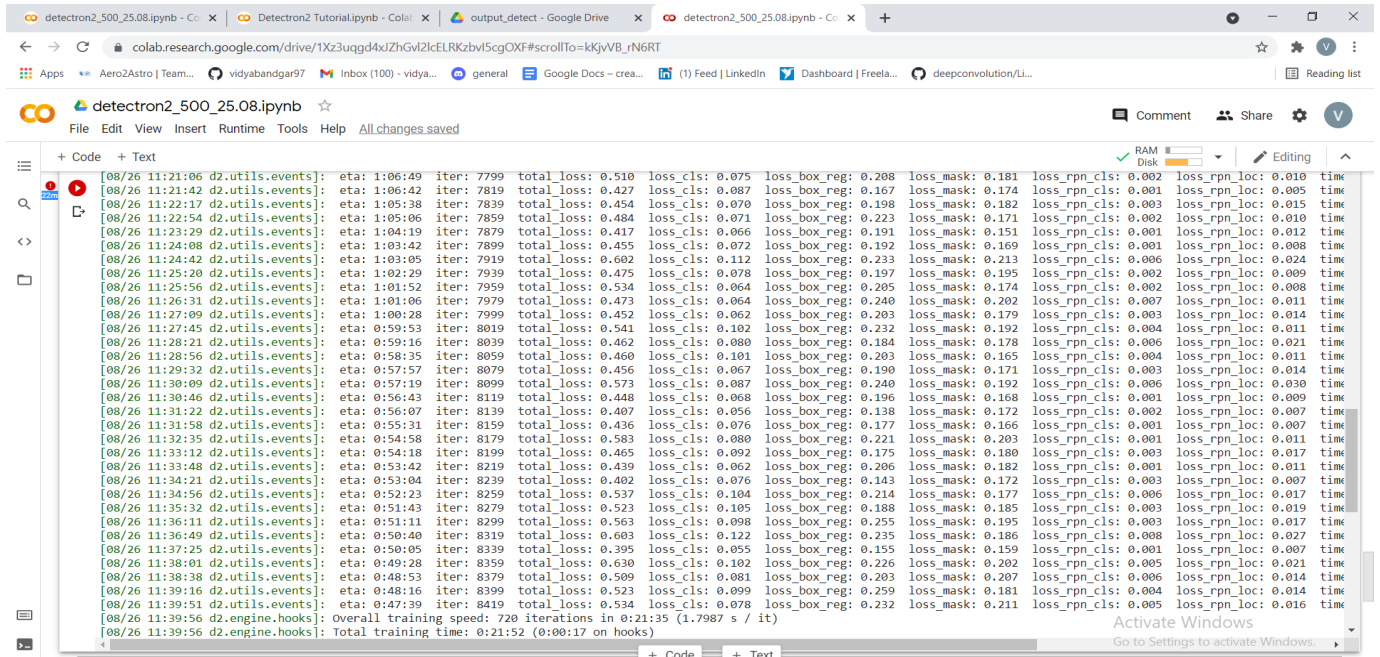


Work report

26 Aug 2021

Detectron2 for 500 instances

Deformable convolution (3x and 42.7 box AP)



```
detectron2_500_25.08.ipynb - Co x Detectron2 Tutorial.ipynb - Cola x output_detect - Google Drive x detectron2_500_25.08.ipynb - Co x +
colab.research.google.com/drive/1Xz3uqgd4xJZhGvI2lCELRKzbvI5cgOXF#scrollTo=kKjvVB_rN6RT
Apps Aero2Astro | Team... vidyabandgar97 | Inbox (100) - vidya... general | Google Docs - crea... (1) Feed | LinkedIn | Dashboard | Freela... | deepconvolution/Li... | Reading list
detectron2_500_25.08.ipynb
File Edit View Insert Runtime Tools Help All changes saved
+ Code + Text
[08/26 11:21:06 d2.utils.events]: eta: 1:06:49 iter: 7799 total_loss: 0.510 loss_cls: 0.075 loss_box_reg: 0.208 loss_mask: 0.181 loss_rpn_cls: 0.002 loss_rpn_loc: 0.010 time
[08/26 11:21:42 d2.utils.events]: eta: 1:06:42 iter: 7819 total_loss: 0.427 loss_cls: 0.087 loss_box_reg: 0.167 loss_mask: 0.174 loss_rpn_cls: 0.001 loss_rpn_loc: 0.005 time
[08/26 11:22:17 d2.utils.events]: eta: 1:05:38 iter: 7839 total_loss: 0.454 loss_cls: 0.070 loss_box_reg: 0.198 loss_mask: 0.182 loss_rpn_cls: 0.003 loss_rpn_loc: 0.015 time
[08/26 11:22:54 d2.utils.events]: eta: 1:05:06 iter: 7859 total_loss: 0.484 loss_cls: 0.071 loss_box_reg: 0.223 loss_mask: 0.171 loss_rpn_cls: 0.002 loss_rpn_loc: 0.010 time
[08/26 11:23:29 d2.utils.events]: eta: 1:04:19 iter: 7879 total_loss: 0.417 loss_cls: 0.066 loss_box_reg: 0.191 loss_mask: 0.151 loss_rpn_cls: 0.001 loss_rpn_loc: 0.012 time
[08/26 11:24:08 d2.utils.events]: eta: 1:03:42 iter: 7899 total_loss: 0.455 loss_cls: 0.072 loss_box_reg: 0.192 loss_mask: 0.169 loss_rpn_cls: 0.001 loss_rpn_loc: 0.008 time
[08/26 11:24:42 d2.utils.events]: eta: 1:03:05 iter: 7919 total_loss: 0.602 loss_cls: 0.112 loss_box_reg: 0.233 loss_mask: 0.213 loss_rpn_cls: 0.006 loss_rpn_loc: 0.024 time
[08/26 11:25:20 d2.utils.events]: eta: 1:02:29 iter: 7939 total_loss: 0.475 loss_cls: 0.078 loss_box_reg: 0.197 loss_mask: 0.195 loss_rpn_cls: 0.002 loss_rpn_loc: 0.009 time
[08/26 11:25:56 d2.utils.events]: eta: 1:01:52 iter: 7959 total_loss: 0.534 loss_cls: 0.064 loss_box_reg: 0.205 loss_mask: 0.174 loss_rpn_cls: 0.002 loss_rpn_loc: 0.008 time
