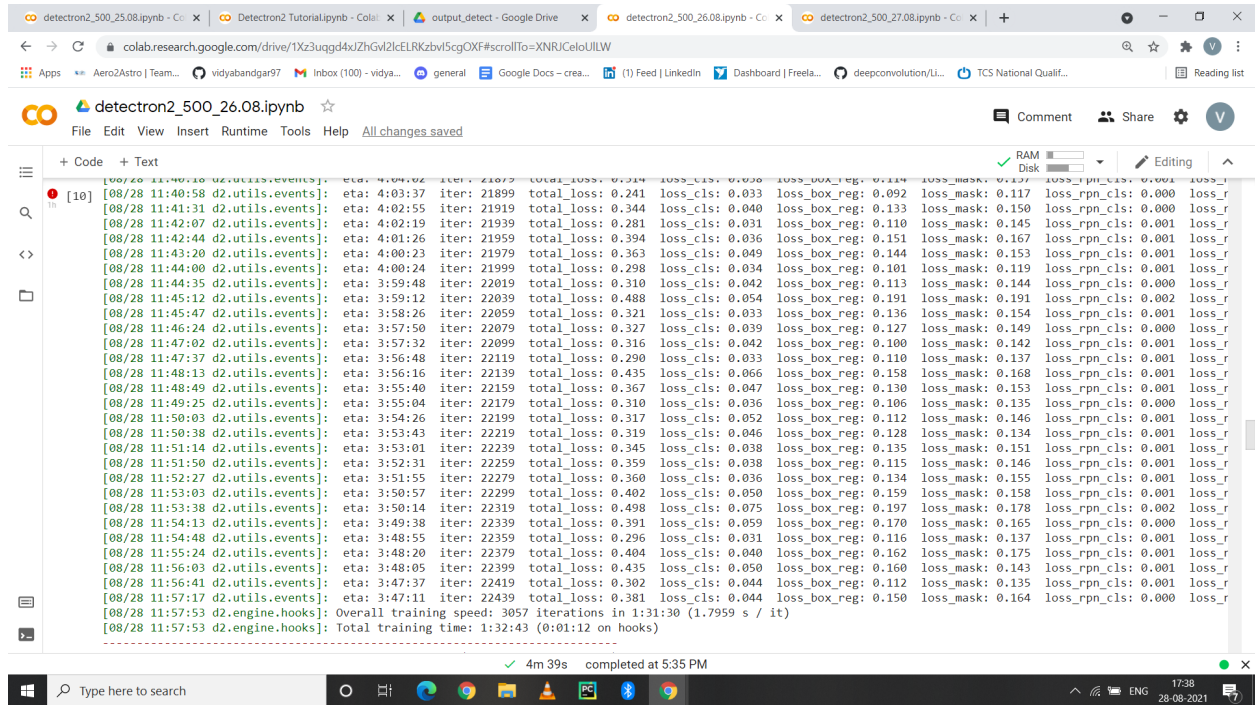


Work report

28 Aug 2021

Detectron2 for 500 instances

Deformable convolution (3x and 42.7 box AP)



1. Train evaluation:

Average Precision (AP)	@[IoU=0.50:0.95	area= all	maxDets=100]	= 0.801
Average Precision (AP)	@[IoU=0.50	area= all	maxDets=100]	= 0.973
Average Precision (AP)	@[IoU=0.75	area= all	maxDets=100]	= 0.907
Average Precision (AP)	@[IoU=0.50:0.95	area= small	maxDets=100]	= 0.736
Average Precision (AP)	@[IoU=0.50:0.95	area=medium	maxDets=100]	= 0.863
Average Precision (AP)	@[IoU=0.50:0.95	area= large	maxDets=100]	= 0.919
Average Recall (AR)	@[IoU=0.50:0.95	area= all	maxDets= 1]	= 0.324
Average Recall (AR)	@[IoU=0.50:0.95	area= all	maxDets= 10]	= 0.812
Average Recall (AR)	@[IoU=0.50:0.95	area= all	maxDets=100]	= 0.843
Average Recall (AR)	@[IoU=0.50:0.95	area= small	maxDets=100]	= 0.777
Average Recall (AR)	@[IoU=0.50:0.95	area=medium	maxDets=100]	= 0.901
Average Recall (AR)	@[IoU=0.50:0.95	area= large	maxDets=100]	= 0.954

