

YOLO Model Analysis Report

Model:	yolov8m_finetuned_1
Model Size:	49.6 MB
Parameters:	25.9 M
FLOPs (640x640):	79.09 GFLOPs
Run Name:	yolov8m_finetuned_1_testing_20251127_210146
Timestamp:	2025-11-27 21:13:22
Dataset:	bdd100k_yolo_limited - test split
Images Processed:	20000
Total Execution Time	118.61s
IoU Threshold:	0.5

Inference Performance

Metric	Value
Average Inference Time	2.36 ms per image
FPS (Frames Per Second)	423.12

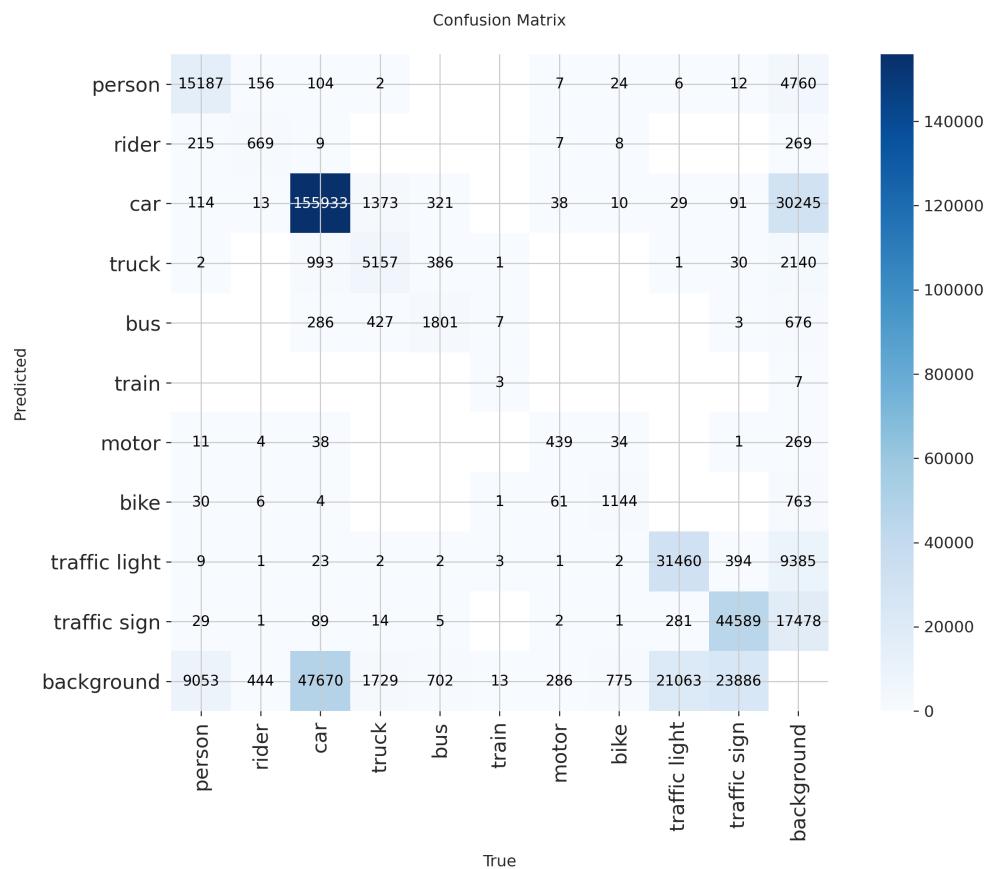
Note: Inference time includes preprocessing, model inference, and postprocessing.

Overall Accuracy Metrics

Metric	Value
Precision	0.6972
Recall	0.7814
F1-Score	0.7369
mAP@0.5	0.5683
mAP@0.5:0.95	0.3236
True Positives	256382
False Positives	111345
False Negatives	71716

