

Mask Detection

Done by Sai Chandra Reddy

DataSet

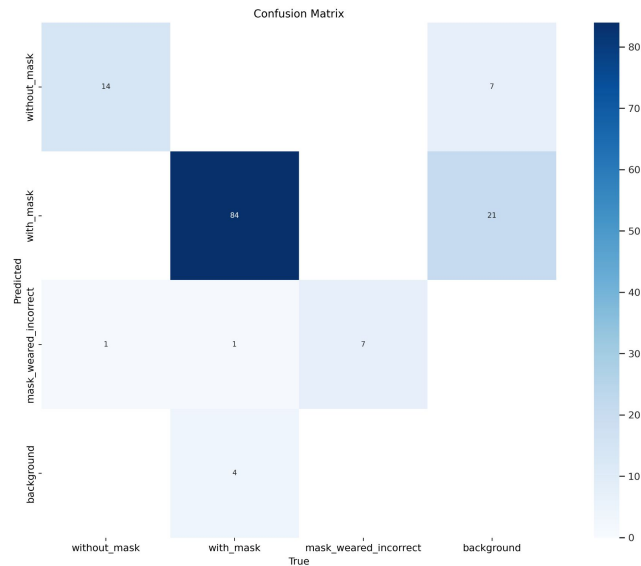
- We have got around 880 images
- The images are divided into the three categories
 - **Mask - 3000 +**
 - **Without Mask - 550 +**
 - **Partial Mask - 150 +**
- Above count images are instances.
- Right side images are the examples of the mask and without mask
- Annotation data i got in XML format converted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

Results saved to runs/detect/train

Application

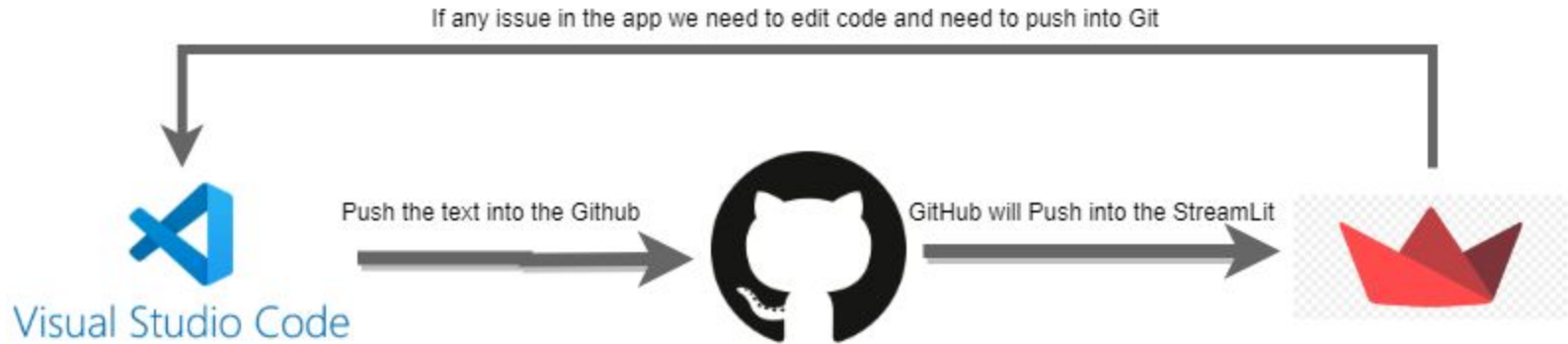
- For Building the Application i have used the **streamlit**
- **Streamlit** is very light weighted app building framework in python
- Deployed the app on the **streamlit apps hub**
- App takes images as the input and return the predicted images as the output
- CI/CD automatically handled by the streamlit 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

Thank You