[08/26 11:26:31 d2.utils.events]: eta: 1:01:06 iter: 7979 total_loss: 0.473 loss_cls: 0.064 loss_box_reg: 0.240 loss_mask: 0.202 loss_rpn_cls: 0.007 loss_rpn_loc: 0.011 time
[08/26 11:27:09 d2.utils.events]: eta: 1:00:28 iter: 7999 total_loss: 0.452 loss_cls: 0.062 loss_box_reg: 0.203 loss_mask: 0.179 loss_rpn_cls: 0.003 loss_rpn_loc: 0.014 time
[08/26 11:27:45 d2.utils.events]: eta: 0:59:53 iter: 8019 total_loss: 0.541 loss_cls: 0.102 loss_box_reg: 0.232 loss_mask: 0.192 loss_rpn_cls: 0.004 loss_rpn_loc: 0.011 time
[08/26 11:28:21 d2.utils.events]: eta: 0:59:16 iter: 8039 total_loss: 0.462 loss_cls: 0.080 loss_box_reg: 0.184 loss_mask: 0.178 loss_rpn_cls: 0.006 loss_rpn_loc: 0.021 time
[08/26 11:28:56 d2.utils.events]: eta: 0:58:35 iter: 8059 total_loss: 0.460 loss_cls: 0.101 loss_box_reg: 0.203 loss_mask: 0.165 loss_rpn_cls: 0.004 loss_rpn_loc: 0.011 time
[08/26 11:29:32 d2.utils.events]: eta: 0:57:57 iter: 8079 total_loss: 0.456 loss_cls: 0.067 loss_box_reg: 0.190 loss_mask: 0.171 loss_rpn_cls: 0.003 loss_rpn_loc: 0.014 time
[08/26 11:30:09 d2.utils.events]: eta: 0:57:19 iter: 8099 total_loss: 0.573 loss_cls: 0.087 loss_box_reg: 0.240 loss_mask: 0.192 loss_rpn_cls: 0.006 loss_rpn_loc: 0.030 time
[08/26 11:30:46 d2.utils.events]: eta: 0:56:43 iter: 8119 total_loss: 0.448 loss_cls: 0.068 loss_box_reg: 0.196 loss_mask: 0.162 loss_rpn_cls: 0.001 loss_rpn_loc: 0.009 time
[08/26 11:31:22 d2.utils.events]: eta: 0:56:07 iter: 8139 total_loss: 0.407 loss_cls: 0.056 loss_box_reg: 0.138 loss_mask: 0.172 loss_rpn_cls: 0.002 loss_rpn_loc: 0.007 time
[08/26 11:31:58 d2.utils.events]: eta: 0:55:31 iter: 8159 total_loss: 0.436 loss_cls: 0.076 loss_box_reg: 0.177 loss_mask: 0.166 loss_rpn_cls: 0.001 loss_rpn_loc: 0.007 time
[08/26 11:32:35 d2.utils.events]: eta: 0:54:58 iter: 8179 total_loss: 0.583 loss_cls: 0.080 loss_box_reg: 0.221 loss_mask: 0.203 loss_rpn_cls: 0.001 loss_rpn_loc: 0.011 time
[08/26 11:33:12 d2.utils.events]: eta: 0:54:18 iter: 8199 total_loss: 0.465 loss_cls: 0.092 loss_box_reg: 0.175 loss_mask: 0.180 loss_rpn_cls: 0.003 loss_rpn_loc: 0.017 time
[08/26 11:33:48 d2.utils.events]: eta: 0:53:42 iter: 8219 total_loss: 0.439 loss_cls: 0.062 loss_box_reg: 0.206 loss_mask: 0.182 loss_rpn_cls: 0.001 loss_rpn_loc: 0.011 time
