

YOLO Model Analysis Report

Model:	yolov8m_finetuned_1_finetuned_20251128
Model Size:	49.6 MB
Parameters:	25.9 M
FLOPs (640x640):	79.09 GFLOPs
Run Name:	yolov8m_finetuned_1_finetuned_20251128_testing_20251128_23094
Timestamp:	2025-11-28 23:25:36
Dataset:	bdd100k_yolo_limited - test split
Images Processed:	20000
Total Execution Time	139.92s
IoU Threshold:	0.5

Inference Performance

Metric	Value
Average Inference Time	3.03 ms per image
FPS (Frames Per Second)	329.52

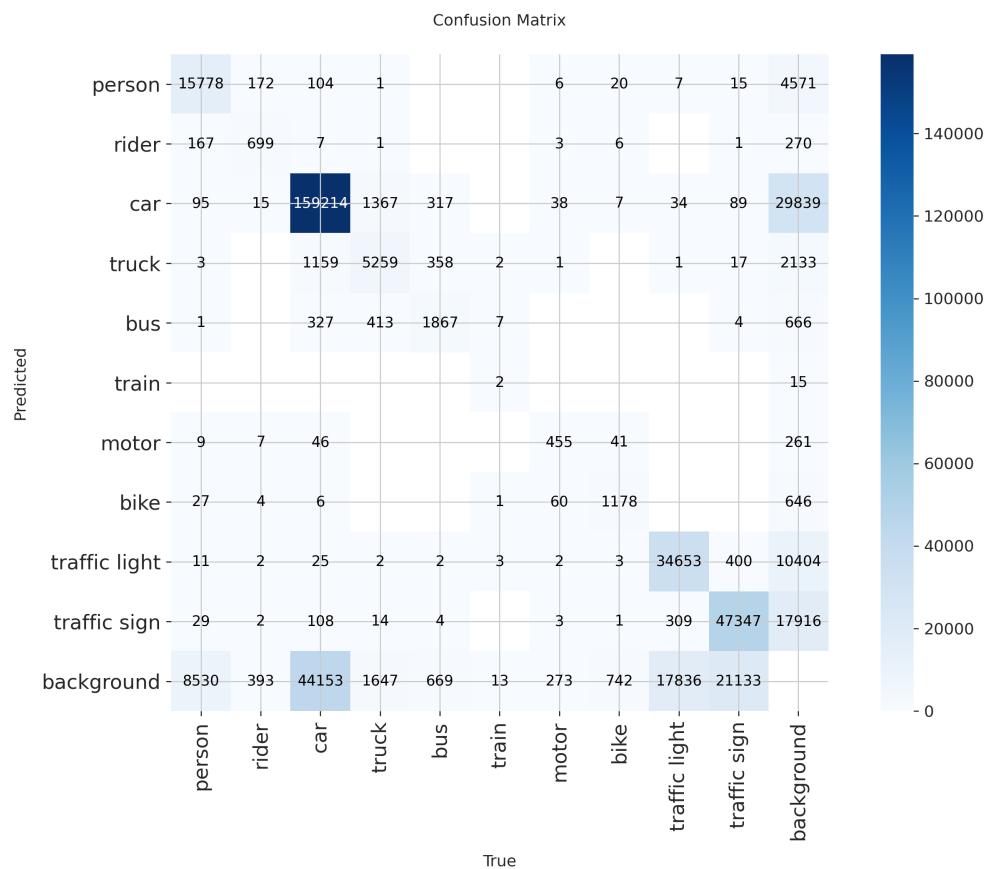
Note: Inference time includes preprocessing, model inference, and postprocessing.

Overall Accuracy Metrics

Metric	Value
Precision	0.7246
Recall	0.7859
F1-Score	0.7540
mAP@0.5	0.5850
mAP@0.5:0.95	0.3338
True Positives	266452
False Positives	101275
False Negatives	72607

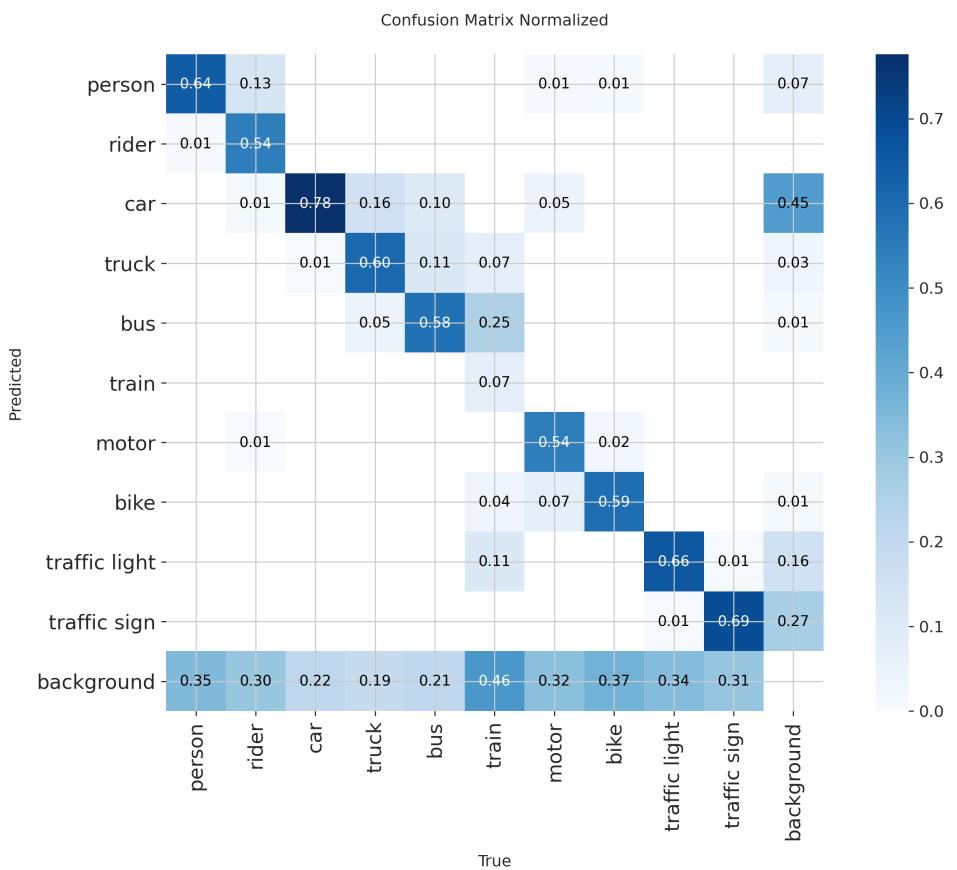
Confusion Matrices

Confusion Matrix (Counts)



Note: Shows raw prediction counts for each class combination.

