Aero2Astro

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(03/09/2021)

I had trained Faster Rcnn model upto 100999 iterations. And also evaluated with both train and test dataset.

Model:(Faster Rcnn)
Backbone = Faster_rcnn_X_101_32x8d_FPN_3x
bs = 4
lr = 0.001
ins = 500
Previous Checkpoint : 83500
Threshold : 0.85
Test :

```
[09/01 11:00:32 d2.evaluation.fast_eval_api]: COCOeval_opt.accumulate() finished in 0.0
 Average Precision  (AP) @[ IoU=0.50:0.95 | area=   all | maxDets=100 ] = 0.388
 Average Precision  (AP) @[ IoU=0.50      | area=   all | maxDets=100 ] = 0.563
 Average Precision  (AP) @[ IoU=0.75      | area=   all | maxDets=100 ] = 0.416
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.234
 Average Precision  (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.506
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.555
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=  1 ] = 0.222
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets= 10 ] = 0.547
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=100 ] = 0.590
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.417
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.698
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.834
[09/01 11:00:32 d2.evaluation.coco_evaluation]: Evaluation results for bbox:
```

AP	AP50	AP75	APs	APm	APl
38.774	56.323	41.635	23.398	50.569	55.524

```
[09/01 11:00:32 d2.evaluation.coco_evaluation]: Per-category bbox AP:
```

category	AP	category	AP	category	AP
aeroplane	66.686	car	25.895	chair	31.846
cow	57.283	person	20.700	traffic light	30.234

```
Total inference time: 0:02:15.337548 (0.731554 s / iter per device, on 1 devices)
Total inference pure compute time: 0:02:14 (0.728070 s / iter per device, on 1 devices)
```

Train :

```
[09/01 11:13:20 d2.evaluation.fast_eval_api]: COCOeval_opt.accumulate() finished in 0.05 second
 Average Precision  (AP) @[ IoU=0.50:0.95 | area=   all | maxDets=100 ] = 0.641
 Average Precision  (AP) @[ IoU=0.50      | area=   all | maxDets=100 ] = 0.845
 Average Precision  (AP) @[ IoU=0.75      | area=   all | maxDets=100 ] = 0.709
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.548
 Average Precision  (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.737
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.822
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=  1 ] = 0.309
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets= 10 ] = 0.714
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=100 ] = 0.755
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.665
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.827
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.915
[09/01 11:13:20 d2.evaluation.coco_evaluation]: Evaluation results for bbox:
```

AP	AP50	AP75	APs	APm	APl
64.101	84.488	70.862	54.822	73.704	82.153

```
[09/01 11:13:20 d2.evaluation.coco_evaluation]: Per-category bbox AP:
```

category	AP	category	AP	category	AP
aeroplane	88.188	car	55.989	chair	67.044
cow	73.846	person	51.198	traffic_light	48.340

```
 Total inference time: 0:08:20.223715 (0.731321 s / iter per device, on 1 devices)
 Total inference pure compute time: 0:08:18 (0.728191 s / iter per device, on 1 devices)
tion]: Preparing results for COCO format
```

Threshold : 0.65
Test :

```
[09/01 11:24:43 d2.evaluation.fast_eval_api]: Accumulating evaluation results...
[09/01 11:24:43 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 ] = 0.388
 Average Precision  (AP) @[ IoU=0.50      | area=   all | maxDets=100 ] = 0.563
 Average Precision  (AP) @[ IoU=0.75      | area=   all | maxDets=100 ] = 0.416
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.234
 Average Precision  (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.506
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.555
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=  1 ] = 0.222
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets= 10 ] = 0.547
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=100 ] = 0.590
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.417
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.698
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[09/01 11:24:43 d2.evaluation.coco_evaluation]: Evaluation results for bbox:
```

AP	AP50	AP75	APs	APm	APl
38.774	56.323	41.635	23.398	50.569	55.524

```
[09/01 11:24:43 d2.evaluation.coco_evaluation]: Per-category bbox AP:
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category	AP	category	AP	category	AP
aeroplane	66.686	car	25.895	chair	31.846
cow	57.283	person	20.700	traffic_light	30.234

