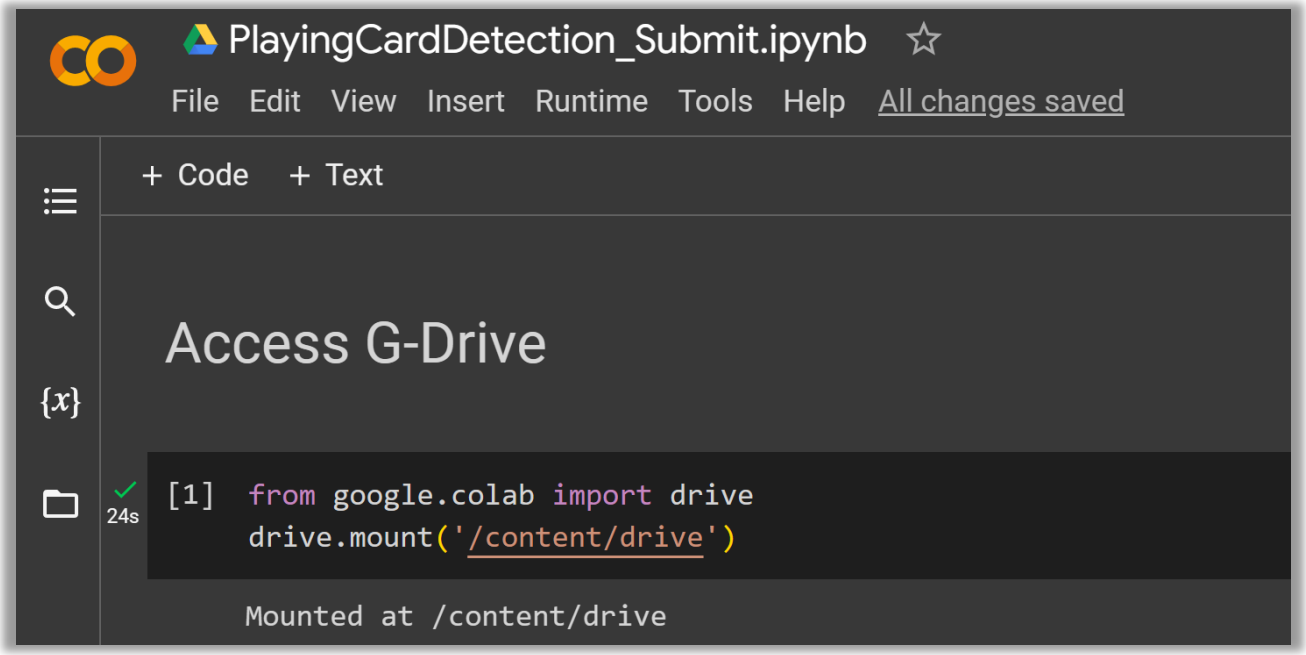
PLAYING CARDS DETECTION AND RECOGNITION

1. LOADING THE DATA FROM DRIVE

Google Colab was used for this project, for the same purpose, it is required that data should be present in the drive.

We need to mount the google drive, to ensure that, virtual machine in Colab has access to the dataset.



2. INSTALLING RESPECTIVE PACKAGES

Install Ultralytics and some other useful packages using 'pip' command in Colab, and 'pip3' if using a local machine.

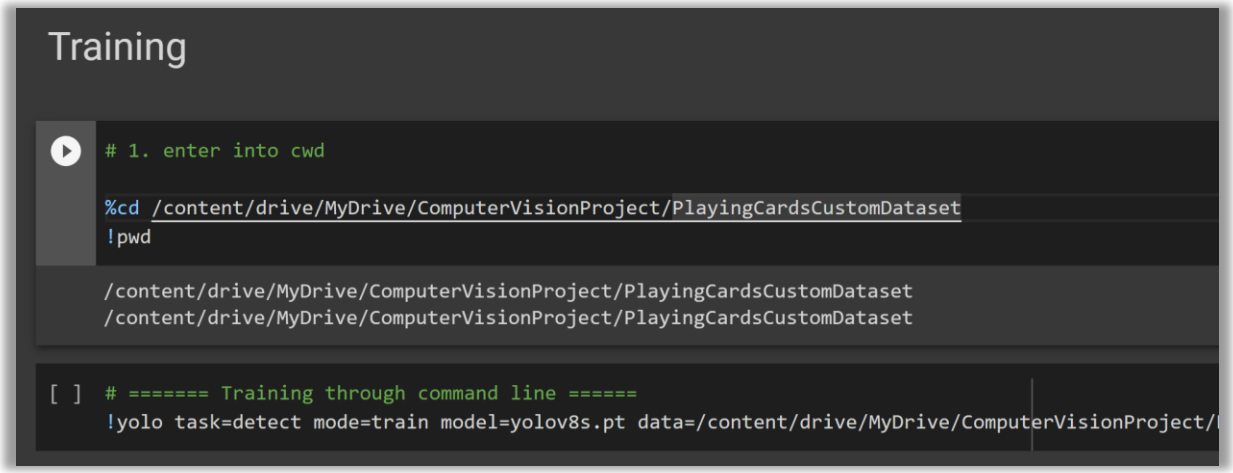
We require these packages to ensure that the project runs successfully without any obstacles/errors.

