Yolov5 using Google Colab

Dataset Preparation:

Step 1: Extract frames from video and annotate using https://roboflow.com/

-Download the dataset from there. Please make sure there is no space in the folder name.

Step 2: Download YoloV5 Repo from github: https://github.com/ultralytics/yolov5

Step 3: Environment Setup in google Colab

a) Go to : https://colab.research.google.com/

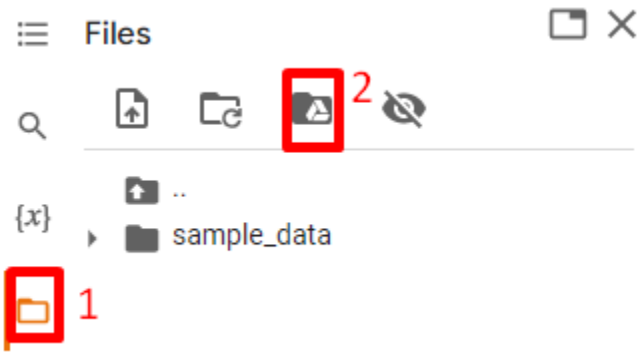
b) Go to File. Open a new notebook.

c) Go to Edit>Notebook Settings>

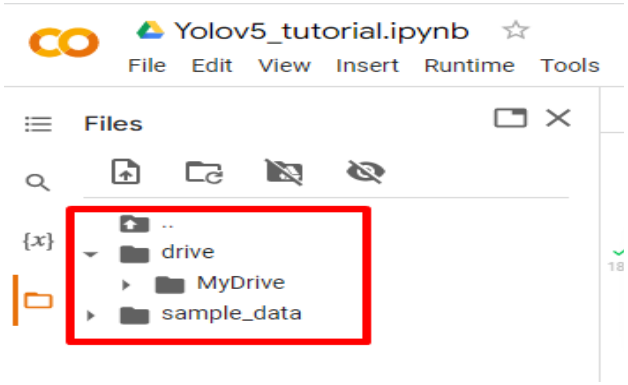
Hardware accelerator: GPU

GPU class: Standard

d) Click Files and then mount your google dirve



e) Now your window should look like



f) Execute the following commad

```
from google.colab import drive
drive.mount('/content/drive')
```

This line mounts our Google Drive to the specified path in the Colab runtime environment. By doing this, you can access your Google Drive files and folders within our Colab Notebook as if they were part of the local file system. The window should look like the following:

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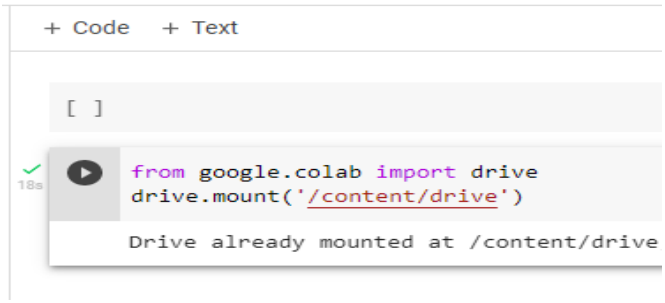
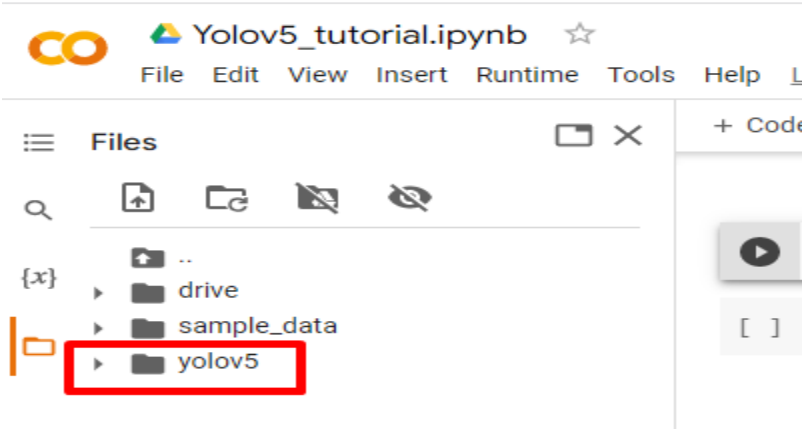


g) Clone the YoloV5 repository to your google colab.
Click: +Code and paste the following code in the new cell.

```
!git clone https://github.com/ultralytics/yolov5.git
```

