

TRAFFIC VEHICLE DETECTION SYSTEM

USING YOLOV8 AND COMPUTER VISION

INTERNSHIP ASSESSMENT PROJECT

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PROBLEM STATEMENT :

BUILD A COMPUTER VISION SYSTEM THAT CAN AUTOMATICALLY DETECT, CLASSIFY, AND COUNT VEHICLES IN TRAFFIC IMAGES. YOUR SYSTEM SHOULD IDENTIFY CARS, TRUCKS, AND MOTORCYCLES WITH HIGH ACCURACY AND PROVIDE VISUAL FEEDBACK THROUGH BOUNDING BOXES AND CONFIDENCE SCORES.

- Monitoring traffic manually is inefficient and error-prone.
- Need for automated vehicle detection systems for:
- Smart traffic management
- Congestion control
- Data-driven urban planning

OBJECTIVES

- image & video can be uploaded
- output shows bounding box ,specific count,confidence score



- design a system which detect , classify type and count the vehicle



MODEL AND APPROACH

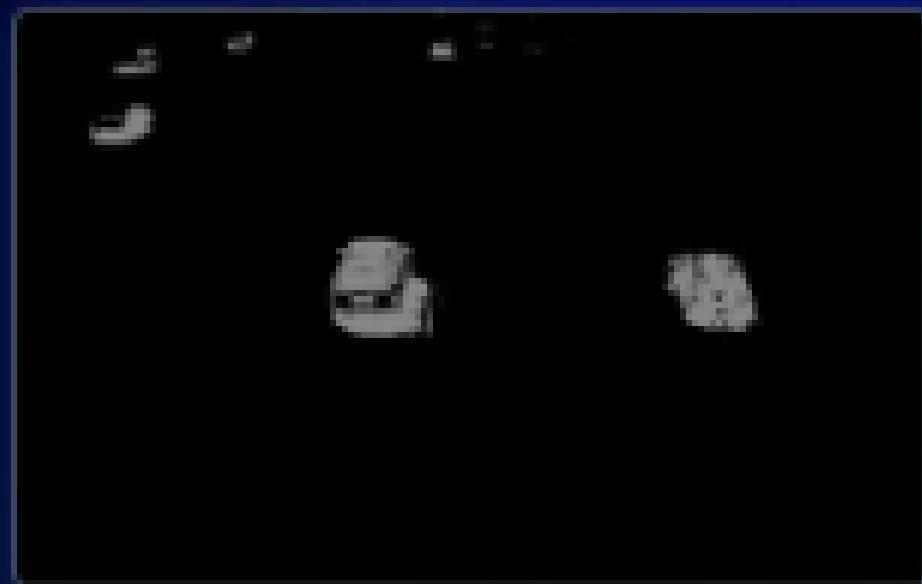
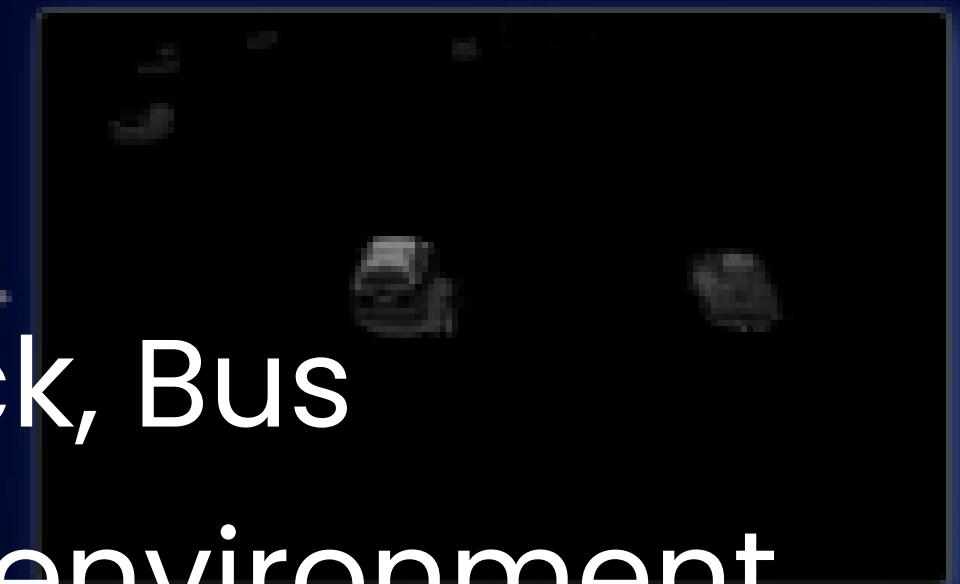
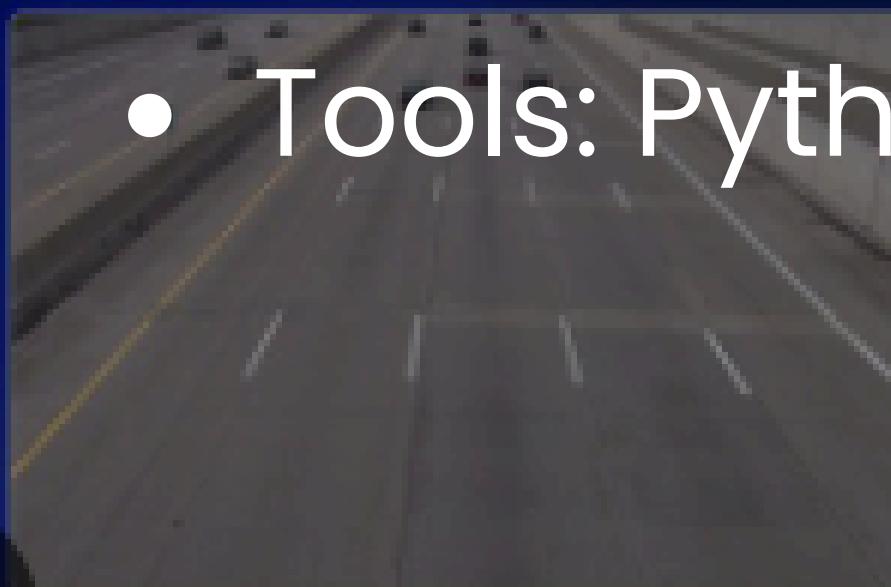
- Model: YOLOv8 Medium (yolov8m-1280)
- Pre-trained Dataset: COCO
- Steps:
- Load image → Inference with YOLOv8
- Filter vehicle classes (car, motorcycle, truck, bus)
- Apply Non-Maximum Suppression (NMS)
- Annotate image + count vehicles

