ASL Letter Detector: Object Detection

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Problem Statement

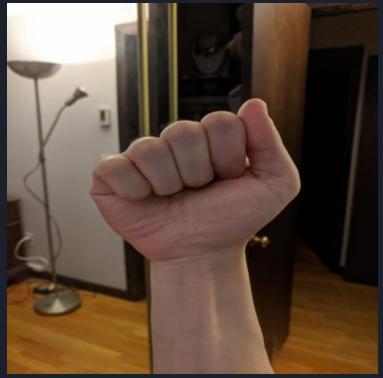
- ASL (American Sign Language)
- Object Detection
- Learning App for Practicing
- Real Time Detection

Dataset (ASL Images)

- RoboFlow
- 1728 Images
- 416 x 416 pixels
- Some of the Augmentations:
 - Flip (Horizontal)
 - Crop
 - \circ Rotation (-5° to +5°)
 - Blur (Up to 1.25px)

Image Examples from Dataset

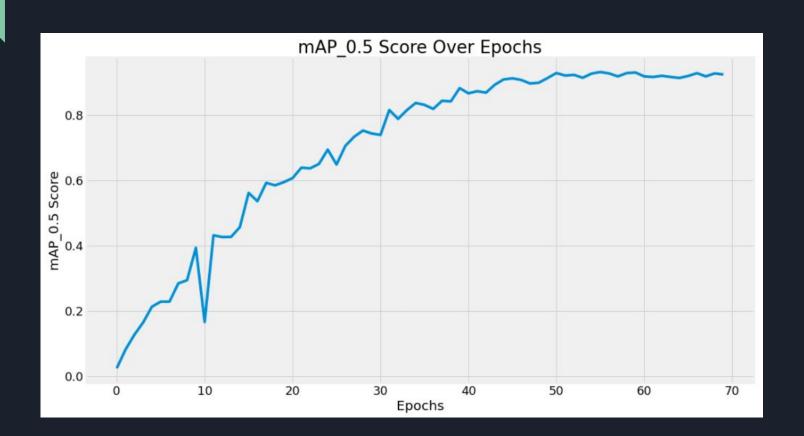




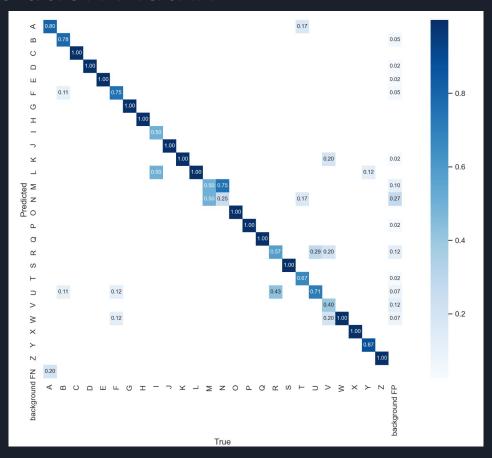
Yolov5 - Modeling

- Yolov5s
 - Small Model
 - Good for Smaller Datasets
 - Efficient for Model Size
- Open-Source Object Detection
- Trained on COCO dataset
- Great for Model Refinement

Model Evaluation



Correlation Matrix



Conclusion & Recommendations

Final Metrics:

• mAP_0.5 : 0.925

• Precision : 0.793

• Recall : 0.937

Streamlit