Refresh the page you can see a folder a name: yoloV5



h) Change the relative path of the training, validation and testing images folder path of ***data.yaml*** located at your dataset folder.
i) copy the path of any of the test/train/valid folder

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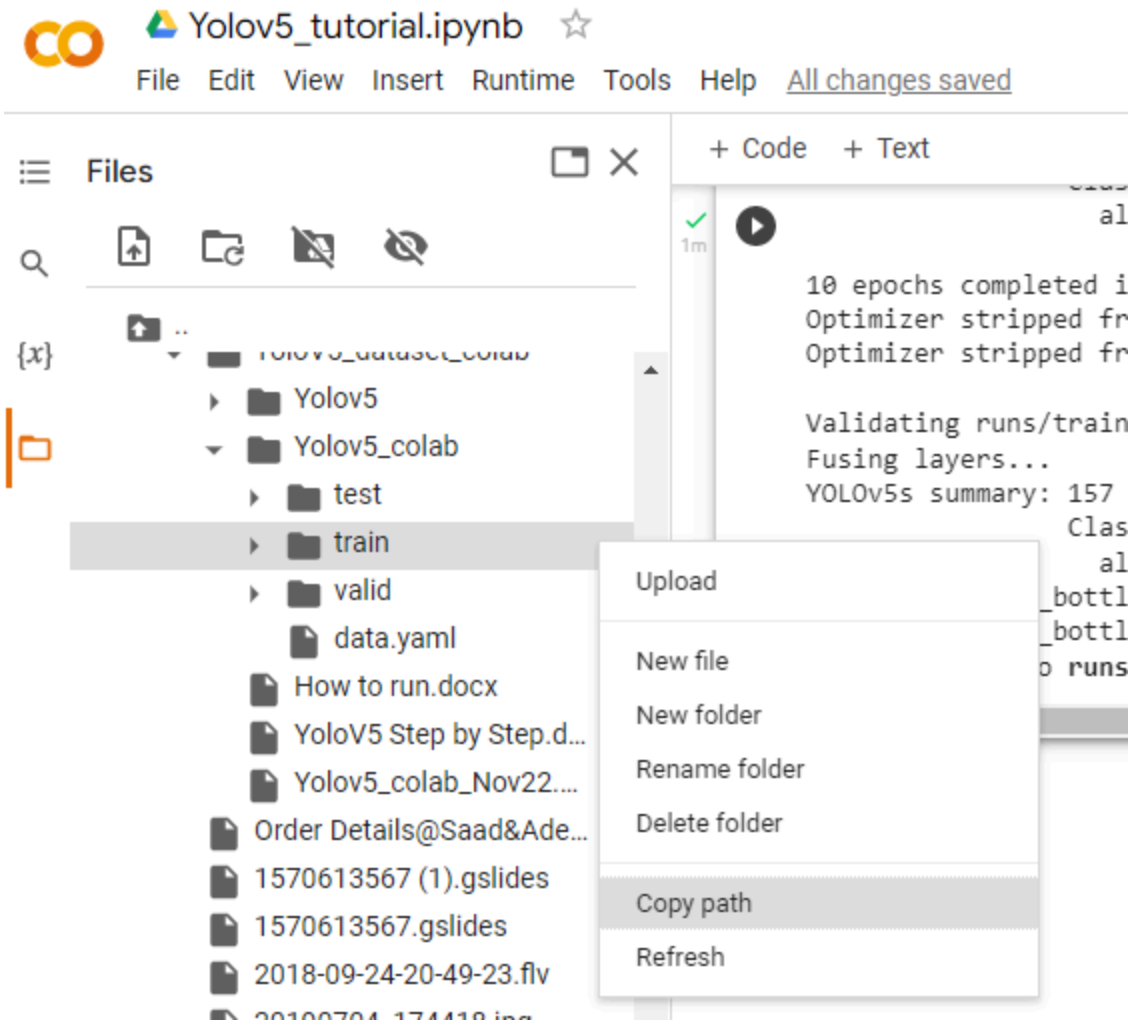
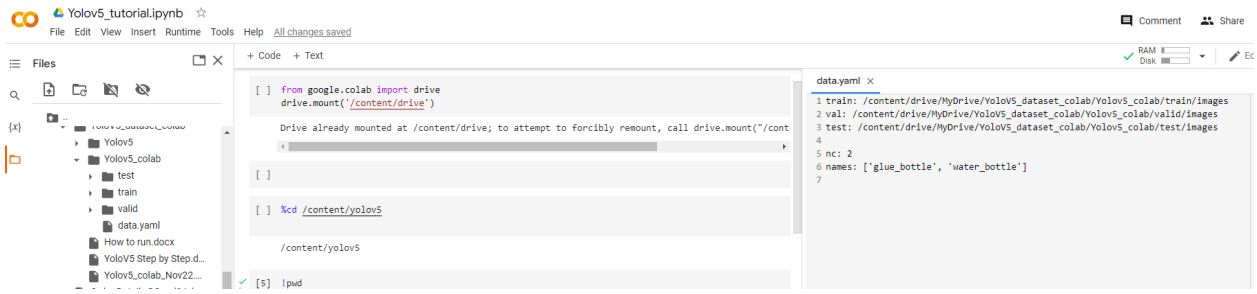


