

Importing the Libraries

```
In [1]: import warnings
warnings.filterwarnings('ignore')
```

```
In [2]: import torch
        from IPython.display import Image
        import shutil
        import os
        from random import choice
```

```
In [3]: device = torch.device("cuda:0" if torch.cuda.is_available() else "cpu")
device
```

```
Out[3]: device(type='cuda', index=0)
```

```
In [4]: ML_Model = []
precision = []
recall = []
mAP = []

#function to call for storing the results
def storeResults(model, a,b,c):
    ML_Model.append(model)
    precision.append(round(a, 3))
    recall.append(round(b, 3))
    mAP.append(round(c, 3))
```

Yolo v5s6

```
In [5]: !mkdir v5
```

```
In [6]: cd v5
```

/mnt/c/Users/TruProjects/Desktop/Truprojects/24-25/Yolo/24/v5

```
In [7]: from ultralytics import YOLO
# Load a model

# model = YOLO("yolo8m.yaml") # build a new model from scratch
model = YOLO("yolo5s6u.pt") # load a pretrained model (recommended for training)

# Use the model
results = model.train(data="/mnt/c/Users/TruProjects/Desktop/Truprojects/24-25/Yolo/24/yolo5/data.yaml", epochs=50, imgs=416) # train the
```

```
Downloading https://github.com/ultralytics/assets/releases/download/v8.3.0/yolov5s6u.pt (https://github.com/ultralytics/assets/releases/download/v8.3.0/yolov5s6u.pt) to 'yolov5s6u.pt'...
```

[illegible]

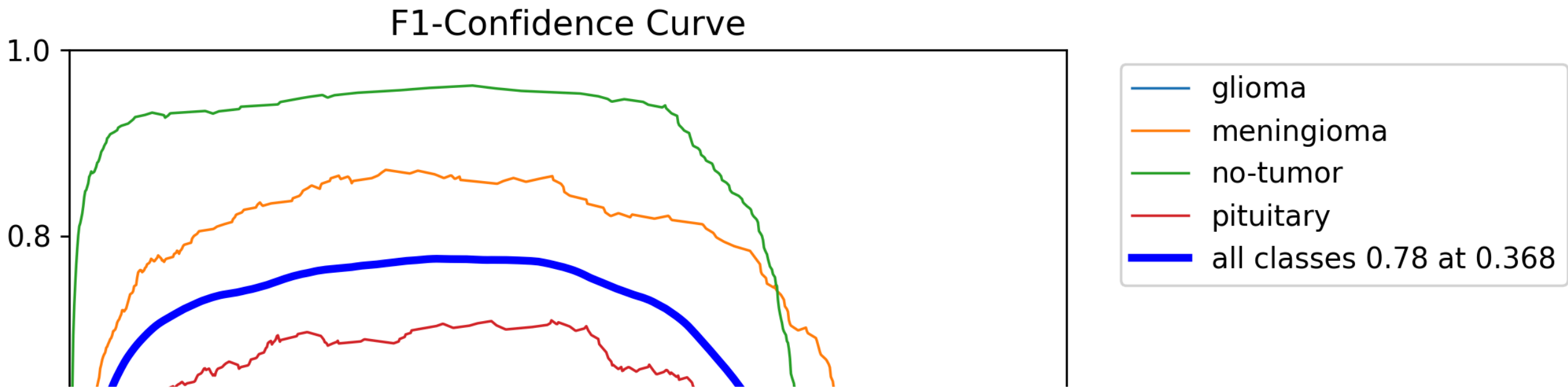
New <https://pypi.org/project/ultralytics/8.3.56> (<https://pypi.org/project/ultralytics/8.3.56>) available 🐍 Update with 'pip install -U ultralytics'
 Ultralytics 8.3.6 🚀 Python-3.10.9 torch-2.5.0+cu124 CUDA:0 (NVIDIA GeForce RTX 4090, 24564MiB)
engine/trainer: task=detect, mode=train, model=yolov5s6u.pt, data=/mnt/c/Users/TruProjects/Desktop/Truprojects/24-25/Yolo/24/yolov5/data.yaml, epochs=50, time=None, patience=100, batch=16, imgsz=416, save=True, save_period=-1, cache=False, device=None, workers=8, project=None, name=train, exist_ok=False, pretrained=True, optimizer=auto, verbose=True, seed=0, deterministic=True, single_cls=False, rect=False, cos_lr=False, close_mosaic=10, resume=False, amp=True, fraction=1.0, profile=False, freeze=None, multi_scale=False, overlap_mask=True, mask_ratio=4, dropout=0.0, val=True, split=val, save_json=False, save_hybrid=False, conf=None, iou=0.7, max_det=300, half=False, dnn=False, plots=True, source=None, vid_stride=1, stream_buffer=False, visualize=False, augment=False, agnostic_nms=False, classes=None, retina_masks=False, embed=None, show=False, save_frames=False, save_txt=False, save_conf=False, save_crop=False, show_labels=True, show_conf=True, show_boxes=True, line_width=None, format=torchscript, keras=False, optimize=False, int8=False, dynamic=False, simplify=True, opset=None, workspace=4, nms=False, lr0=0.01, lrf=0.01, momentum=0.937, weight_decay=0.0005, warmup_epochs=3.0, warmup_momentum=0.8, warmup_bias_lr=0.1, box=7.5, cls=0.5, df=1.5, pose=12.0, kobj=1.0, label_smoothing=0.0, nbs=64, hsv_h=0.015, hsv_s=0.7, hsv_v=0.4, degrees=0.0, translate=0.1, scale=0.5, shear=0.0, perspective=0.0, flipud=0.0, fliplr=0.5, bgr=0.0, mosaic=1.0, mixup=0.0, copy_paste=0.0, copy_paste_mode=flip, auto_augment=randaugment, erasing=0.4, crop_fraction=1.0, cfg=None, tracker=botsort.yaml, save_dir=runs/detect/train
 Overriding model.yaml nc=80 with nc=4

```
from n      params module                                arguments
```

```
In [5]: p_yol5 = 0.821
r_yol5 = 0.734
mAP_yol5 = 0.793

storeResults('Yolo v5s6',p_yol5,r_yol5,mAP_yol5)
```

```
In [8]: # displaying metrics for train data
from IPython.display import Image
from IPython.display import display
x = Image(filename='runs/detect/train/F1_curve.png')
y = Image(filename='runs/detect/train/PR_curve.png')
z = Image(filename='runs/detect/train/confusion_matrix.png')
display(x, y, z)
```



