

24.07- People Detection using VisDrone Dataset:

Gitlab repo: <https://gitlab.bewelltech.com.tr/Intern4/visdrone-object-detection>

Paddle Detection using VisDrone Dataset:

Page is on Chinese so its hard to read

<https://github.com/PaddlePaddle/PaddleDetection/tree/release/2.7>

YOLOE+

VisDrone Dataset:

Vision Meets Drones: A Challenge

<https://arxiv.org/abs/1804.07437>

```
# Classes
names:
0: pedestrian
1: people
2: bicycle
3: car
4: van
5: truck
6: tricycle
7: awning-tricycle
8: bus
9: motor
```

Dataset originally consist of followings:

Train: 6471 images

Val: 548 images

Test-dev: 1610 images

Test(challenge): 1580 images

Subset:

Train: 500 images

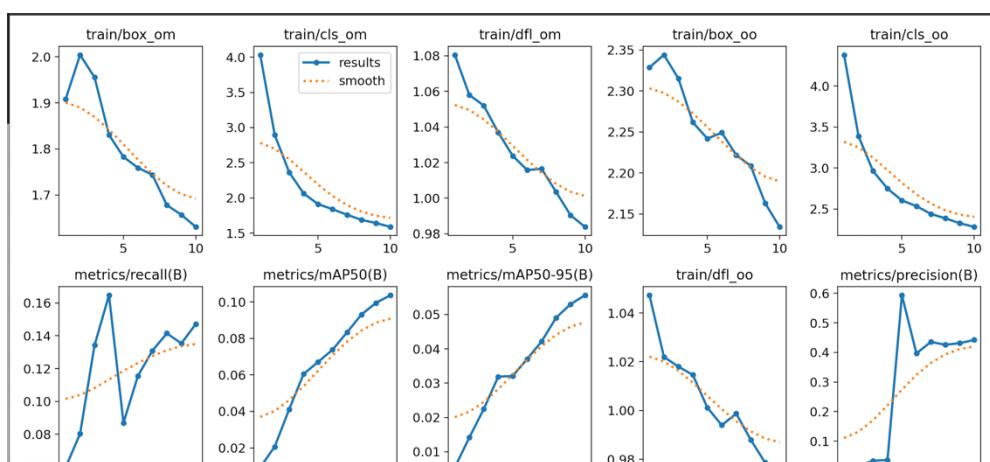
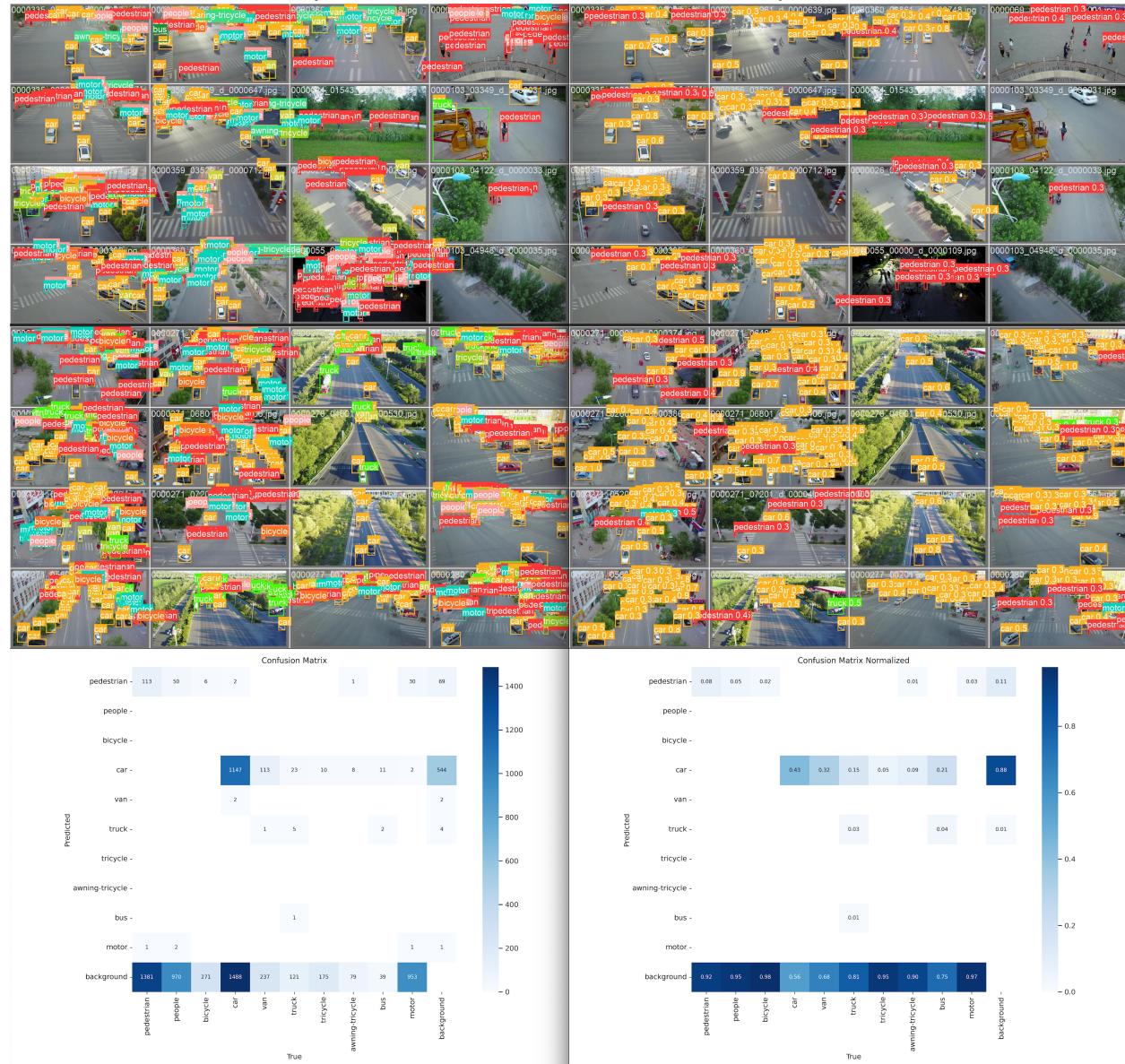
Val: 100 images