```
OrderedDict([('bbox',
```

```
: Total inference time: 0:02:16.642567 (0.738608 s / iter per device, on 1 devices)
: Total inference pure compute time: 0:02:15 (0.735123 s / iter per device, on 1 devices)
```

Train :

```
[09/01 11:35:26 d2.evaluation.fast_eval_api]: COCOeval_opt.accumulate() finished in 0.05 seconds.
 Average Precision  (AP) @[ IoU=0.50:0.95 | area=   all | maxDets=100 ] = 0.641
 Average Precision  (AP) @[ IoU=0.50      | area=   all | maxDets=100 ] = 0.845
 Average Precision  (AP) @[ IoU=0.75      | area=   all | maxDets=100 ] = 0.709
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.548
 Average Precision  (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.737
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.822
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=  1 ] = 0.309
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets= 10 ] = 0.714
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=100 ] = 0.755
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.665
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.827
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.915
[09/01 11:35:26 d2.evaluation.coco_evaluation]: Evaluation results for bbox:
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AP	AP50	AP75	APs	APm	APl
64.101	84.488	70.862	54.822	73.704	82.153

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[09/01 11:35:26 d2.evaluation.coco_evaluation]: Per-category bbox AP:
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category	AP	category	AP	category	AP
aeroplane	88.188	car	55.989	chair	67.044
cow	73.846	person	51.198	traffic_light	48.340

```
OrderedDict([('bbox'
```

```
Total inference time: 0:08:12.162782 (0.719536 s / iter per device, on 1 devices)
Total inference pure compute time: 0:08:10 (0.716395 s / iter per device, on 1 devices)
tion]: Preparing results for COCO format
```

Last checkpoints : 101000 itr (with Horizontal flip augmentation)
Threshold : 0.85
Test :

```
[09/03 13:06:29 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 ] = 0.388
 Average Precision  (AP) @[ IoU=0.50      | area=   all | maxDets=100 ] = 0.575
 Average Precision  (AP) @[ IoU=0.75      | area=   all | maxDets=100 ] = 0.420
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.238
 Average Precision  (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.503
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.589
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=  1 ] = 0.221
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets= 10 ] = 0.546
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=100 ] = 0.589
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.428
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.692
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.827
[09/03 13:06:29 d2.evaluation.coco_evaluation]: Evaluation results for bbox:
|   AP   |  AP50  |  AP75  |  APs   |  APm   |  APl   |
|:------:|:------:|:------:|:------:|:------:|:------:|
| 38.795 | 57.503 | 42.001 | 23.815 | 50.281 | 58.874 |
[09/03 13:06:29 d2.evaluation.coco_evaluation]: Per-category bbox AP:
| category   | AP     | category | AP     | category      | AP     |
|:-----------|:-------|:---------|:-------|:--------------|:-------|
| aeroplane  | 66.272 | car      | 27.213 | chair         | 31.770 |
| cow        | 57.276 | person   | 20.187 | traffic_light | 30.051 |
OrderedDict([('bbox'
```

```
Total inference time: 0:02:27.579475 (0.797727 s / iter per device, on 1 devices)
Total inference pure compute time: 0:02:26 (0.794334 s / iter per device, on 1 devices)
ion]: Preparing results for COCO format
```