3. TRAINING and VALIDATION of THE DATASET

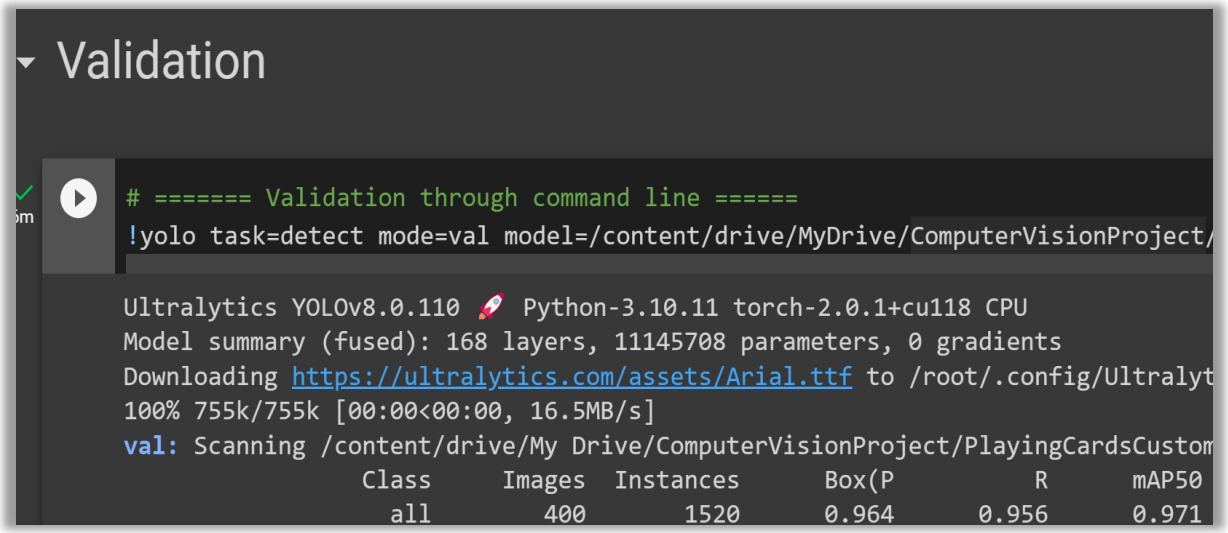
Before beginning to train the dataset, we must review the current working directory using the '!pwd' command. If the directory is not correct, the individual must inform the VM to be inside the required working directory, where the dataset is located.

If the working directory is not set, numerous issues may emerge.

After that, training of the dataset can be done.



Same process can be imitated for Validation of Dataset.