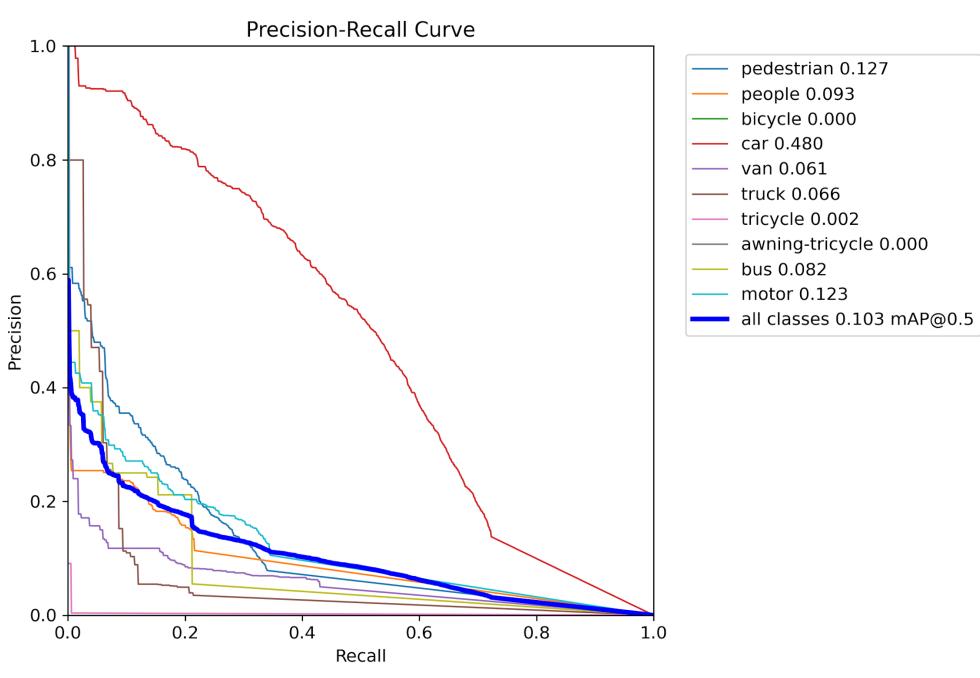
Test-dev: 100 images

- 1- Creating random subset with Python script. See “`data_reducer.py`” on [GitHub](#)
- 2- Data annotations converted to YOLO labels with Python Script. See “`annotation_handler.py`” on [GitHub](#)