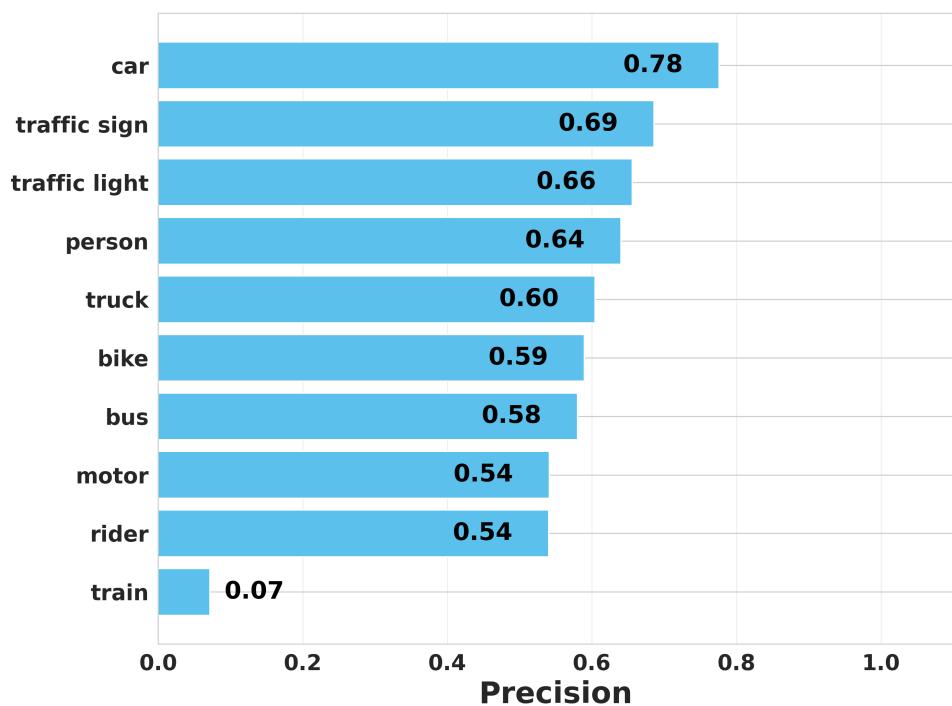
Confusion Matrix (Normalized)



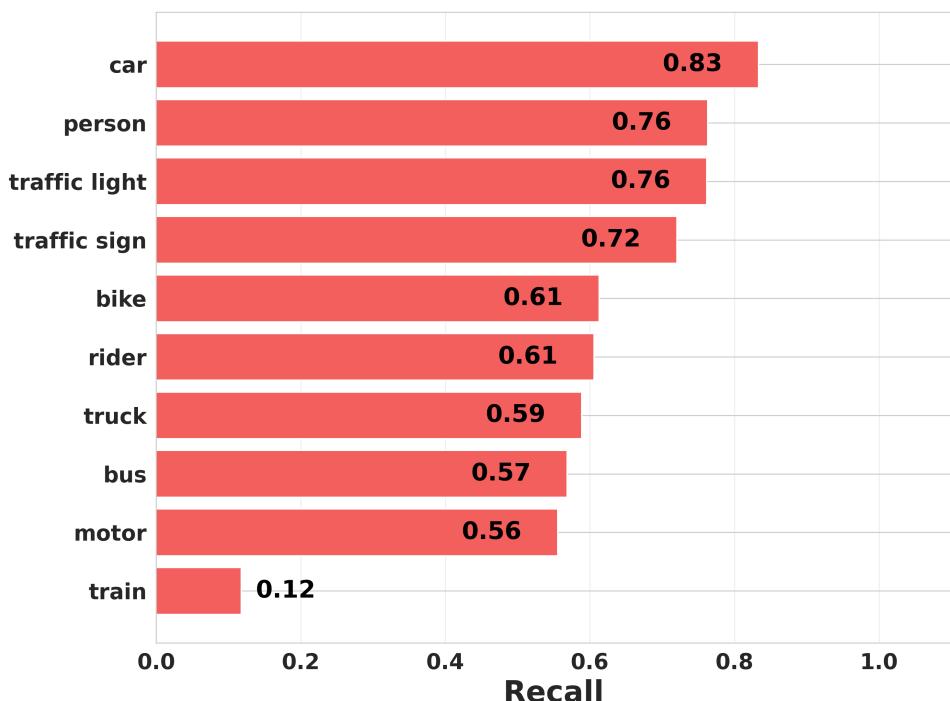
Note: Values are normalized by the number of ground truth instances per class. Shows the proportion of correct vs incorrect classifications.