IMPLEMENTATION DETAILS

Current frame

- Libraries: OpenCV, NumPy, Supervision, Inference
- Detection Threshold: 0.3
- NMS Threshold: 0.4
- Classes Detected:
- Car, Motorcycle, Truck, Bus
- Tools: Python, Colab environment

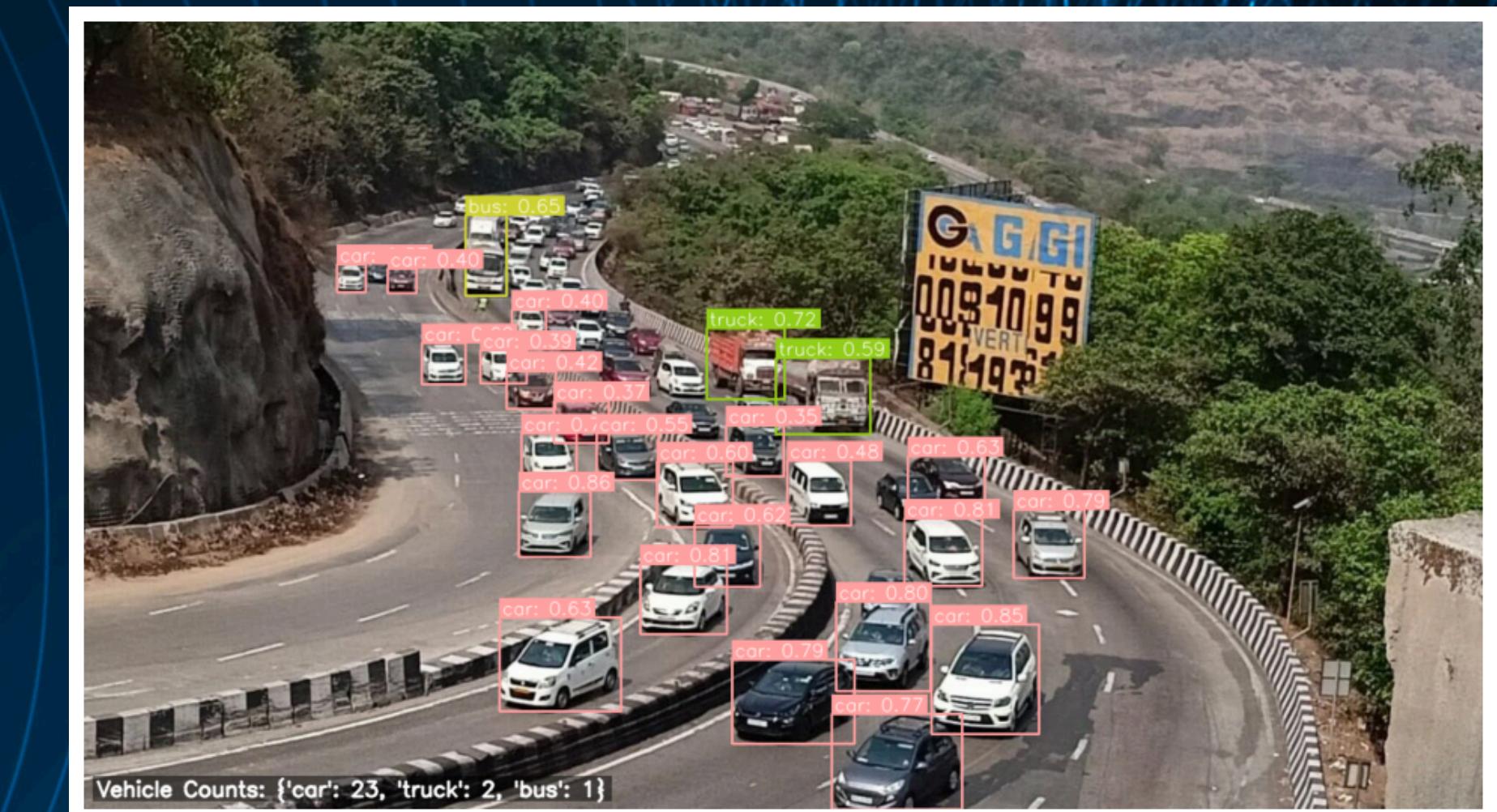
Foreground mask



INPUT & OUTPUT VISUALIZATION



INPUT IMAGE



OUTPUT IMAGE

THANK YOU