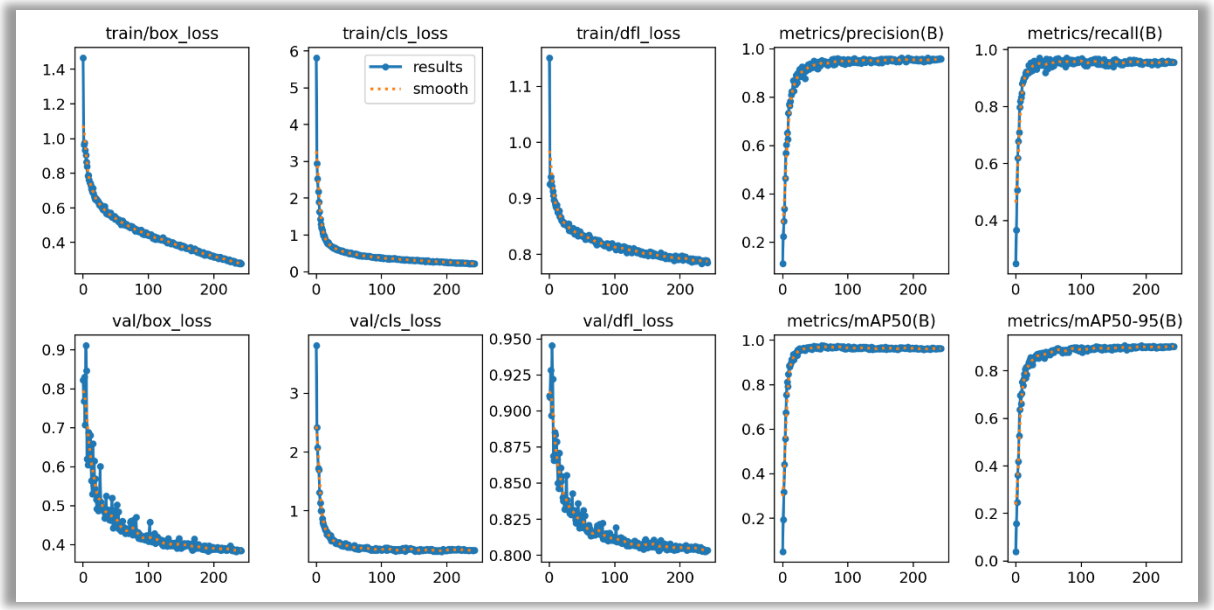
4. OUTPUT

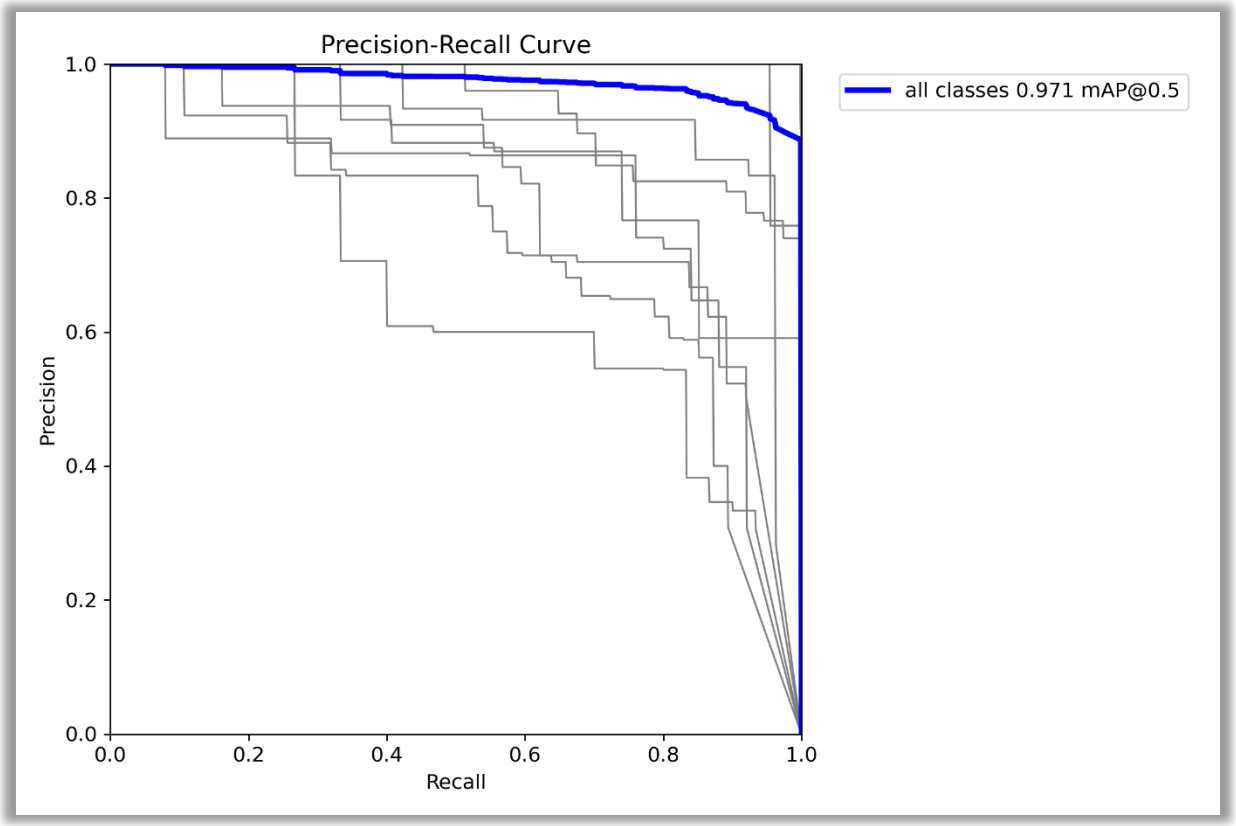
Below images portray the capability of model, with their respective loss, precision, recall, accuracy graphs.