Train :

```
[09/03 13:17:54 d2.evaluation.fast_eval_api]: COCOeval_opt.accumulate() finished in 0.04 secon
 Average Precision  (AP) @[ IoU=0.50:0.95 | area=   all | maxDets=100 ] = 0.643
 Average Precision  (AP) @[ IoU=0.50      | area=   all | maxDets=100 ] = 0.851
 Average Precision  (AP) @[ IoU=0.75      | area=   all | maxDets=100 ] = 0.719
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.553
 Average Precision  (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.734
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.814
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=  1 ] = 0.305
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets= 10 ] = 0.713
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=100 ] = 0.753
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.666
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.823
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.906
[09/03 13:17:54 d2.evaluation.coco_evaluation]: Evaluation results for bbox:
|   AP   |  AP50  |  AP75  |  APs   |  APm   |  APl   |
|:------:|:------:|:------:|:------:|:------:|:------:|
| 64.338 | 85.093 | 71.879 | 55.269 | 73.435 | 81.437 |
[09/03 13:17:54 d2.evaluation.coco_evaluation]: Per-category bbox AP:
| category   | AP     | category | AP     | category      | AP     |
|:-----------|:-------|:---------|:-------|:--------------|:-------|
| aeroplane  | 87.213 | car      | 56.145 | chair         | 67.627 |
| cow        | 73.221 | person   | 52.803 | traffic_light | 49.017 |
```

```
Total inference time: 0:09:01.542198 (0.791728 s / iter per device, on 1 devices)
Total inference pure compute time: 0:08:59 (0.788535 s / iter per device, on 1 devices)
```

Threshold : 0.65
Test:

```
[09/03 13:20:57 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 ] = 0.388
 Average Precision  (AP) @[ IoU=0.50      | area=   all | maxDets=100 ] = 0.575
 Average Precision  (AP) @[ IoU=0.75      | area=   all | maxDets=100 ] = 0.420
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.238
 Average Precision  (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.503
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.589
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=  1 ] = 0.221
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets= 10 ] = 0.546
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=100 ] = 0.589
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.428
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.692
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.827
[09/03 13:20:57 d2.evaluation.coco_evaluation]: Evaluation results for bbox:
|   AP   |  AP50  |  AP75  |  APs   |  APm   |  APl   |
|:------:|:------:|:------:|:------:|:------:|:------:|
| 38.795 | 57.503 | 42.001 | 23.815 | 50.281 | 58.874 |
[09/03 13:20:57 d2.evaluation.coco_evaluation]: Per-category bbox AP:
| category   | AP     | category | AP     | category      | AP     |
|:-----------|:-------|:---------|:-------|:--------------|:-------|
| aeroplane  | 66.272 | car      | 27.213 | chair         | 31.770 |
| cow        | 57.276 | person   | 20.187 | traffic light | 30.051 |
```

```
Total inference time: 0:02:27.451421 (0.797035 s / iter per device, on 1 devices)
Total inference pure compute time: 0:02:26 (0.793703 s / iter per device, on 1 devices)
```

Train :

```
 Average Precision  (AP) @[ IoU=0.50:0.95 | area=   all | maxDets=100 ] = 0.643
 Average Precision  (AP) @[ IoU=0.50      | area=   all | maxDets=100 ] = 0.851
 Average Precision  (AP) @[ IoU=0.75      | area=   all | maxDets=100 ] = 0.719
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.553
 Average Precision  (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.734
 Average Precision  (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.814
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=  1 ] = 0.305
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets= 10 ] = 0.713
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=   all | maxDets=100 ] = 0.753
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.666
 Average Recall     (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = 0.823
 Average Recall     (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.906
[09/03 13:30:22 d2.evaluation.coco_evaluation]: Evaluation results for bbox:
|   AP   |  AP50  |  AP75  |  APs   |  APm   |  APl   |
|:------:|:------:|:------:|:------:|:------:|:------:|
| 64.338 | 85.093 | 71.879 | 55.269 | 73.435 | 81.437 |
[09/03 13:30:22 d2.evaluation.coco_evaluation]: Per-category bbox AP:
| category   | AP     | category | AP     | category      | AP     |
|:-----------|:-------|:---------|:-------|:--------------|:-------|
| aeroplane  | 87.213 | car      | 56.145 | chair         | 67.627 |
| cow        | 73.221 | person   | 52.803 | traffic_light | 49.017 |
```

```
Total inference time: 0:09:01.864907 (0.792200 s / iter per device, on 1 devices)
Total inference pure compute time: 0:08:59 (0.788929 s / iter per device, on 1 devices)
```