Check [Colab notebook](#):

YOLOV10n multiclass object detection model results with 10 epochs batch size = 16





```

Validating runs/detect/train/weights/best.pt...
Ultralytics YOLOv8.1.34 🚀 Python-3.10.12 torch-2.3.1+cu121 CUDA:0 (Tesla T4, 15102MiB)
YOLOv10n summary (fused): 285 layers, 2698316 parameters, 0 gradients, 8.2 GFLOPs
      Class   Images Instances     Box(P)      R    mAP50  mAP50-95: 100% 4/4 [00:12<00:00,  3.10s/it]
      all     100     7245    0.445    0.146    0.103  0.0556
pedestrian  100     1495    0.171    0.256    0.127  0.0508
    people   100     1022    0.245    0.0486   0.0926  0.0322
    bicycle  100      277     1        0        0        0
      car     100     2639    0.275    0.653    0.48    0.291
      van     100      351    0.108    0.162    0.0613  0.0375
      truck   100      150    0.147    0.0933   0.0655  0.0435
    tricycle  100      185     1        0        0.00235  0.00141
awning-tricycle  100      88     1        0        0        0
      bus     100      52     0.243    0.115    0.0824  0.0582
      motor   100     986     0.26    0.136    0.123   0.0407
Speed: 0.5ms preprocess, 5.1ms inference, 0.0ms loss, 0.3ms postprocess per image

```

Comments and inferences on my perspective:

10 epochs is not enough for training phase and also there are too many classes.

TODO 1: decrease class size(eliminate unnecessary classes and merge some classes into one)

TODO 2: increase train epochs to 100

25.07-“Data Wrangling”

TODO 1: decrease class size (eliminate unnecessary classes and merge some classes into one)

- Combine class 0 (pedestrian) and 1 (people) to 0 (PERSON).
- Combine class 3 (car) 4 (van) 5(truck) 8(bus) and 9(motorcycle) to 1 (VEHICLE).
- Ignore class 2 (bicycle), 6 (tricycle), and 7 (awning-tricycle).

See updated python script “[annotation_handler.py](#)”