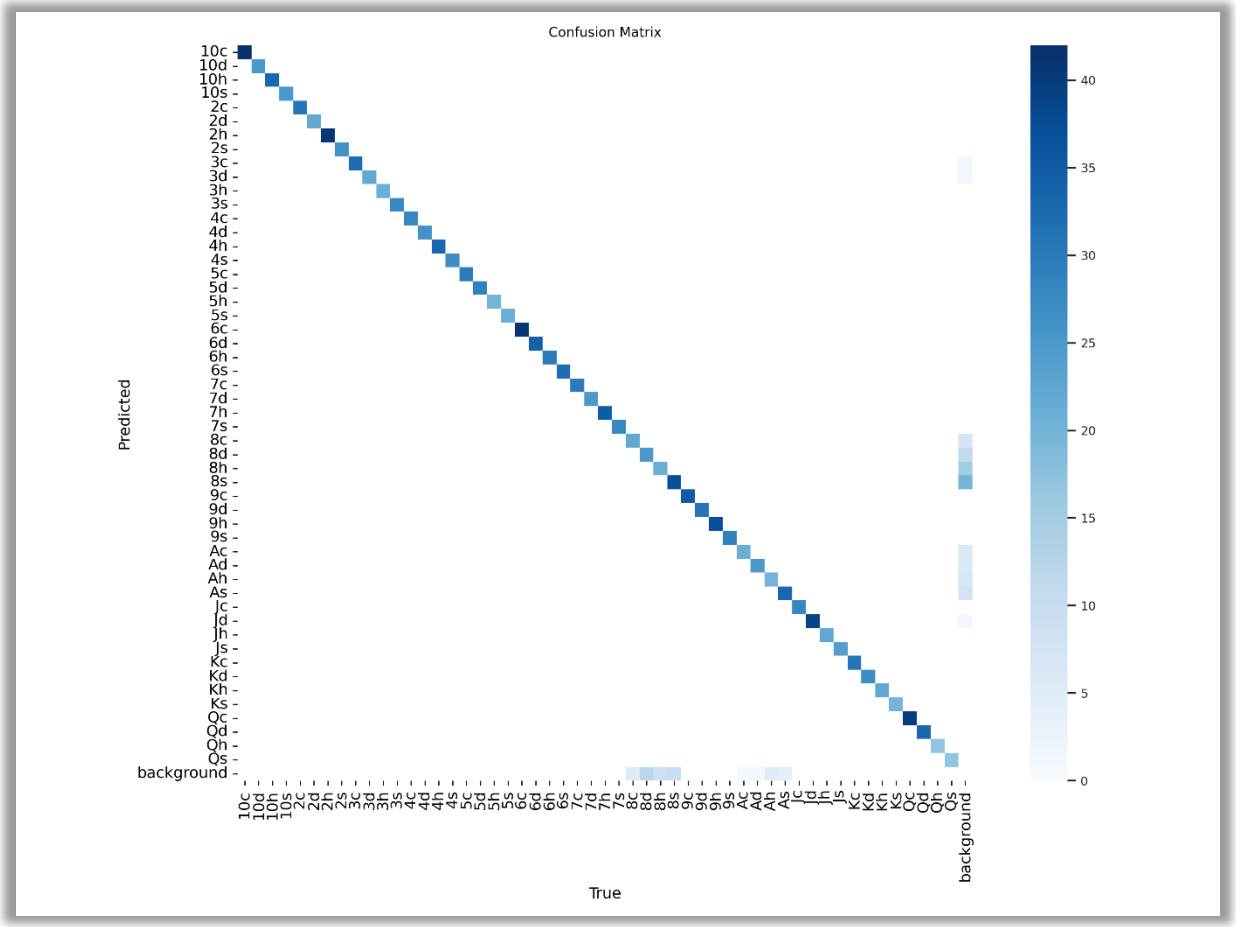
Confusion matrix graph is also present.

Some validation images are included, which can be viewed from the 'runs' folder, as well as all the above mentioned graphs.

All of this was done after training the model for **260 epochs**.




Precision-Recall Curve
all classes 0.971 mAP@0.5
Precision
Recall
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0


Confusion Matrix
Predicted
True
10c
10d
10h
10s
2c
2d
2h
2s
3c
3d
3h
3s
4c
4d
4h
4s
5c
5d
5h
5s
6c
6d
6h
6s
7c
7d
7h
7s
8c
8d
8h
8s
9c
9d
9h
9s
Ac
Ad
Ah
As
Jc
Jd
Jh
Js
Kc
Kd
Kh
Ks
Qc
Qd
Qh
Qs
background
40
35
30
25
20
15
10
5
0

Following two images show the detection of cards in the prediction cell of the notebook. The images can be viewed in the folder 'sample_testing_images'.