Performance Visualizations

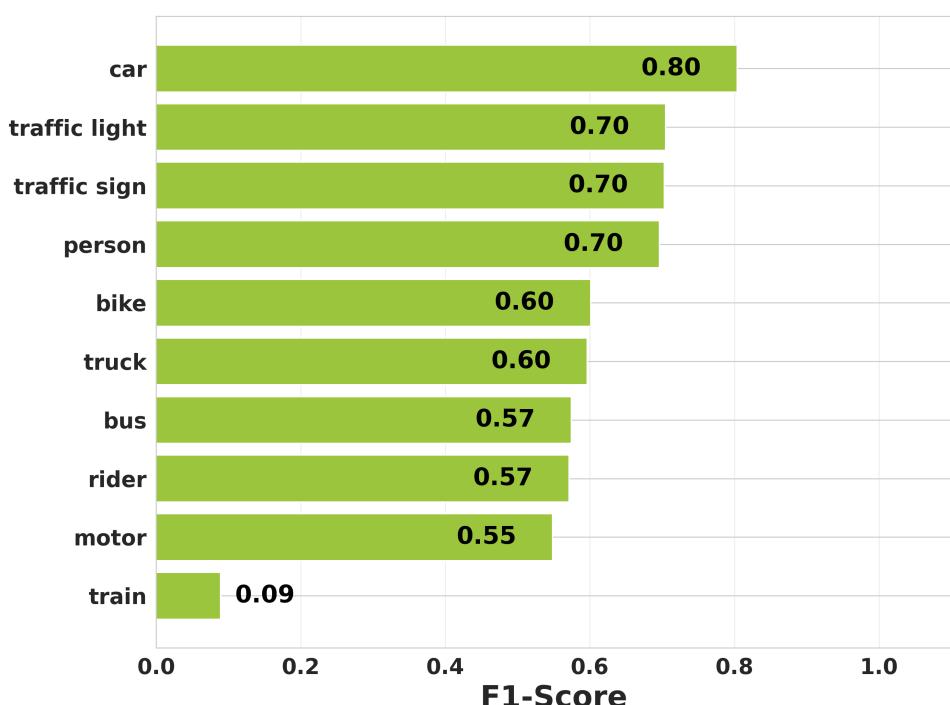
Precision by Class



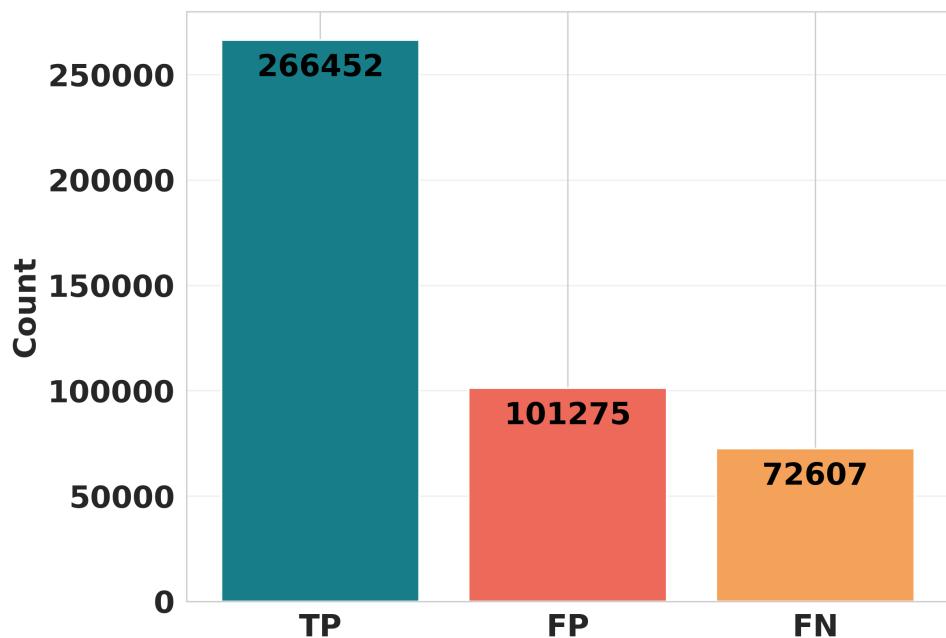
Recall by Class



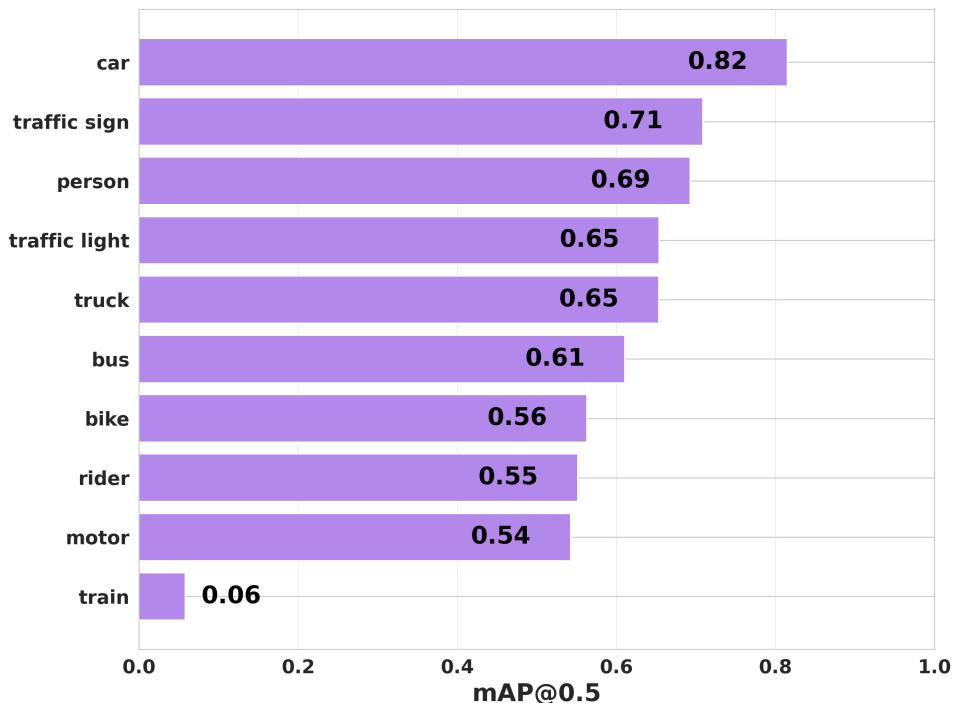
F1-Score by Class



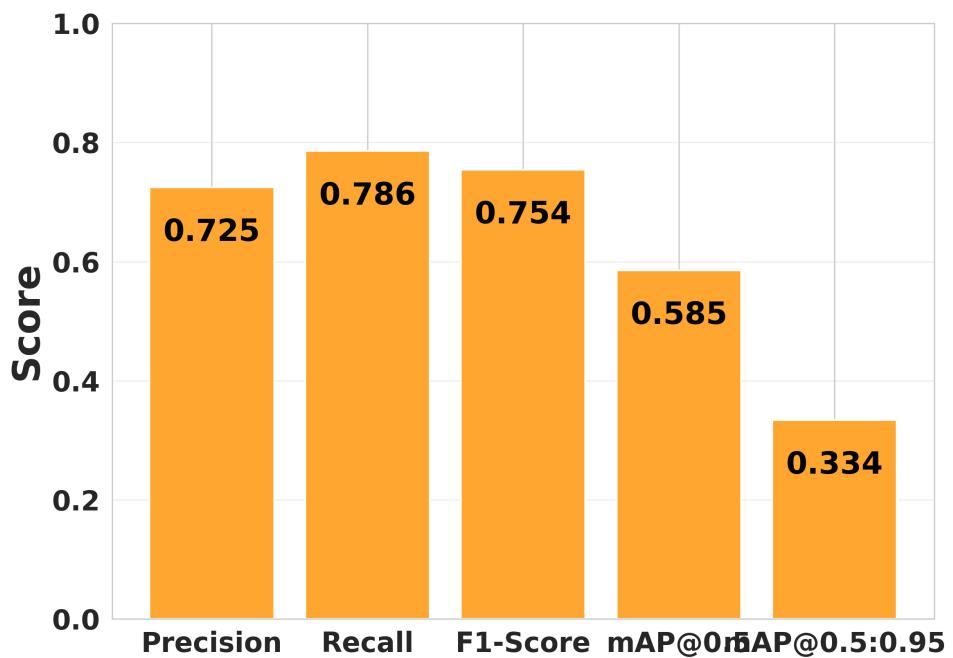
Overall Detection Outcomes



mAP@0.5 by Class



Overall Metrics



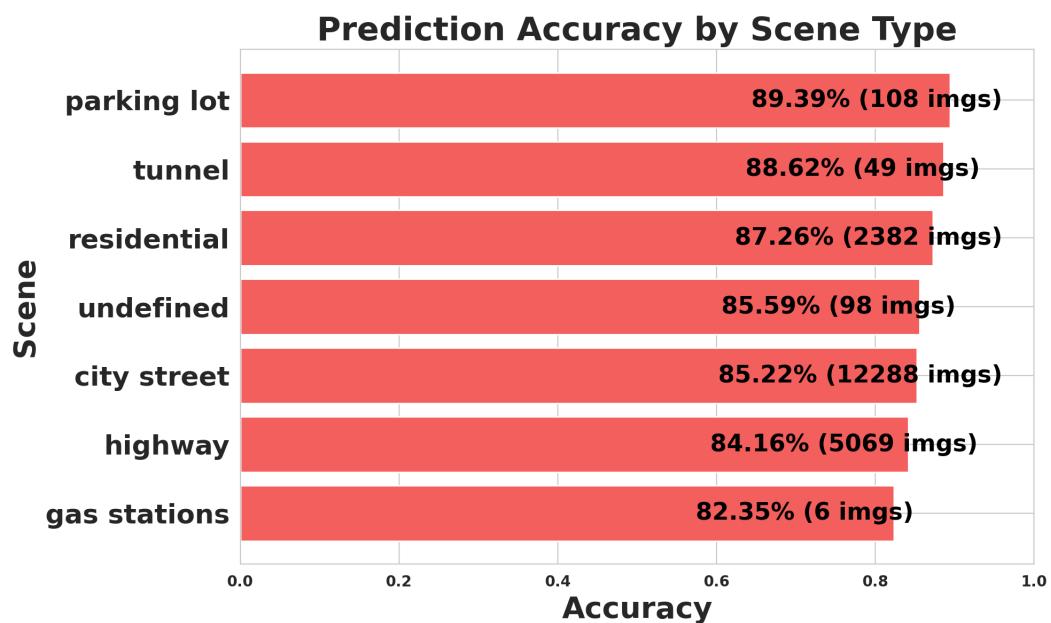
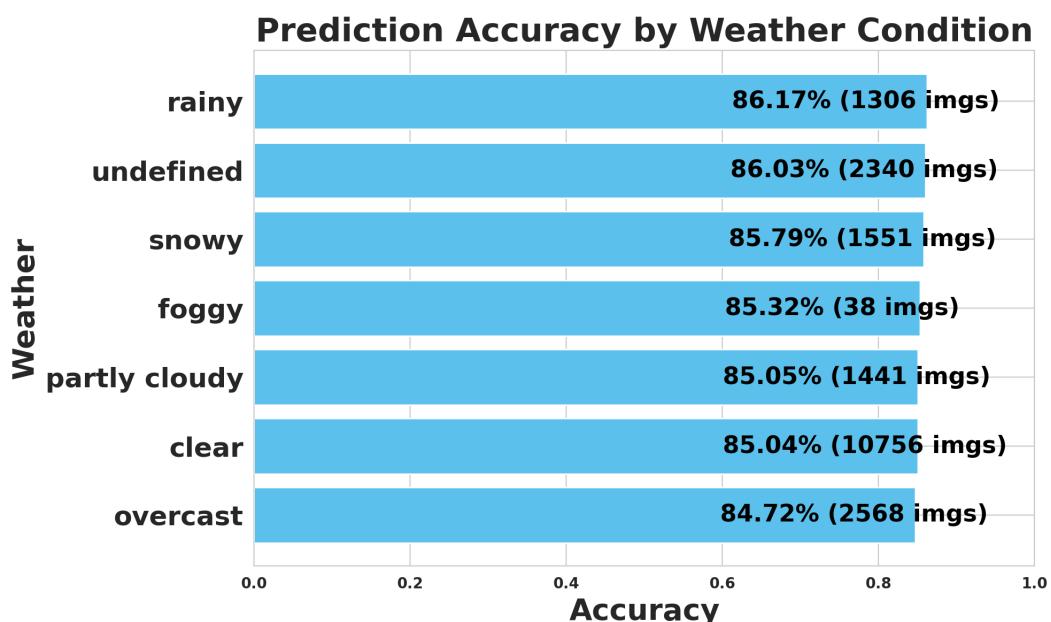
Per-Class Performance

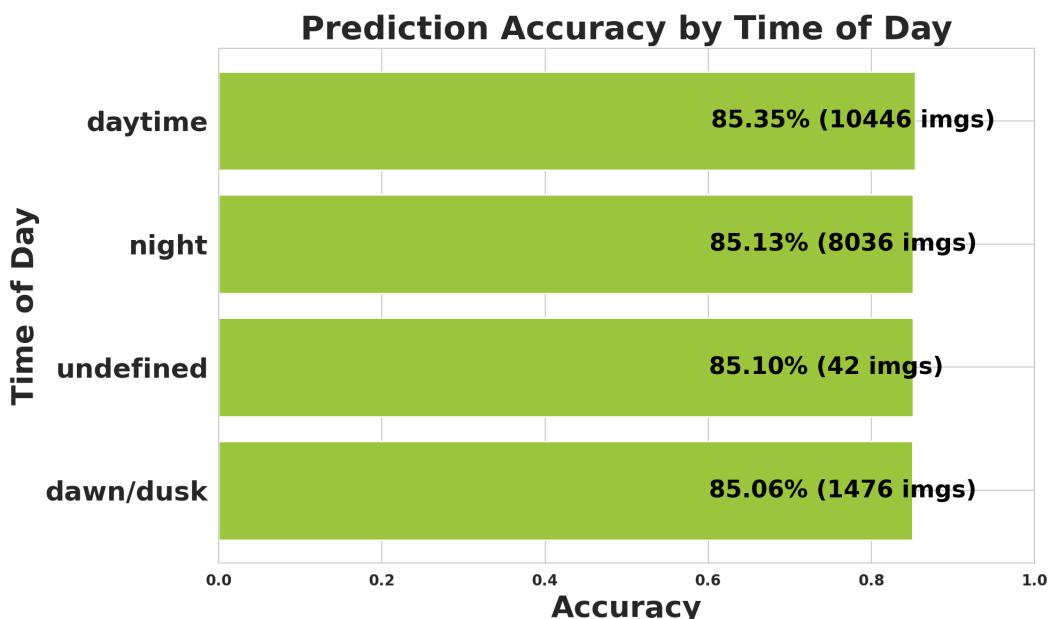
Class	TP	FP	FN	Precision	Recall	F1-Score	mAP@0.5
person	15778	8872	4896	0.6401	0.7632	0.6962	0.6930
rider	699	595	455	0.5402	0.6057	0.5711	0.5518