VisDrone.yaml file:

```
path: /content/data # dataset root dir
train: VisDrone2019-DET-train/images # train images (relative to 'path') 6471 images
val: VisDrone2019-DET-val/images # val images (relative to 'path') 548 images
test: VisDrone2019-DET-test-dev/images # test images (optional) 1610 images

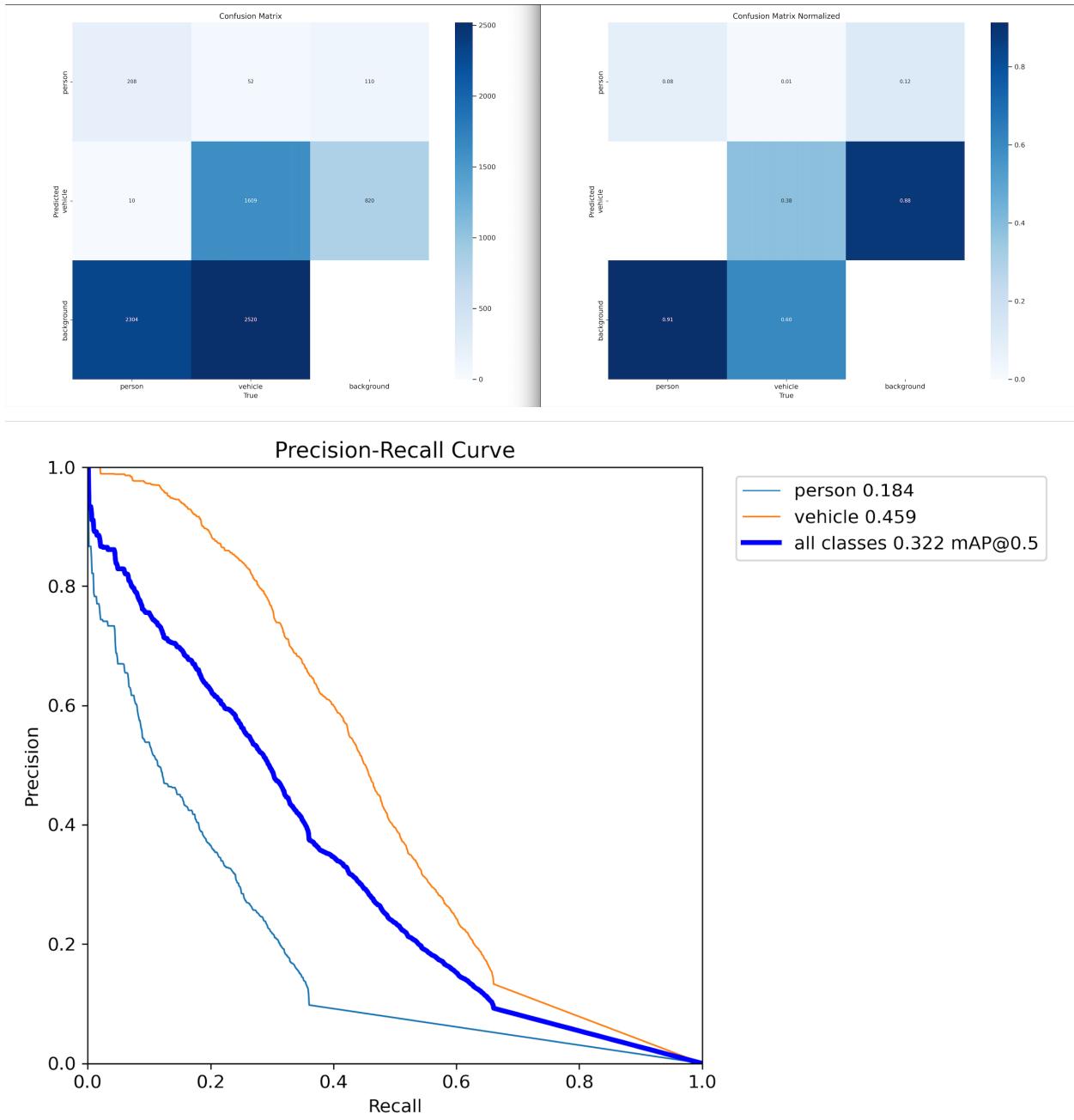
# Classes
names:
  0: person
  1: vehicle
```

