

Traffic Flow Analysis

Mini Project Week 6

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PROBLEM STATEMENT

In cities, growing traffic congestion causes:

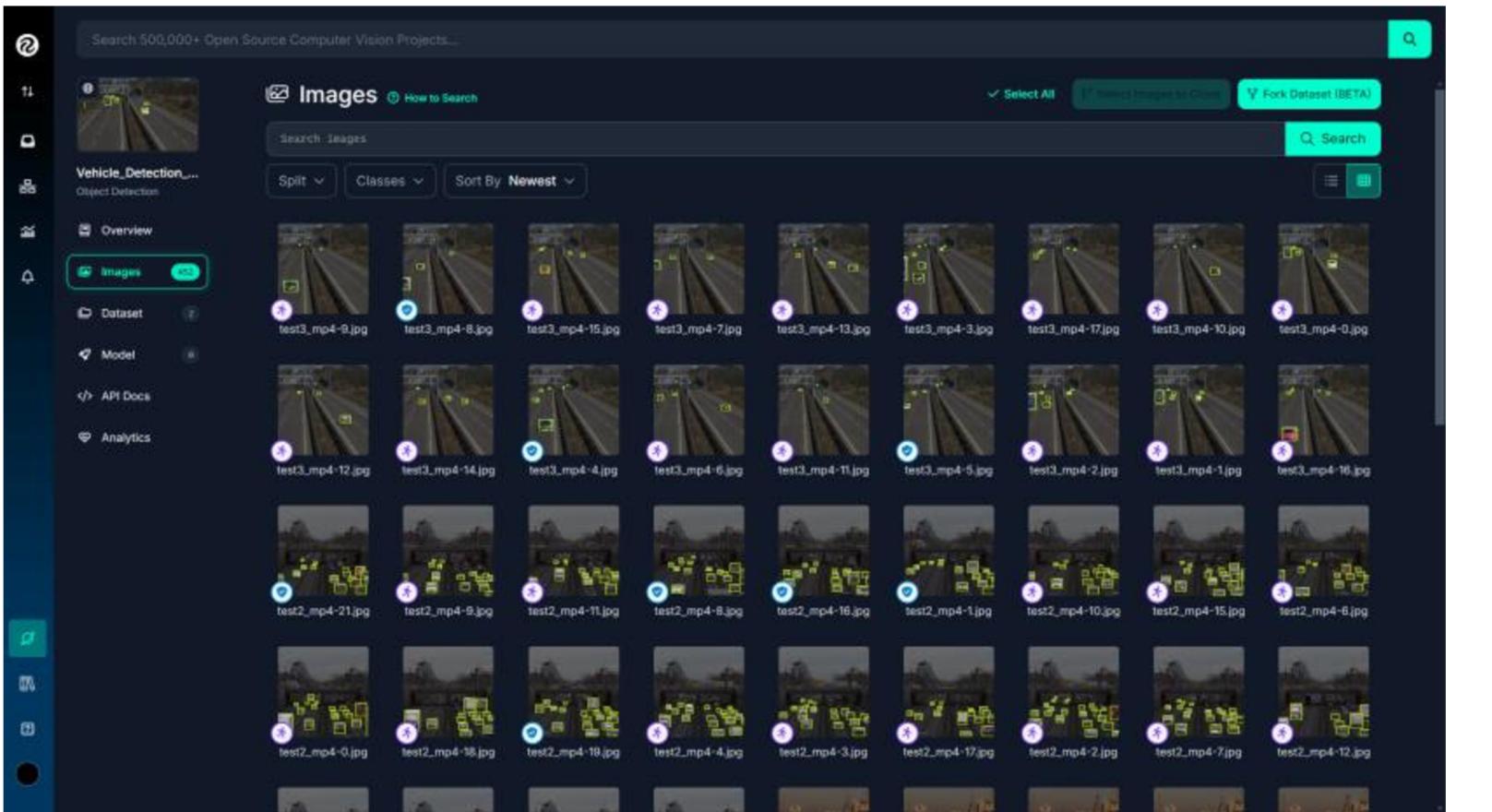
- longer commute times.
- Increased anger among drivers.