[08/28 12:05:10 d2.evaluation.coco_evaluation]: Evaluation results for bbox:

AP	AP50	AP75	APs	APm	APl
80.122	97.341	90.739	73.581	86.256	91.937

[08/28 12:05:10 d2.evaluation.coco_evaluation]: Per-category bbox AP:

category	AP	category	AP	category	AP
aeroplane	91.669	car	76.208	chair	80.810
cow	82.875	person	81.247	traffic_light	67.926

2. Test evaluation:

```
Average Precision (AP) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.313
Average Precision (AP) @[ IoU=0.50      | area= all | maxDets=100 ] = 0.485
Average Precision (AP) @[ IoU=0.75      | area= all | maxDets=100 ] = 0.329
Average Precision (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.164
Average Precision (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.412
Average Precision (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.498
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 1 ] = 0.197
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 10 ] = 0.445
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.461
Average Recall (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.289
Average Recall (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.535
Average Recall (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.752
```

[08/28 11:59:54 d2.evaluation.coco_evaluation]: Evaluation results for bbox:

AP	AP50	AP75	APs	APm	APl
31.323	48.542	32.874	16.368	41.206	49.817

[08/28 11:59:54 d2.evaluation.coco_evaluation]: Per-category bbox AP:

category	AP	category	AP	category	AP
aeroplane	52.881	car	18.314	chair	24.517
cow	50.986	person	15.526	traffic_light	25.713

Evaluation:(27.08.2021)

1. Train evaluation:

```

Average Precision (AP) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.759
Average Precision (AP) @[ IoU=0.50      | area= all | maxDets=100 ] = 0.962
Average Precision (AP) @[ IoU=0.75      | area= all | maxDets=100 ] = 0.867
Average Precision (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.683
Average Precision (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.826
Average Precision (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.894
Average Recall    (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 1 ] = 0.316
Average Recall    (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 10 ] = 0.778
Average Recall    (AR) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.808
Average Recall    (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.735
Average Recall    (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.871
Average Recall    (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.935

```

[08/27 10:22:06 d2.evaluation.coco_evaluation]: Evaluation results for bbox:

AP	AP50	AP75	APs	APm	APl
75.933	96.238	86.674	68.259	82.620	89.433

[08/27 10:22:06 d2.evaluation.coco_evaluation]: Per-category bbox AP:

category	AP	category	AP	category	AP
aeroplane	90.811	car	72.100	chair	76.317
cow	81.540	person	75.195	traffic_light	59.638

2. Test evaluation:

```

Average Precision (AP) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.335
Average Precision (AP) @[ IoU=0.50      | area= all | maxDets=100 ] = 0.506
Average Precision (AP) @[ IoU=0.75      | area= all | maxDets=100 ] = 0.351
Average Precision (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.174
Average Precision (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.442
Average Precision (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.580
Average Recall    (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 1 ] = 0.204
Average Recall    (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 10 ] = 0.471
Average Recall    (AR) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.495
Average Recall    (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.320
Average Recall    (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.577
Average Recall    (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.777

```

[08/27 10:10:08 d2.evaluation.coco_evaluation]: Evaluation results for bbox:

AP	AP50	AP75	APs	APm	APl
33.535	50.591	35.133	17.360	44.175	57.989

[08/27 10:10:08 d2.evaluation.coco_evaluation]: Per-category bbox AP:

category	AP	category	AP	category	AP
aeroplane	54.622	car	21.737	chair	25.720
cow	55.997	person	17.900	traffic_light	25.232

yolov4 for 1000 instances.

Epochs 32303

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

```

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 results...
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] ppydet.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] ppydet.metrics.coco_utils INFO: per-category PR curve has output to bbox_pr_curve folder.
[08/14 05:42:23] ppydet.engine INFO: Total sample number: 1093, average FPS: 13.546782759184328

```