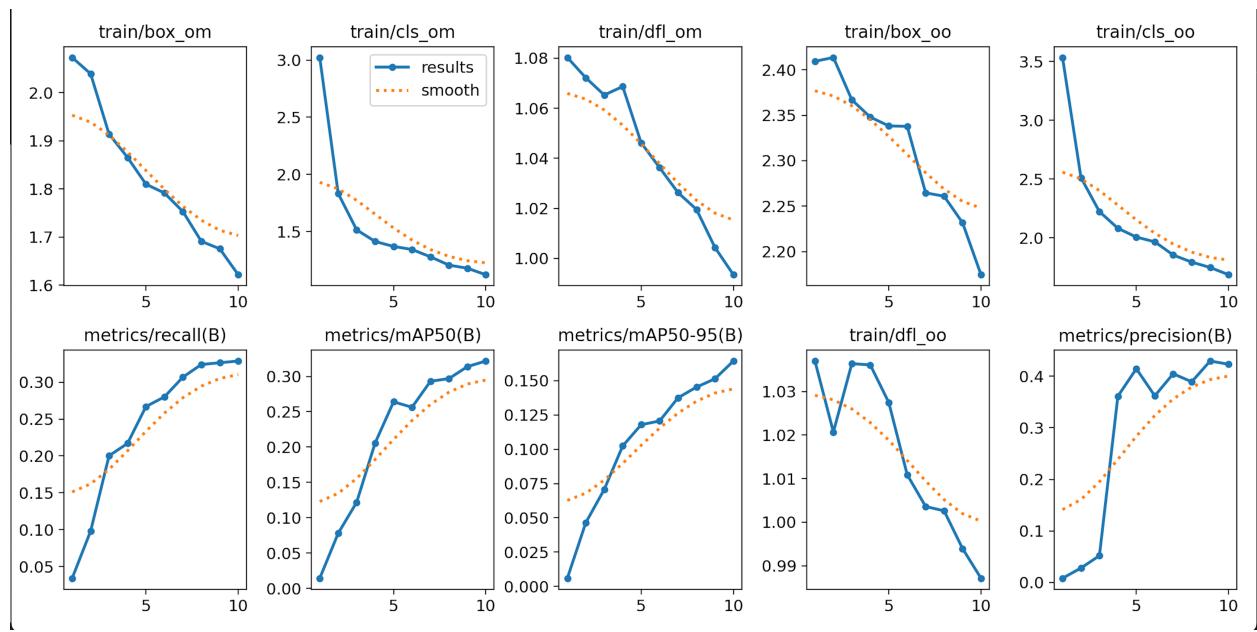
Yolov10n base run with new labels:

```
Validating runs/detect/train2/weights/best.pt...
Ultralytics YOLOv8.1.34 🚀 Python-3.10.12 torch-2.3.1+cu121 CUDA:0 (Tesla T4, 15102MiB)
YOLOv10n summary (fused): 285 layers, 2695196 parameters, 0 gradients, 8.2 GFLOPs
    Class   Images Instances   Box(P)      R      mAP50      mAP50-95: 100% 4/4 [00:05<00:00,  1.43s/it]
    all     100    6703    0.421    0.329    0.322    0.164
    person   100    2522     0.4    0.181    0.184    0.065
    vehicle  100    4181    0.443    0.477    0.459    0.264
Speed: 0.1ms preprocess, 6.1ms inference, 0.0ms loss, 0.0ms postprocess per image
```