Yolo v5x6

```
from n      params module                                arguments
```

```
storeResults('Yolo v5x6',p_yol5,r_yol5,mAP_yolo5)
```

- glioma
- meningioma
- no-tumor
- pituitary
- all classes 0.74 at 0.316

```
/mnt/c/Users/TruProjects/Desktop/Truprojects/24-25/Yolo/24
```

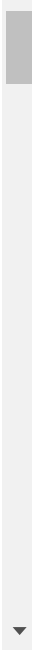
```
cd v8
```

/mnt/c/Users/TruProjects/Desktop/Truprojects/24-25/Yolo/24/v8

```
storeResults('Yolo v8',p_yol5,r_yol5,mAP_yolo5)
```

Downloaded from <http://ajphaphysocpharm.sagepub.com/> at 11:06 11 November 2014

Downloaded from <http://www.sagepub.com> at 10:06 11 May 2015

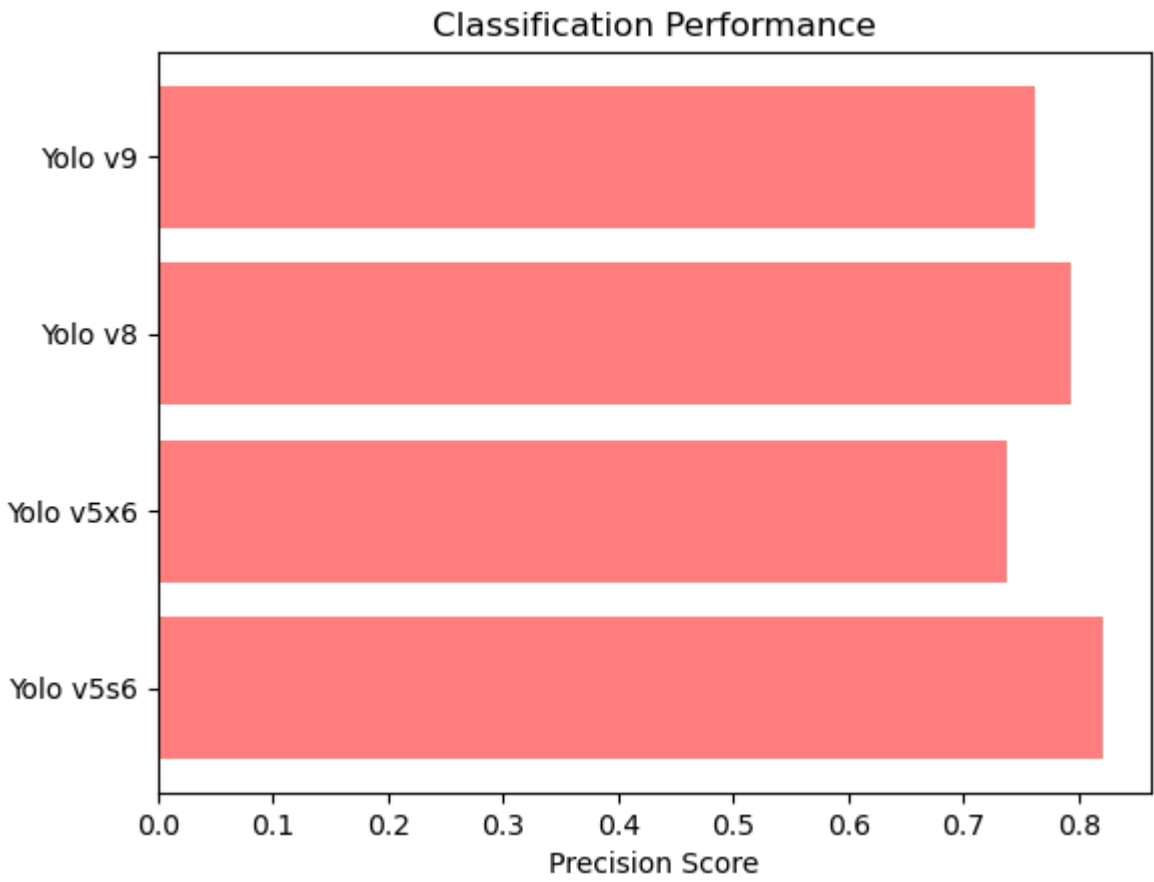


Graph

```
In [11]: import numpy as np
classifier = ML_Model
y_pos = np.arange(len(classifier))
```

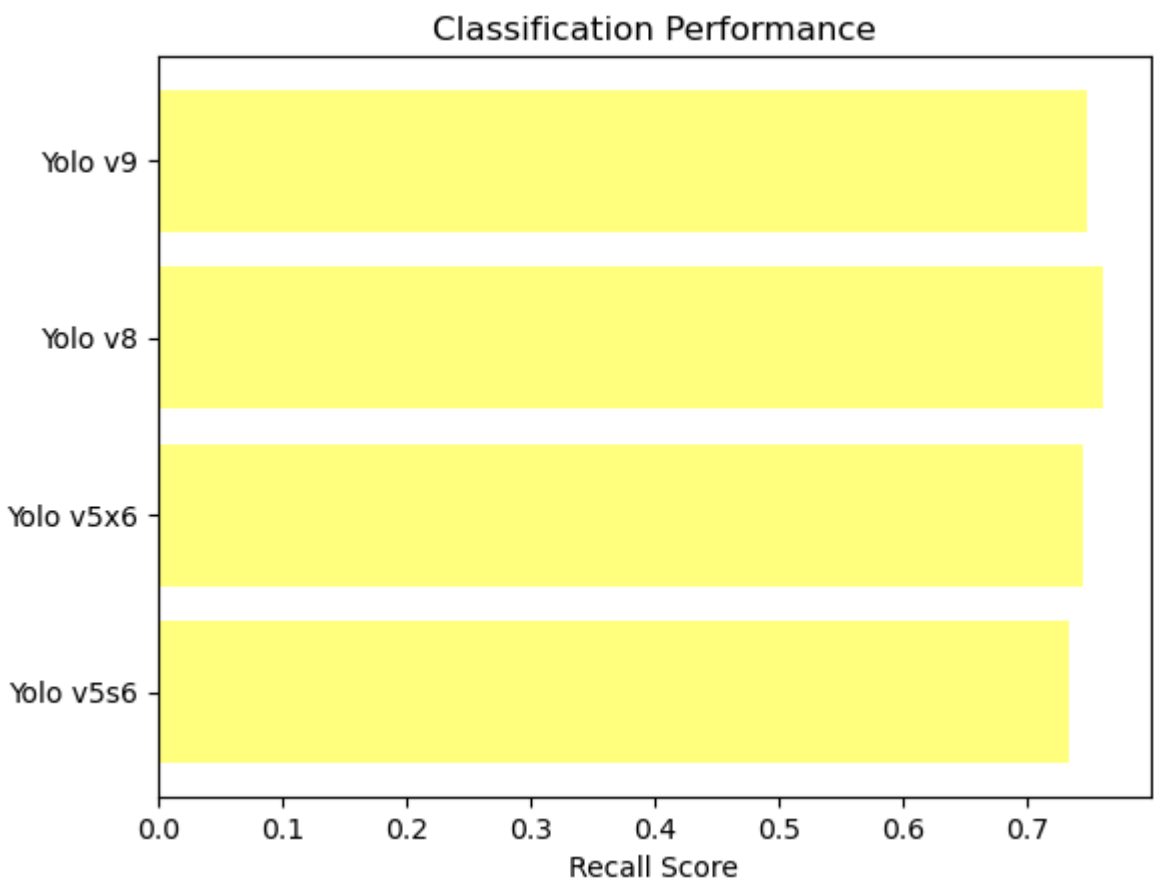
Precision

```
In [12]: import matplotlib.pyplot as plt2
plt2.barh(y_pos, precision, align='center', alpha=0.5,color='red')
plt2.yticks(y_pos, classifier)
plt2.xlabel('Precision Score')
plt2.title('Classification Performance')
plt2.show()
```