OBJECTIVES

Develop an AI model that can:

- Count the number of vehicles on the road.
- Detect traffic density in real-time to understand congestion levels.
- Track vehicle and movement to identify patterns.

EDA



Reference

- Number of training images: 536
- Number of validation: 90

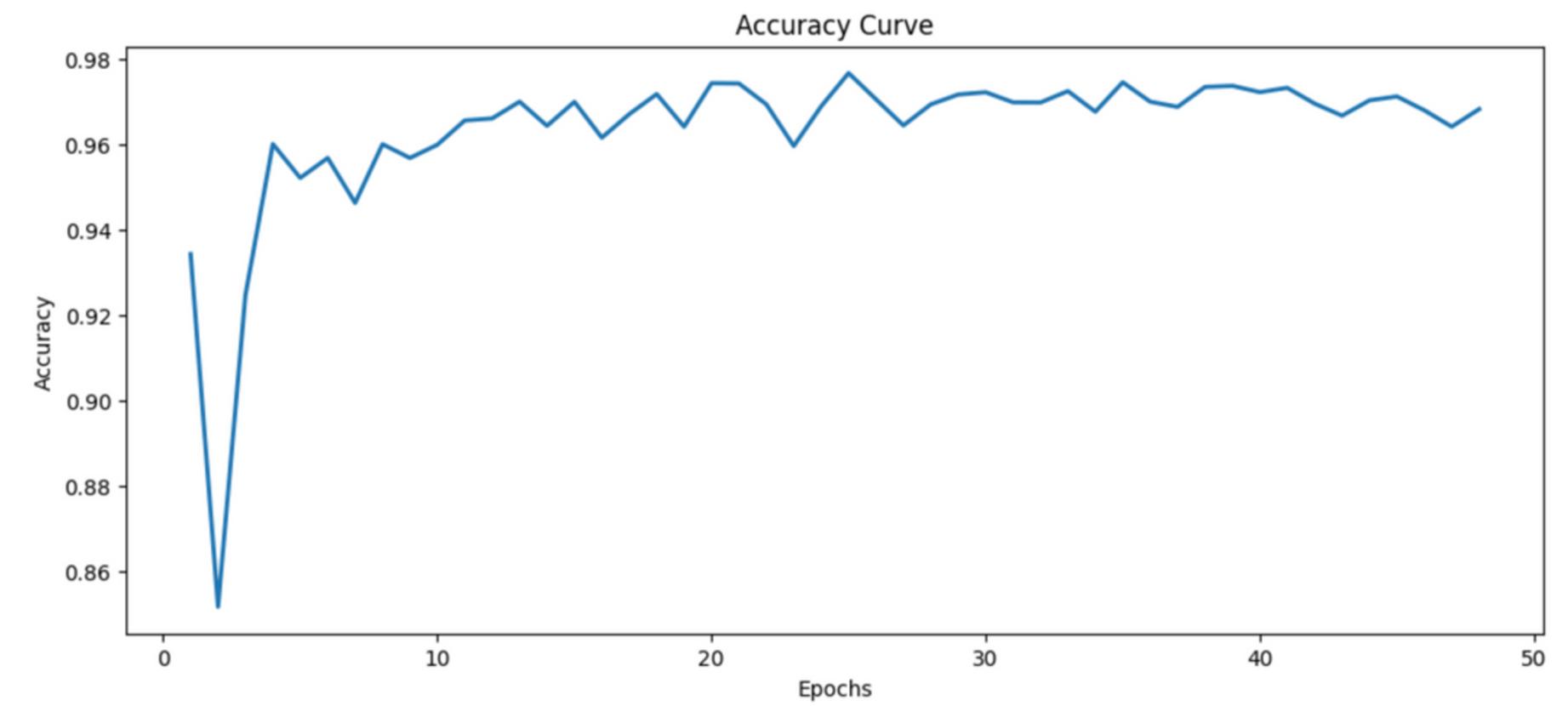
METHODOLOGY AND APPROACH

- Problem Identification and Data Gathering
- Exploratory Data Analysis (EDA)
- Model Development and Training
- Model Evaluation

EVALUATION

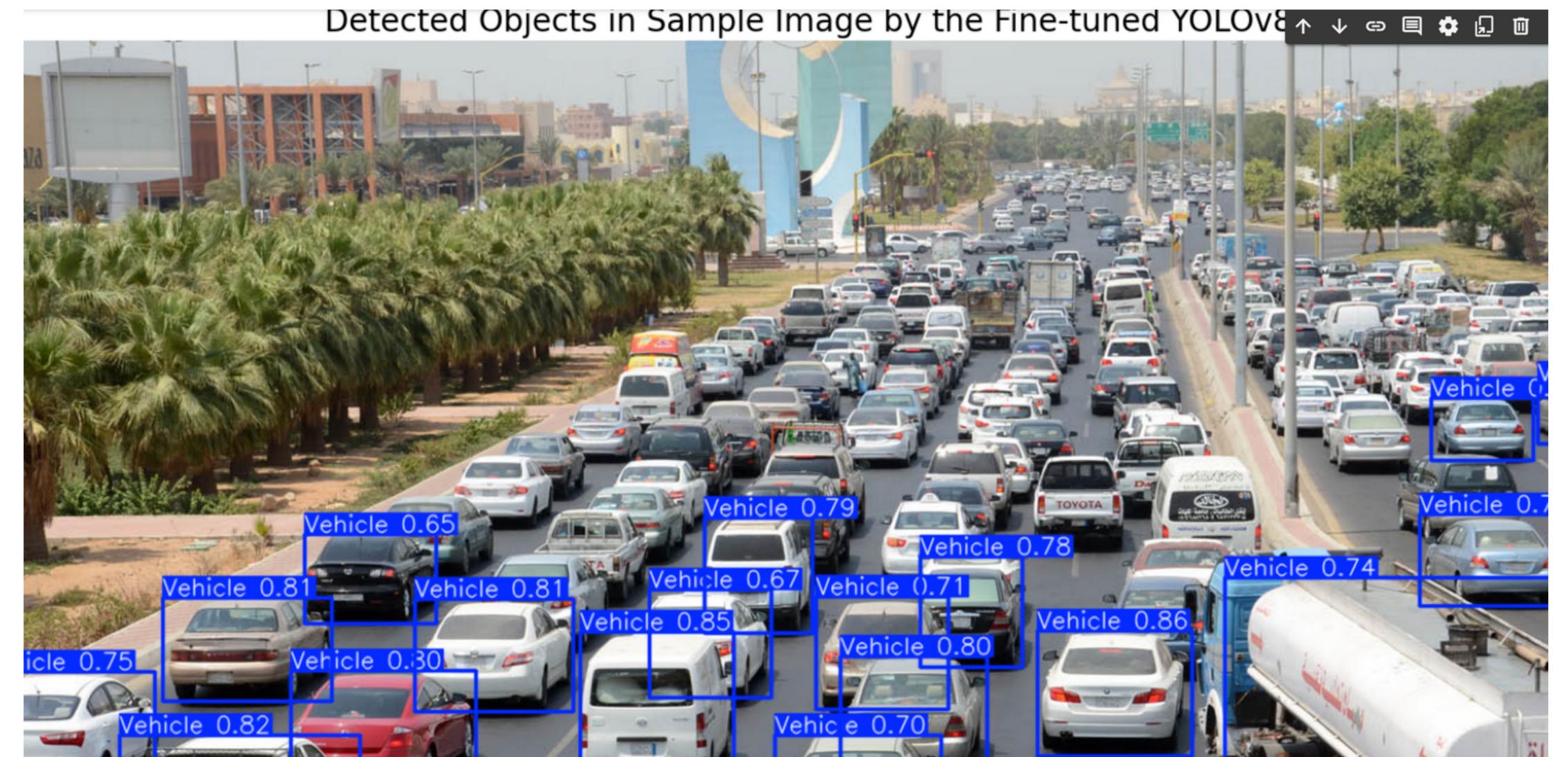
Metric Value	
metrics/precision(B)	0.918
metrics/recall(B)	0.924
metrics/mAP50(B)	0.973
metrics/mAP50-95(B)	0.745
fitness	0.768