car	159214	45935	31801	0.7761	0.8335	0.8038	0.8151
truck	5259	3445	3674	0.6042	0.5887	0.5964	0.6532
bus	1867	1350	1418	0.5804	0.5683	0.5743	0.6106
train	2	26	15	0.0714	0.1176	0.0889	0.0580
motor	455	386	364	0.5410	0.5556	0.5482	0.5425
bike	1178	820	744	0.5896	0.6129	0.6010	0.5631
traffic light	34653	18187	10854	0.6558	0.7615	0.7047	0.6539
traffic sign	47347	21659	18386	0.6861	0.7203	0.7028	0.7087

Comprehensive Failure Analysis

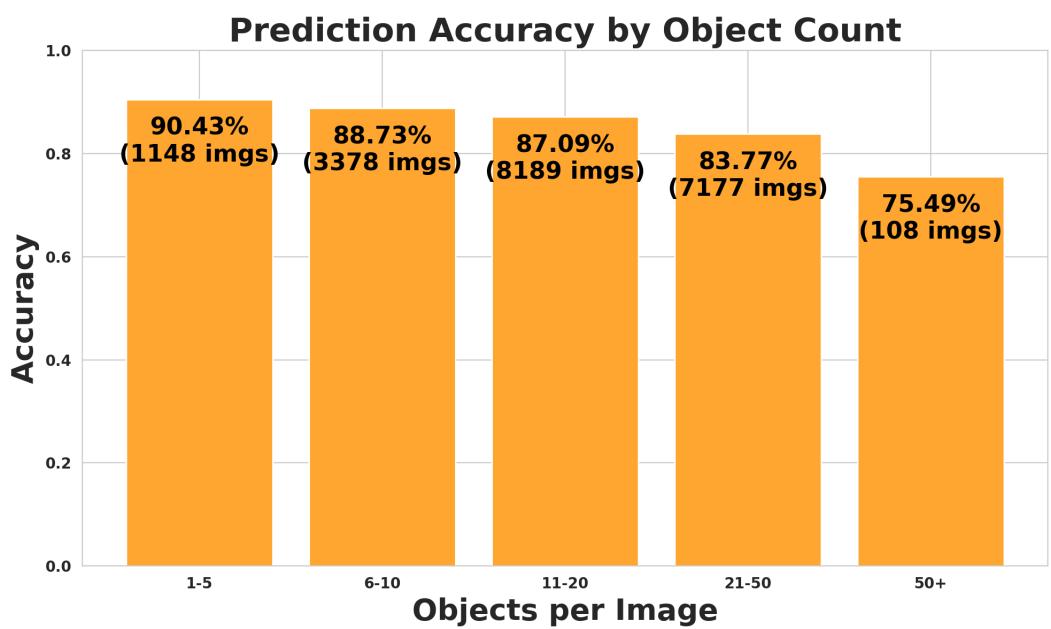
Metric	Value
Total Images Analyzed	20000
Total Expected Objects	367728
Total Matched Objects	313471
Overall Accuracy	85.25%

