Mask Detection

Done by Sai Chandra Reddy

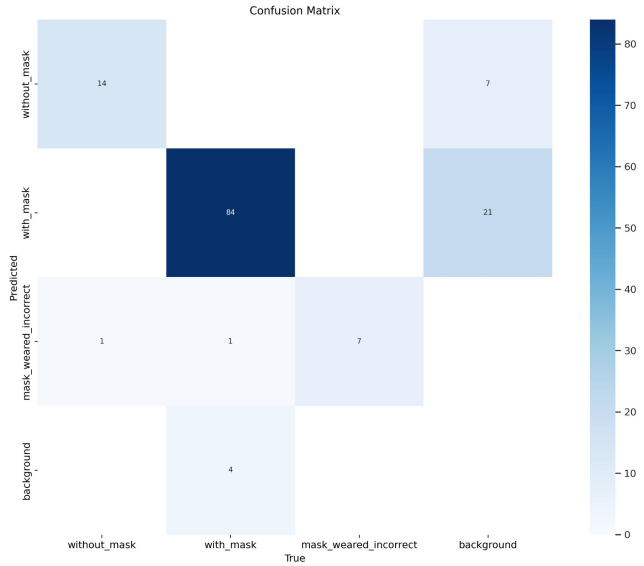
DataSet

- We have got around 880 images
- The images are divided into the three categories
  - **Mask - 3000 +**
  - **Without Mask - 550 +**
  - **Partial Mask - 150 +**
- Above count images are instances.
- Right side images are the examples of the mask and without mask
- Annotation data i got in XML format converted into txt format

Model Training

- Model Used to training the images are YOLO
- Yolo (You only looks once) is the Object detection model
- Trained on the 100 epochs around 1 hour on colab gpu

Confusion Matrix



Metrics Values

```
Validating runs/detect/train/weights/best.pt...
Ultralytics YOLOv8.1.31 🚀 Python-3.10.12 torch-2.2.1+cu121 CUDA:0 (Tesla T4, 15102MiB)
Model summary (fused): 168 layers, 3006233 parameters, 0 gradients, 8.1 GFLOPs
                 Class     Images  Instances      Box(P          R      mAP50  mAP50-95): 100%|          | 1/1 [00:00
                   all         31        111      0.962      0.936      0.982      0.732
          without_mask         31         15      0.921      0.933      0.988      0.707
             with_mask         31         89      0.963      0.888      0.963      0.735
  mask_weared_incorrect         31          7          1      0.985      0.995      0.754
Speed: 0.2ms preprocess, 2.9ms inference, 0.0ms loss, 1.2ms postprocess per image
```

Application

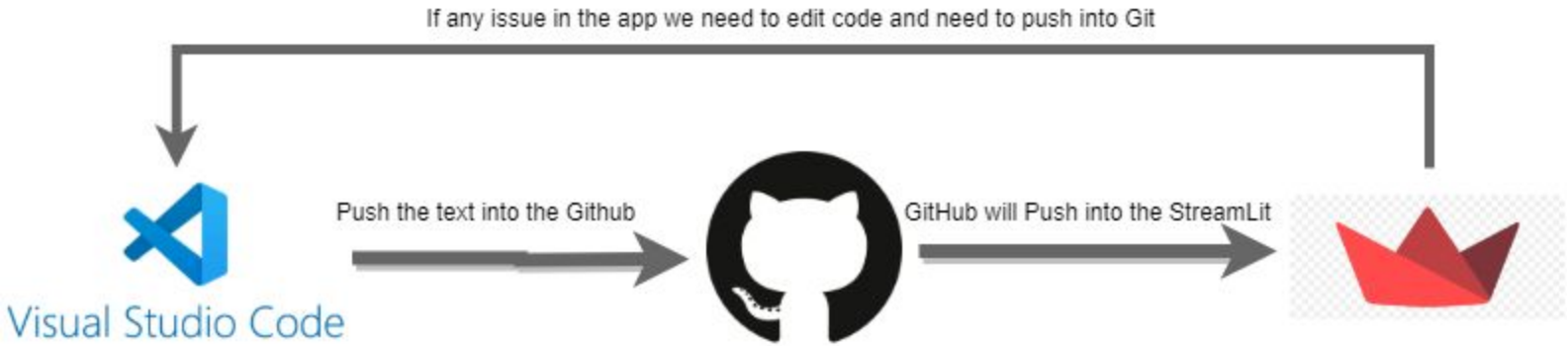
- For Building the Application i have used the **streamlit**
- **Streamlit** is very light weighted app building framework in python
- Deployed the app on the **streamlit apps hub**
- App takes images as the input and return the predicted images as the output
- CI/CD automatically handled by the streamlit app, when we have pushed out updated code it will reflect on the app immediately

App Link

https://maskdetections.streamlit.app/

Note : Loading takes some time please be patience (around 10 sec) for first time

FlowChart for the Application



Note : DataBase will be maintained the Streamlit itself, so no need to worry about it

Final Results

Input to the model

Output from the Model

Thank You