 - type = 28
Detection layer: 150 - type = 28
Detection layer: 161 - type = 28
1192
detections_count = 17700, unique_truth_count = 9852
class_id = 0, name = bird, ap = 84.65%     (TP = 355, FP = 118)
class_id = 1, name = book, ap = 78.51%     (TP = 788, FP = 206)
class_id = 2, name = bottle, ap = 95.09%   (TP = 947, FP = 85)
class_id = 3, name = car, ap = 90.09%      (TP = 4836, FP = 548)
class_id = 4, name = person, ap = 98.32%   (TP = 974, FP = 51)
class_id = 5, name = chair, ap = 96.39%    (TP = 956, FP = 49)

for conf_thresh = 0.25, precision = 0.89, recall = 0.90, F1-score = 0.90
for conf_thresh = 0.25, TP = 8856, FP = 1057, FN = 996, average IoU = 76.87 %

IoU threshold = 50 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.50) = 0.905065, or 90.51 %
Total Detection Time: 91 Seconds
```

2. test

```
calculation mAP (mean average precision)...
Detection layer: 139 - type = 28
Detection layer: 150 - type = 28
Detection layer: 161 - type = 28
180
detections_count = 2248, unique_truth_count = 1995
class_id = 0, name = bird, ap = 12.38%      (TP = 31, FP = 25)
class_id = 1, name = book, ap = 0.11%      (TP = 2, FP = 73)
class_id = 2, name = bottle, ap = 12.62%   (TP = 37, FP = 54)
class_id = 3, name = car, ap = 4.93%       (TP = 131, FP = 302)
class_id = 4, name = chair, ap = 11.67%    (TP = 29, FP = 61)
class_id = 5, name = person, ap = 4.76%    (TP = 16, FP = 60)

for conf_thresh = 0.25, precision = 0.30, recall = 0.12, F1-score = 0.17
for conf_thresh = 0.25, TP = 246, FP = 575, FN = 1749, average IoU = 24.41 %

IoU threshold = 50 %, used Area-Under-Curve for each unique Recall
mean average precision (mAP@0.50) = 0.077448, or 7.74 %
Total Detection Time: 14 Seconds
```

Pp-yolo for 1000 instances

```
DONE (t=0.77s)
creating index...
index created!
Running per image evaluation...
Evaluate annotation type *bbox*
DONE (t=7.72s).
Accumulating evaluation...
DONE (t=1.40s).
Average Precision (AP) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.039
Average Precision (AP) @[ IoU=0.50 | area= all | maxDets=100 ] = 0.111
Average Precision (AP) @[ IoU=0.75 | area= all | maxDets=100 ] = 0.017
Average Precision (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.037
Average Precision (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.051
Average Precision (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.031
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 1 ] = 0.047
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 10 ] = 0.147
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.210
Average Recall (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.160
Average Recall (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.260
Average Recall (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.243
[08/14 05:42:22] ppdet.metrics.coco_utils INFO: Per-category of bbox AP:
+-----+-----+-----+-----+-----+
| category | AP   | category | AP   | category | AP   |
+-----+-----+-----+-----+-----+
| bird    | 0.011 | book     | 0.015 | bottle   | 0.124 |
| car     | 0.002 | chair    | 0.016 | person   | 0.064 |
+-----+-----+-----+-----+-----+
[08/14 05:42:22] ppdet.metrics.coco_utils INFO: per-category PR curve has output to bbox_pr_curve folder.
[08/14 05:42:23] ppdet.engine INFO: Total sample number: 1093, average FPS: 13.546782759184328
```