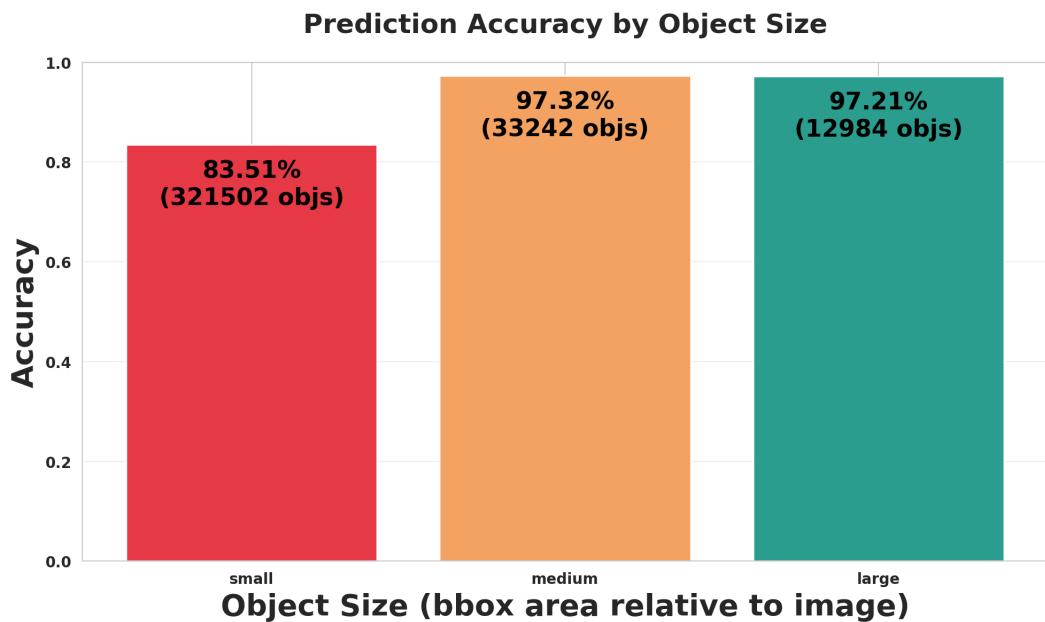
Accuracy by Environmental Attributes





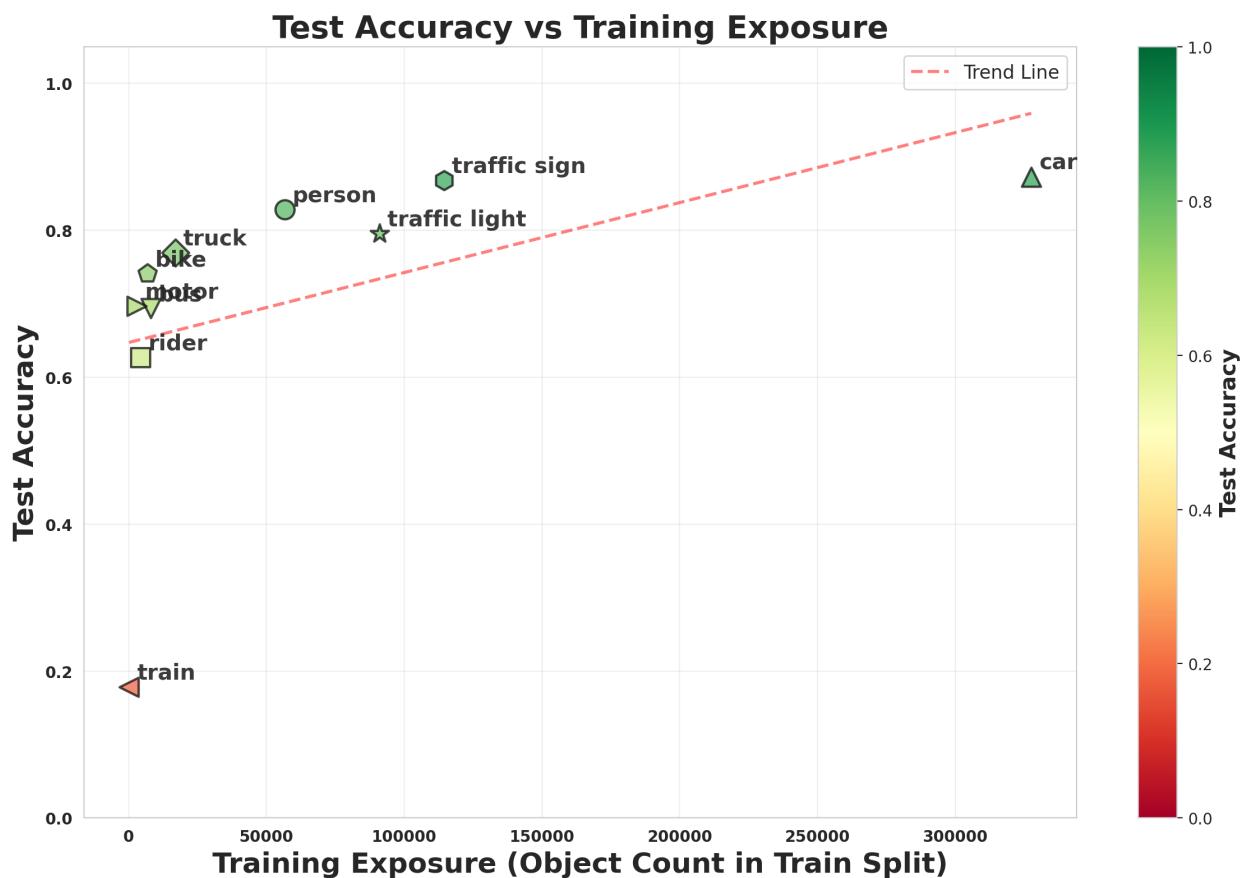