ii) Open the data.yaml file and edit the relative path of the train/valid/test



- Take new Code cell by clicking +Code and pase and run the following code one by one

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Step 4: Training Process

- Take individual cells for the following commands

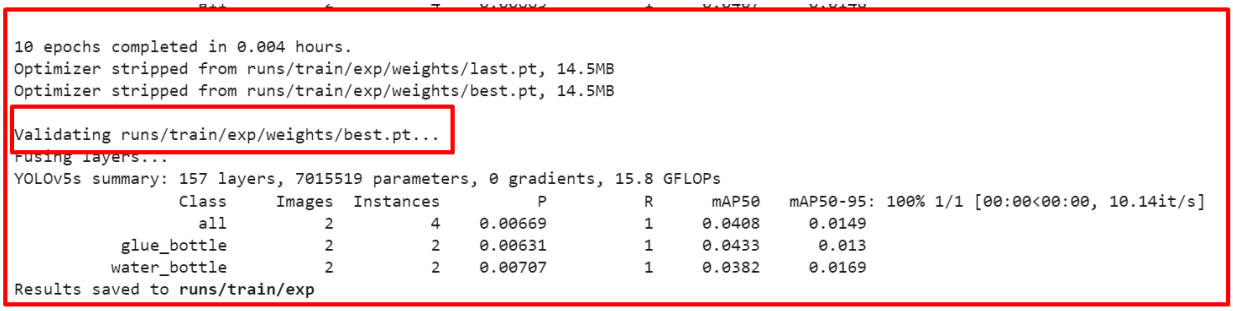
```
%cd /content/yolov5/
```

```
!python train.py --batch 4 --epochs 10 --data path_of_the_data.yaml
--cfg ./models/yolov5s.yaml

***There are several models here. Small, Medium, Large, Extra large.
Choose any of them based on your need.

For example:
!python train.py --batch 4 --epochs 10 --data
/content/drive/MyDrive/YoloV5_dataset_colab/Yolov5_colab/data.yaml --cfg
./models/yolov5s.yaml
```

Step 5: Testing/inference: `detect.py` runs inference on a variety of sources.

-Look for the final **best.pt** and copy&paste inside yolov5 folder

- The location of best.pt can be found immediately after the training process is done.



```
10 epochs completed in 0.004 hours.
Optimizer stripped from runs/train/exp/weights/last.pt, 14.5MB
Optimizer stripped from runs/train/exp/weights/best.pt, 14.5MB

Validating runs/train/exp/weights/best.pt...
Fusing layers...
YOLOv5s summary: 157 layers, 7015519 parameters, 0 gradients, 15.8 GFLOPs
                 Class     Images  Instances          P          R      mAP50   mAP50-95: 100% 1/1 [00:00<00:00, 10.14it/s]
                   all          2          4    0.00669          1     0.0408     0.0149
           glue_bottle          2          2    0.00631          1     0.0433      0.013
         water_bottle           2          2    0.00707          1     0.0382     0.0169
Results saved to runs/train/exp
```

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Run the following command:

python3 detect.py --weights best.pt --source 0 #webcam

```
                            img.jpg  # image
                            vid.mp4  # video
                            path/  # directory
                            path/*.jpg  # glob
                            'https://youtu.be/Zgi9g1ksQHc'  # YouTube
                            'rtsp://example.com/media.mp4'  # RTSP, RTMP, HTTP
```

stream exp