[08/26 11:34:21 d2.utils.events]: eta: 0:53:04 iter: 8239 total_loss: 0.402 loss_cls: 0.076 loss_box_reg: 0.143 loss_mask: 0.172 loss_rpn_cls: 0.003 loss_rpn_loc: 0.007 time
[08/26 11:34:56 d2.utils.events]: eta: 0:52:23 iter: 8259 total_loss: 0.537 loss_cls: 0.104 loss_box_reg: 0.214 loss_mask: 0.177 loss_rpn_cls: 0.006 loss_rpn_loc: 0.017 time
[08/26 11:35:32 d2.utils.events]: eta: 0:51:43 iter: 8279 total_loss: 0.523 loss_cls: 0.105 loss_box_reg: 0.188 loss_mask: 0.185 loss_rpn_cls: 0.003 loss_rpn_loc: 0.019 time
[08/26 11:36:11 d2.utils.events]: eta: 0:51:11 iter: 8299 total_loss: 0.563 loss_cls: 0.098 loss_box_reg: 0.255 loss_mask: 0.195 loss_rpn_cls: 0.003 loss_rpn_loc: 0.017 time
[08/26 11:36:49 d2.utils.events]: eta: 0:50:40 iter: 8319 total_loss: 0.603 loss_cls: 0.122 loss_box_reg: 0.235 loss_mask: 0.186 loss_rpn_cls: 0.008 loss_rpn_loc: 0.027 time
[08/26 11:37:25 d2.utils.events]: eta: 0:50:05 iter: 8339 total_loss: 0.395 loss_cls: 0.055 loss_box_reg: 0.155 loss_mask: 0.159 loss_rpn_cls: 0.001 loss_rpn_loc: 0.007 time
[08/26 11:38:01 d2.utils.events]: eta: 0:49:28 iter: 8359 total_loss: 0.630 loss_cls: 0.102 loss_box_reg: 0.226 loss_mask: 0.202 loss_rpn_cls: 0.005 loss_rpn_loc: 0.021 time
[08/26 11:38:38 d2.utils.events]: eta: 0:48:53 iter: 8379 total_loss: 0.509 loss_cls: 0.081 loss_box_reg: 0.203 loss_mask: 0.207 loss_rpn_cls: 0.006 loss_rpn_loc: 0.014 time
[08/26 11:39:16 d2.utils.events]: eta: 0:48:16 iter: 8399 total_loss: 0.523 loss_cls: 0.099 loss_box_reg: 0.259 loss_mask: 0.181 loss_rpn_cls: 0.004 loss_rpn_loc: 0.014 time
[08/26 11:39:51 d2.utils.events]: eta: 0:47:39 iter: 8419 total_loss: 0.534 loss_cls: 0.078 loss_box_reg: 0.232 loss_mask: 0.211 loss_rpn_cls: 0.005 loss_rpn_loc: 0.016 time
[08/26 11:39:56 d2.engine.hooks]: Overall training speed: 720 iterations in 0:21:35 (1.7987 s / it)
[08/26 11:39:56 d2.engine.hooks]: Total training time: 0:21:52 (0:00:17 on hooks)
Activate Windows
Go to Settings to activate Windows.
```

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=0.57s)
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] 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
```