Accuracy by Object Characteristics



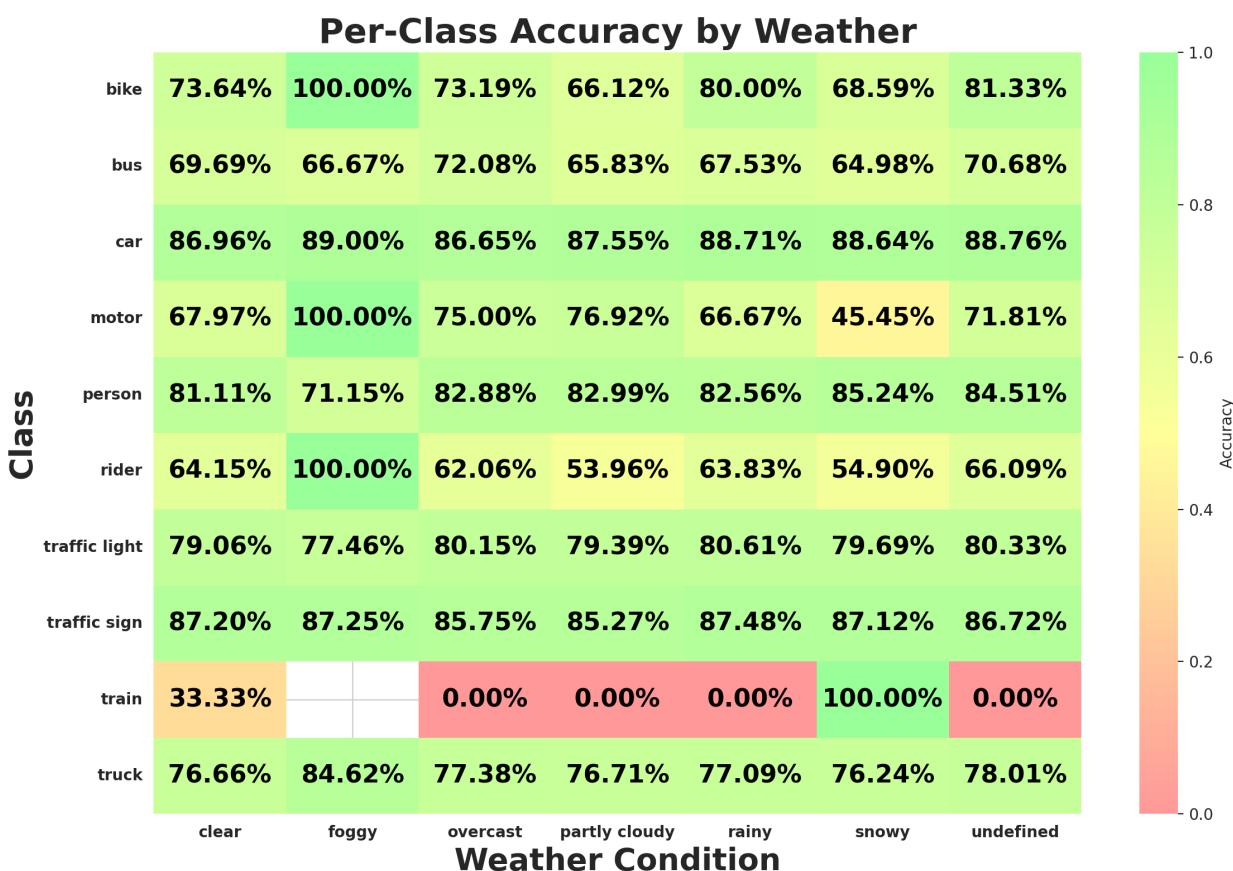
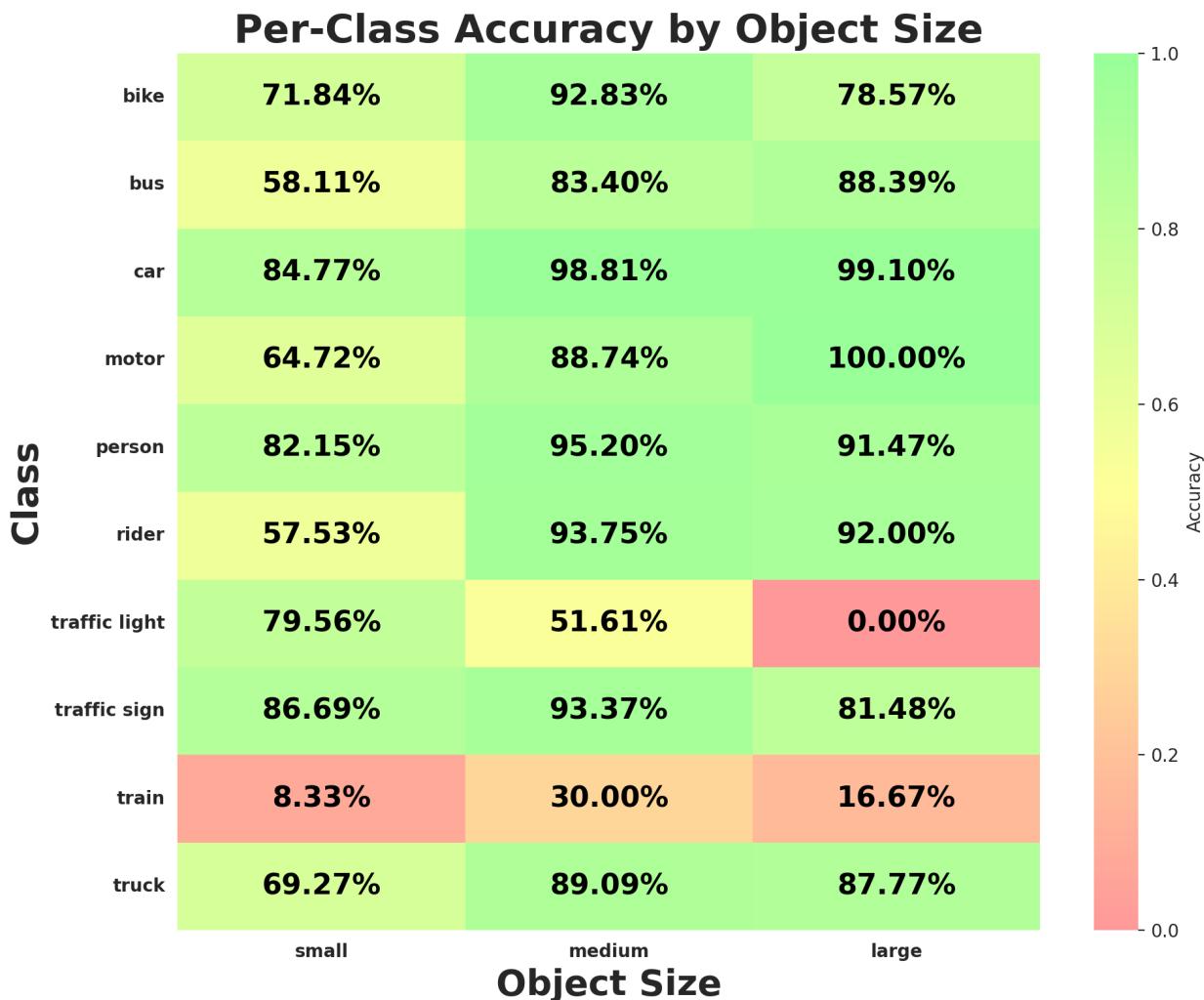


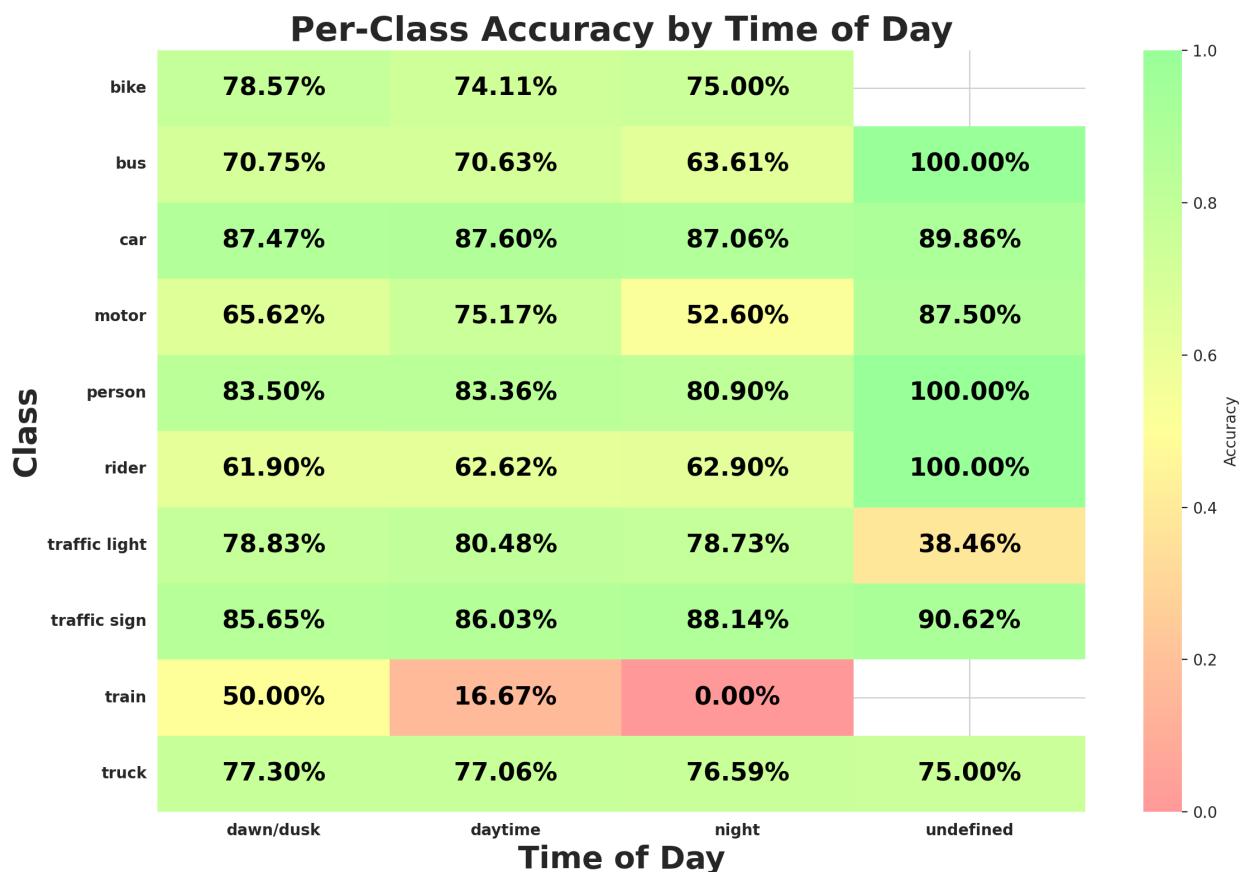
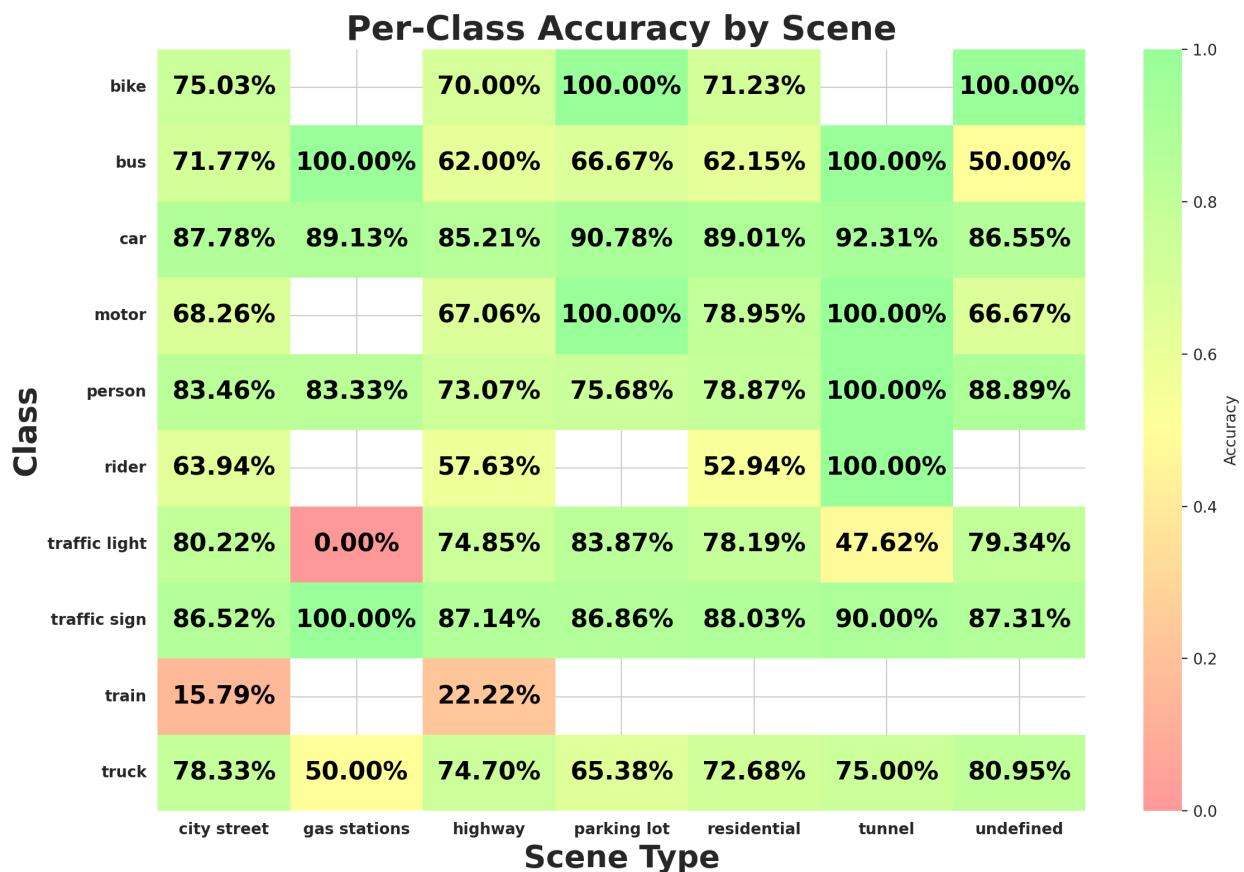
Note: Object size categories are defined based on bounding box area as a percentage of total image area: **Small** objects occupy less than 1% of the image (typically distant or small objects), **Medium** objects occupy between 1% and 5% of the image (moderate-sized objects at medium distances), and **Large** objects occupy more than 5% of the image (close or large objects). These thresholds help identify how object scale affects detection accuracy.