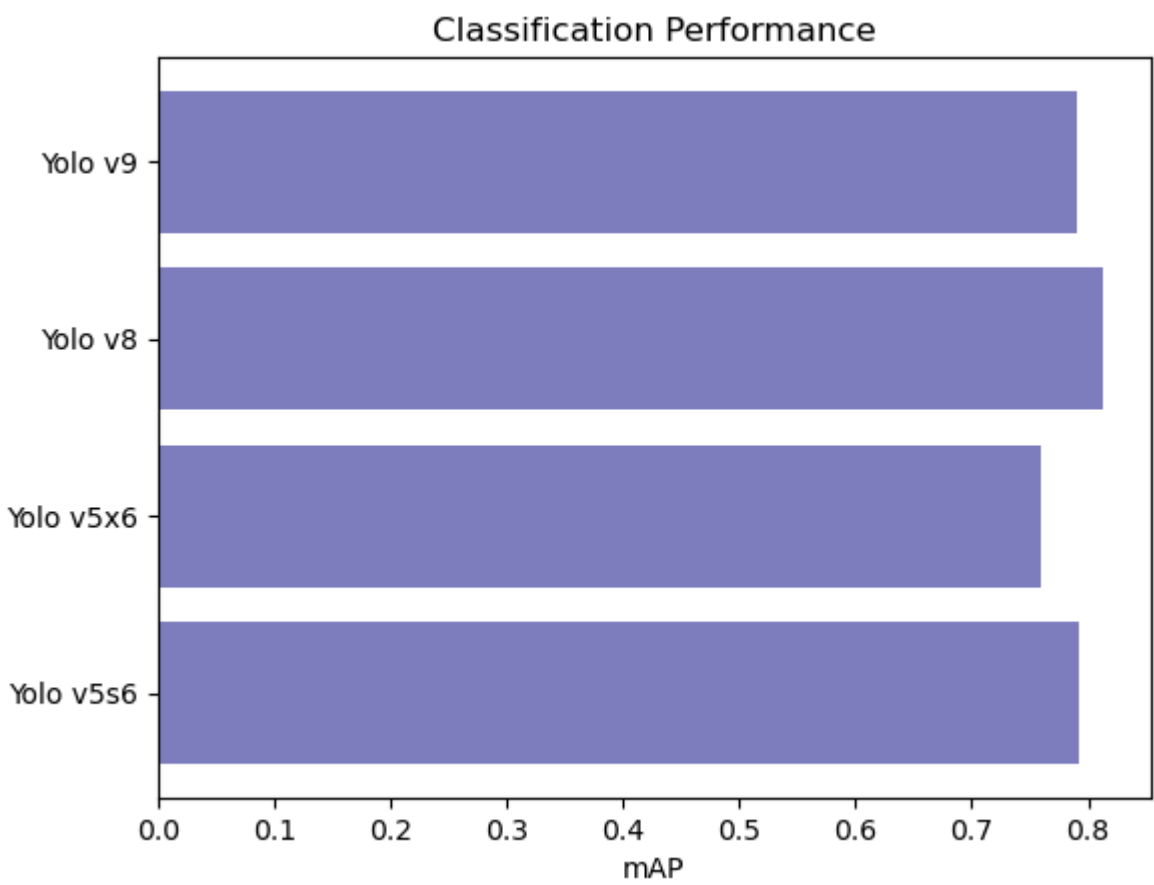
Recall

```
In [13]: plt2.barh(y_pos, recall, align='center', alpha=0.5,color='yellow')
plt2.yticks(y_pos, classifier)
plt2.xlabel('Recall Score')
plt2.title('Classification Performance')
plt2.show()
```



mAP

```
In [14]: plt2.barh(y_pos, mAP, align='center', alpha=0.5,color='navy')
plt2.yticks(y_pos, classifier)
plt2.xlabel('mAP')
plt2.title('Classification Performance')
plt2.show()
```



In []:

In []: