Final Project	
Course Code: CPE313	**Program:** BS Computer Engineering
Course Title: Advanced Machine Learning and Deep Learning	**Date Performed:** 5/5/2025
Section: CPE32S3	**Date Submitted:**
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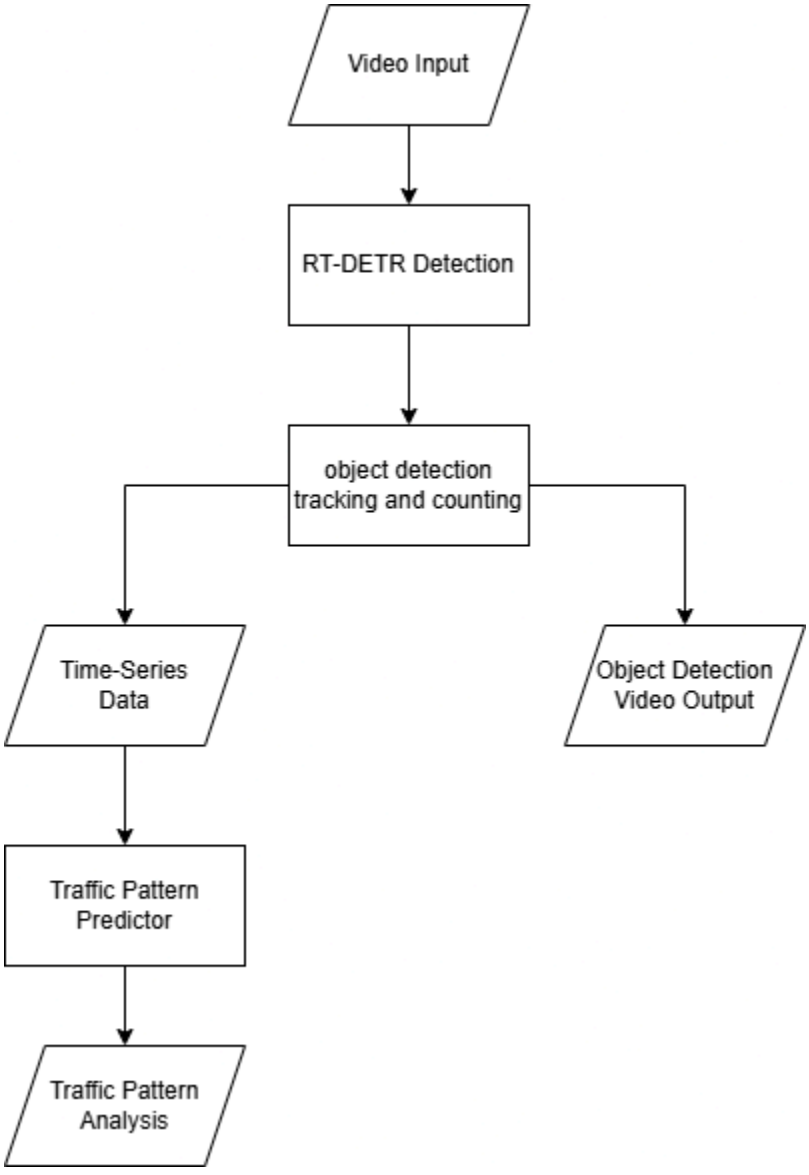
Problem

Monitoring traffic in some areas can be challenging for government offices like the MMDA and DOTr, especially when visibility or traffic flow is unpredictable. To address this, we propose a deep learning system that detects vehicles and pedestrians and provides traffic pattern analysis.

Solution

Multi-Object Detection and Traffic Pattern Analysis for Optimized Traffic Monitoring



Vehicle and Pedestrian Detection: Detect multiple vehicles and the pedestrians

Dataset: BDD100K P2 Dhaka

- Detect vehicles and pedestrians based on a video input
- Provide a counting of detected vehicles and pedestrians