Training Exposure vs Test Performance



Per-Class Performance Analysis



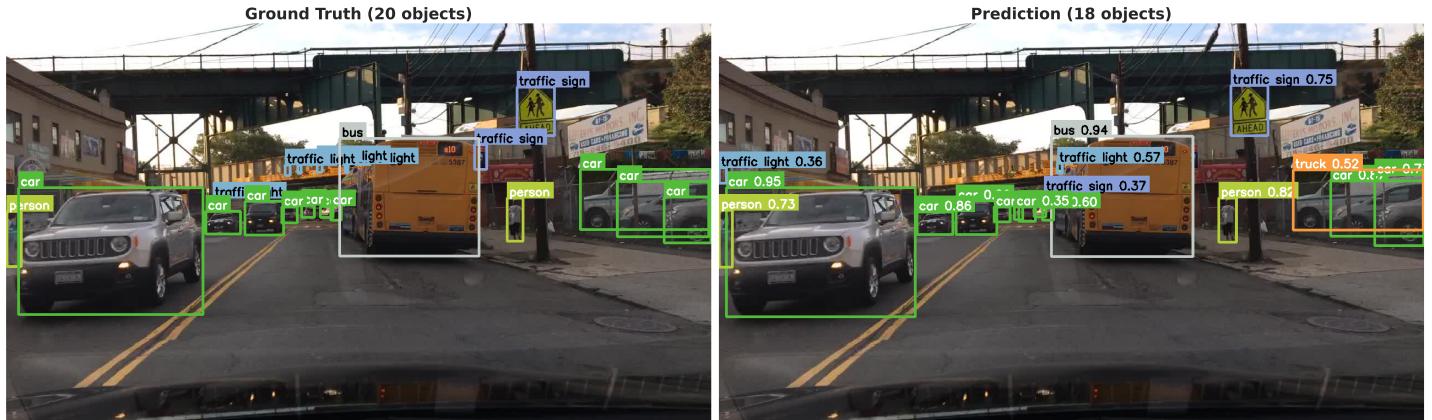


Sample Predictions: Ground Truth vs Model

Sample #1: db1385a4-91f2756a.jpg

Ground Truth Objects: 20 | Predicted Objects: 18

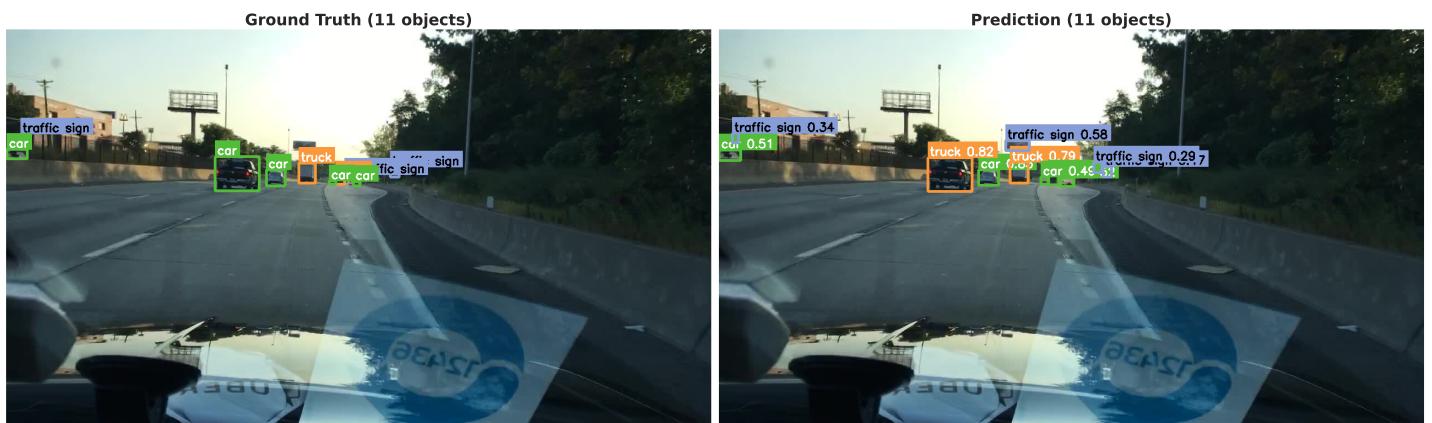
Weather: partly cloudy | Scene: city street | Time of Day: daytime



Sample #2: f8549008-f4b7323c.jpg

Ground Truth Objects: 11 | Predicted Objects: 11

Weather: clear | Scene: city street | Time of Day: dawn/dusk



Sample #3: edc30ef4-f0fa105a.jpg

Ground Truth Objects: 10 | Predicted Objects: 12

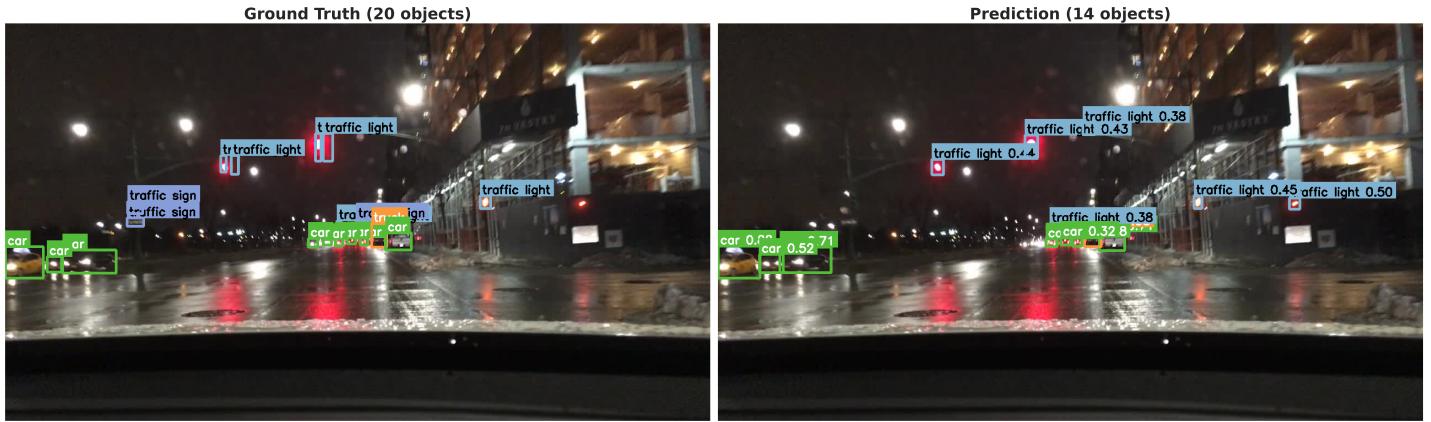
Weather: clear | Scene: highway | Time of Day: night



Sample #4: dcf6de94-b7bf0ce4.jpg

Ground Truth Objects: 20 | Predicted Objects: 14

Weather: rainy | Scene: city street | Time of Day: night



Sample #5: f0220287-62a98a7b.jpg

Ground Truth Objects: 35 | Predicted Objects: 20
Weather: clear | Scene: highway | Time of Day: daytime



Sample #6: fc0517d2-112ed733.jpg

Ground Truth Objects: 22 | Predicted Objects: 21
Weather: clear | Scene: city street | Time of Day: night



Generated by YOLO Testing Pipeline