RESULTS



EVALUATION

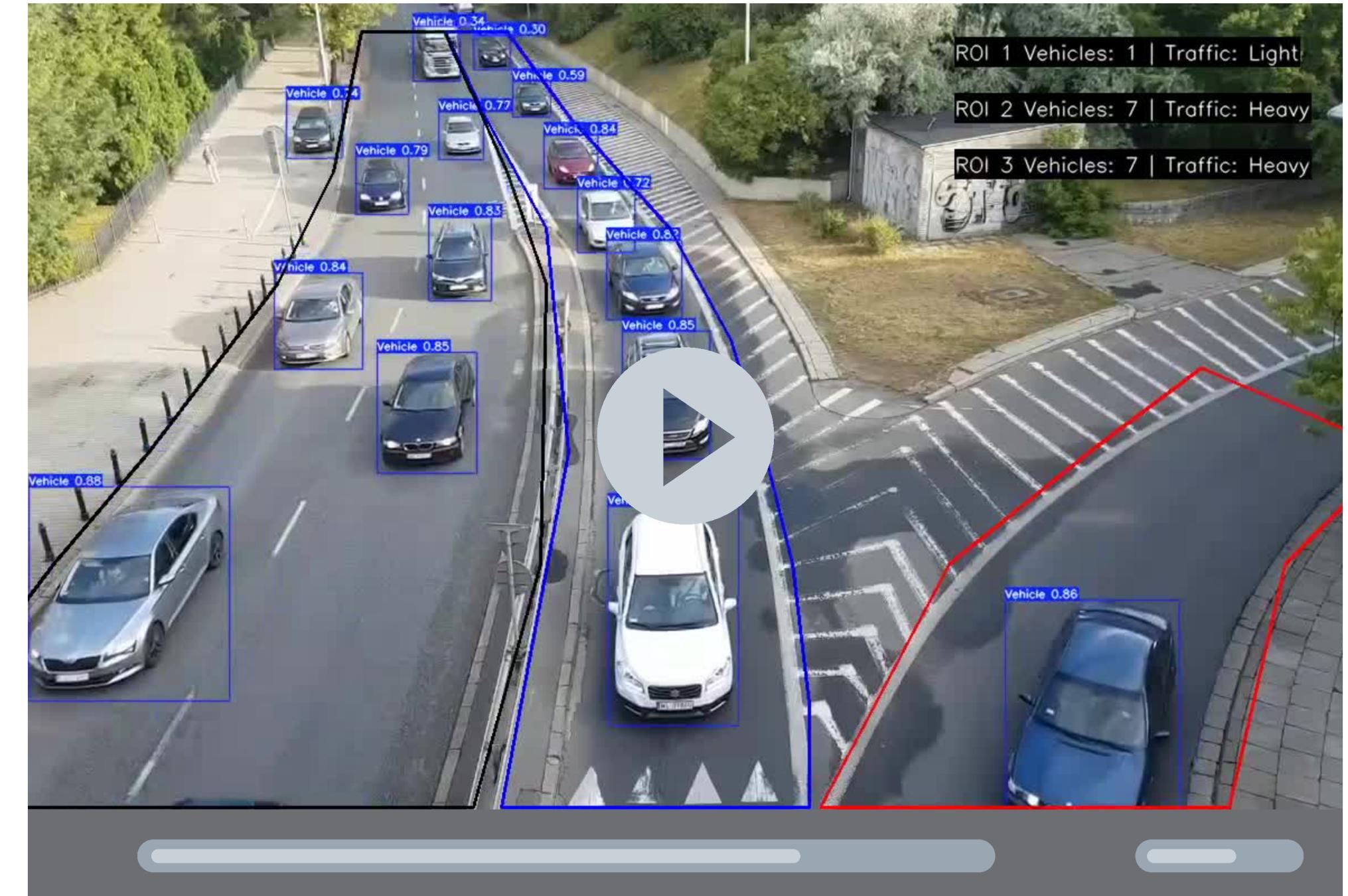
RESULTS



Detected Objects in Sample Image by the Fine-tuned YOLOv8 Model

EVALUATION

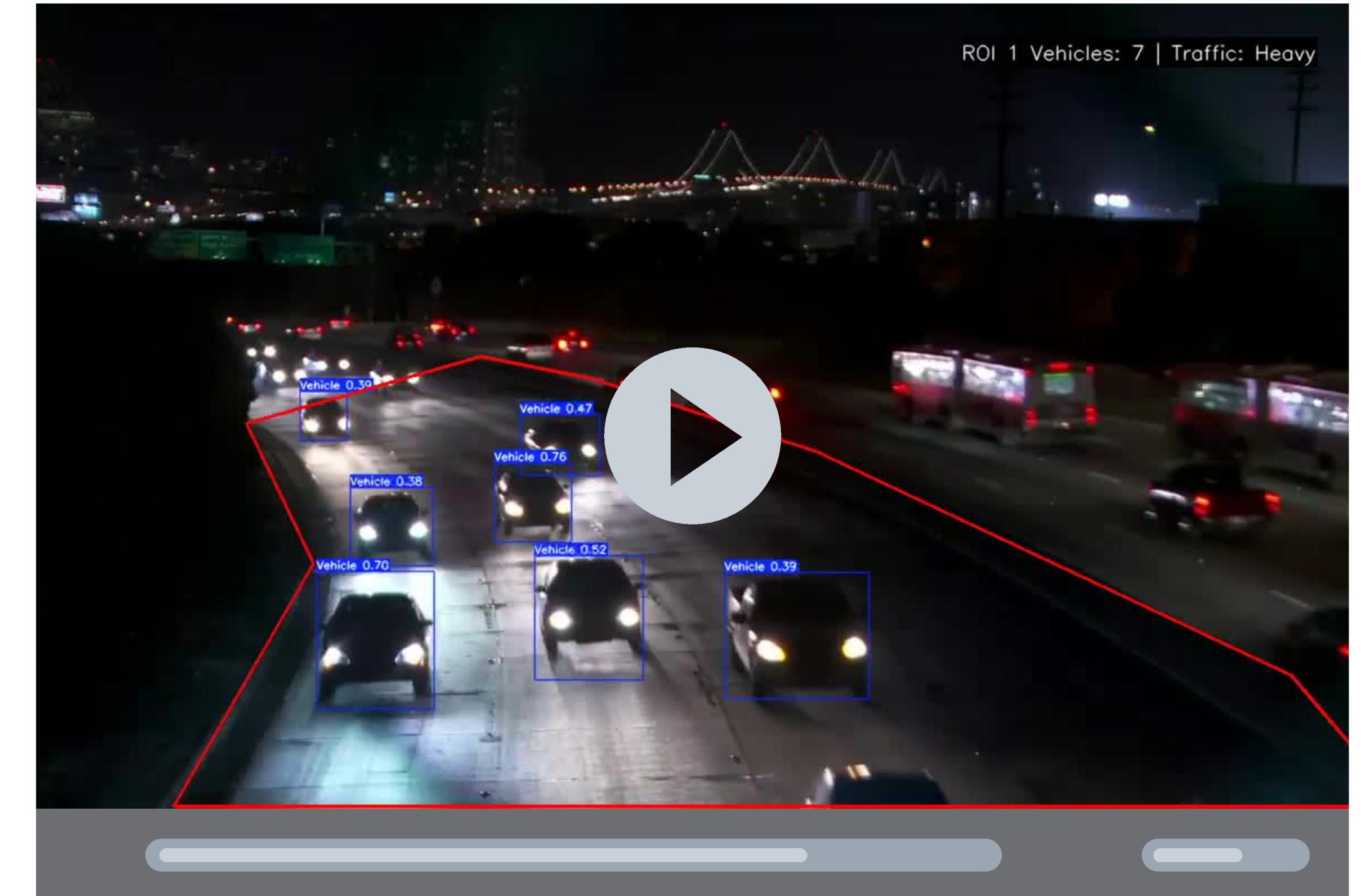
RESULTS



The results of traffic analysis using the YOLO model, Day.

EVALUATION

RESULTS



The results of traffic analysis using the YOLO model, Night.

CHALLENGES

- Select the best video for analysis.
- Determine the coordinates of the Region of Interest (ROI).
- Handle memory crashes.

TEAM MEMBERS

● **Raniyah Alghamdi**

● **Maryam Jathmi**

● **Abdullah AlOwais.**

● **Ziyad Alenzi**

THANKYOU

Don't hesitate to ask any questions!