Model 1	Model 2	Model 3
YOLO 11	*RT-DETR*	*RetinaNet*

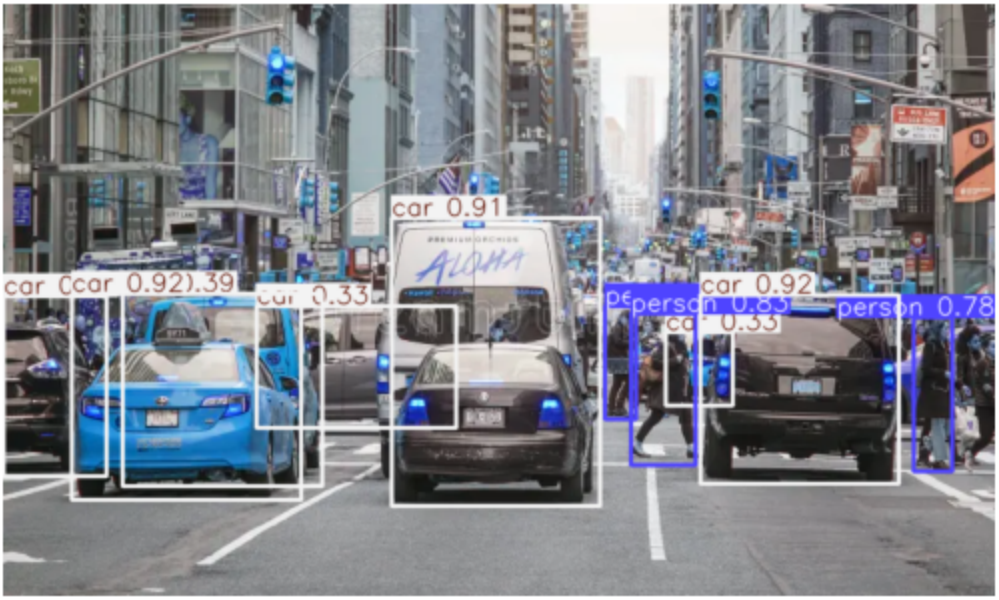
Training and Validation Results

Test Image:

YOLO 11 Model

Epochs	mAP50	map50-95
10	0.812	0.548

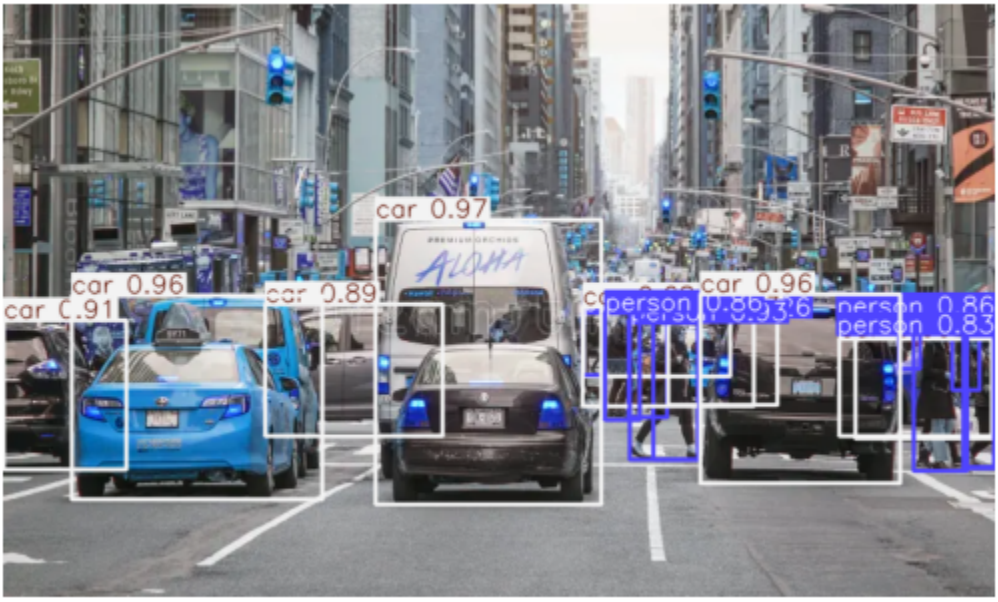
Test Detection at 0 confidence :



RT-DETR Model

Epochs	mAP50	map50-95
10	0.831	0.568

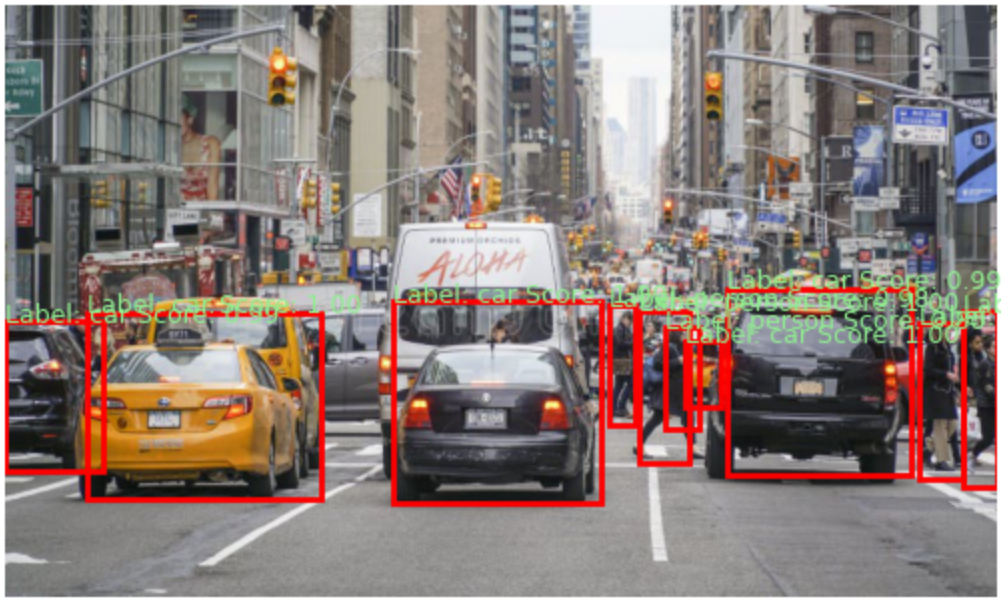
Test Detection at 0 confidence:



RetinaNet Model

Epochs	mAP50	map50-95
70	0.813	-

Test Detection at 0 confidence:



Video Testing Link: vid_testing_output