10 epochs bs16

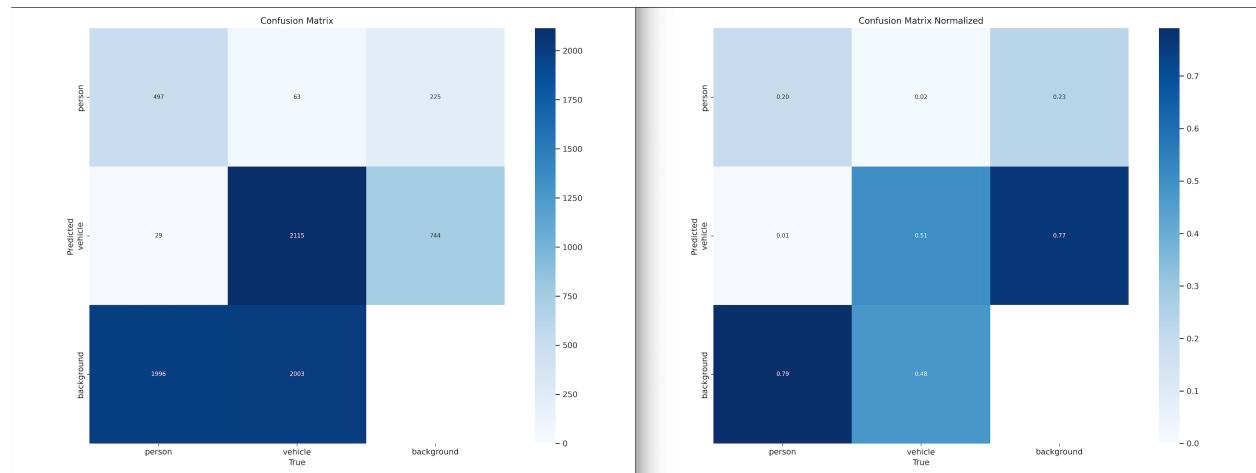


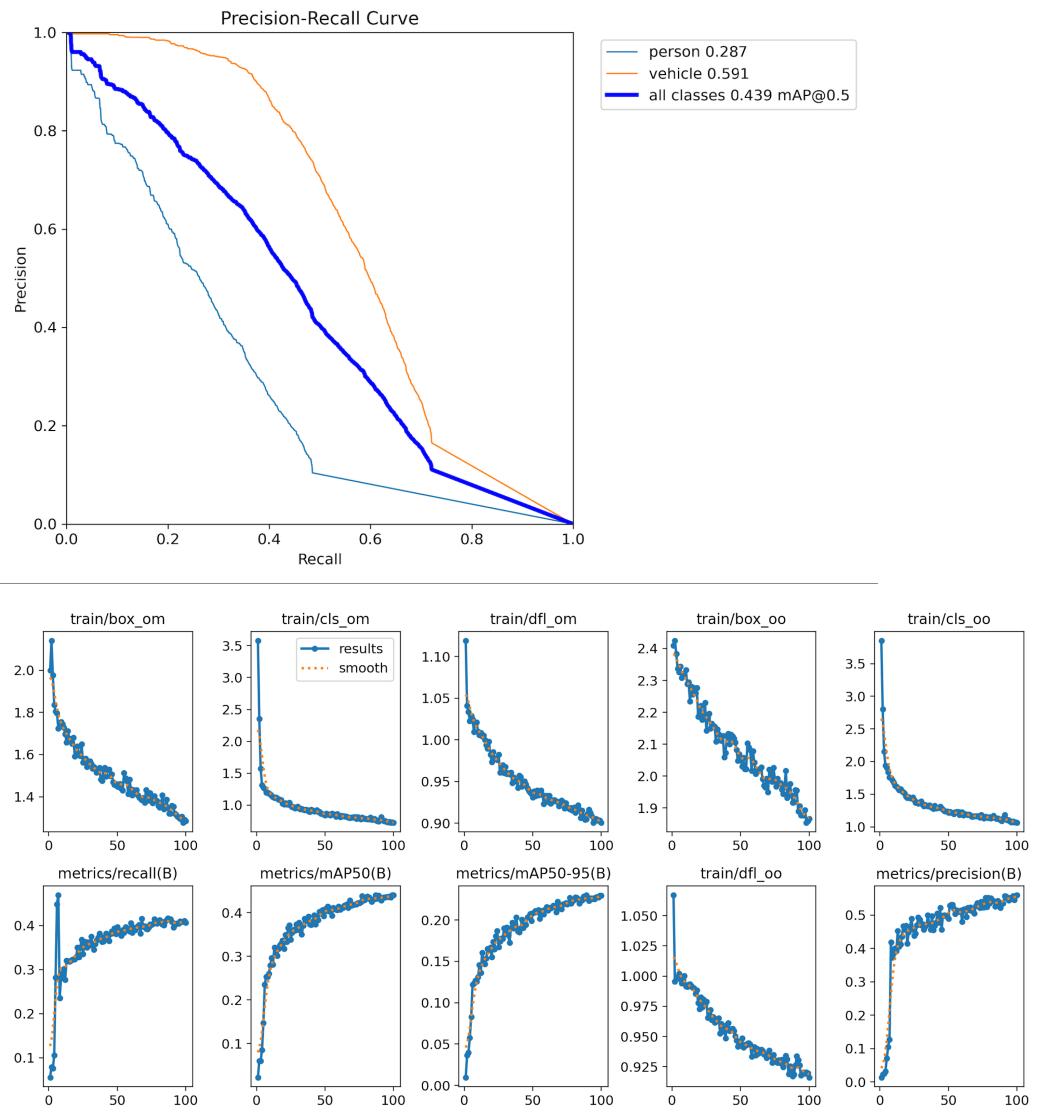




YOLOV10n run with custom labels 100 epoch batch size = 32

```
Validating runs/detect/train5/weights/best.pt...
Ultralytics YOLOv8.1.34 🚀 Python-3.10.12 torch-2.3.1+cu121 CUDA:0 (Tesla T4, 15102MiB)
YOLOv10n summary (fused): 285 layers, 2695196 parameters, 0 gradients, 8.2 GFLOPs
    Class   Images Instances   Box(P)      R      mAP50   mAP50-95: 100% 2/2 [00:03<00:00,  1.91s/it]
    all     100    6703    0.539    0.414    0.439    0.23
    person   100    2522    0.478    0.276    0.287    0.103
    vehicle  100    4181    0.6      0.552    0.591    0.357
Speed: 0.3ms preprocess, 3.0ms inference, 0.0ms loss, 0.0ms postprocess per image
```





MODEL COMPARISON