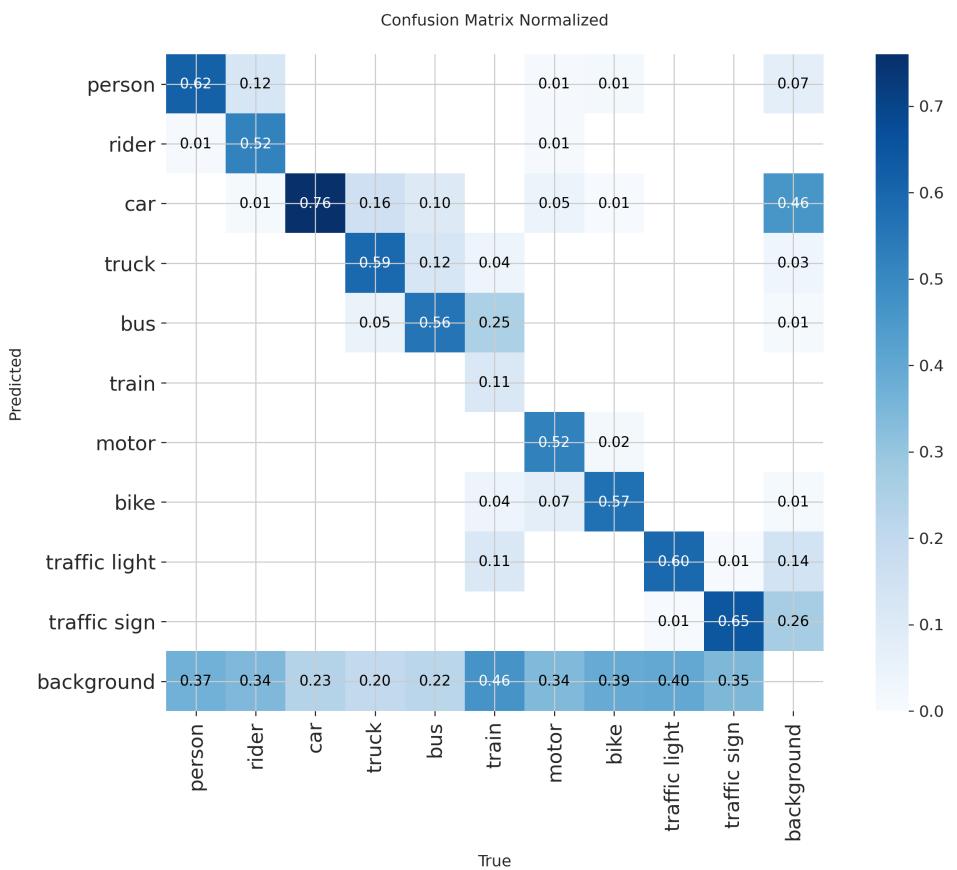
Confusion Matrices

Confusion Matrix (Counts)



Note: Shows raw prediction counts for each class combination.

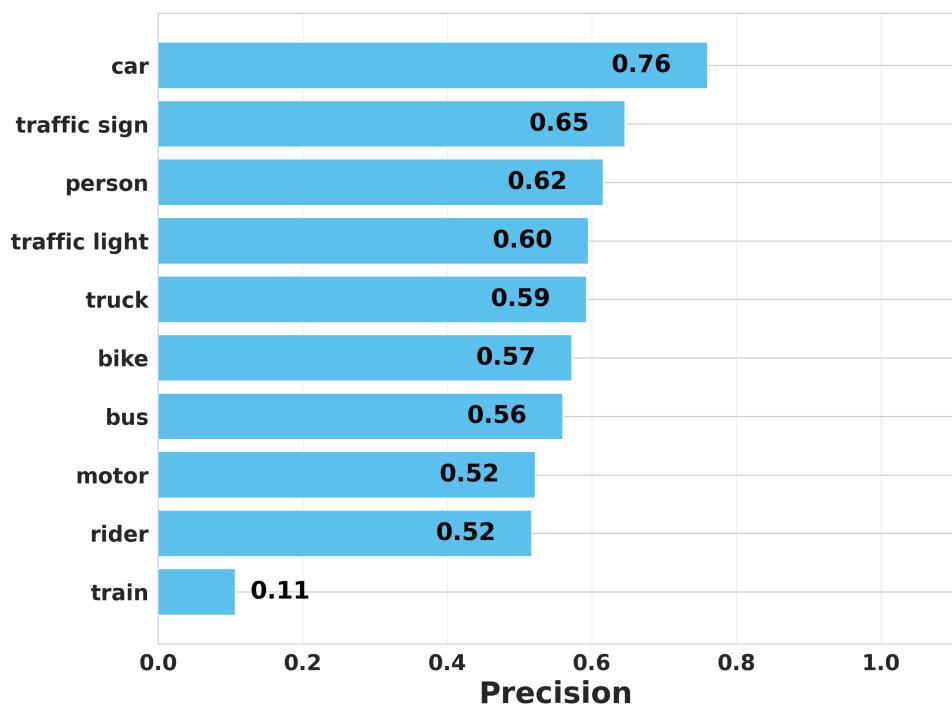
Confusion Matrix (Normalized)



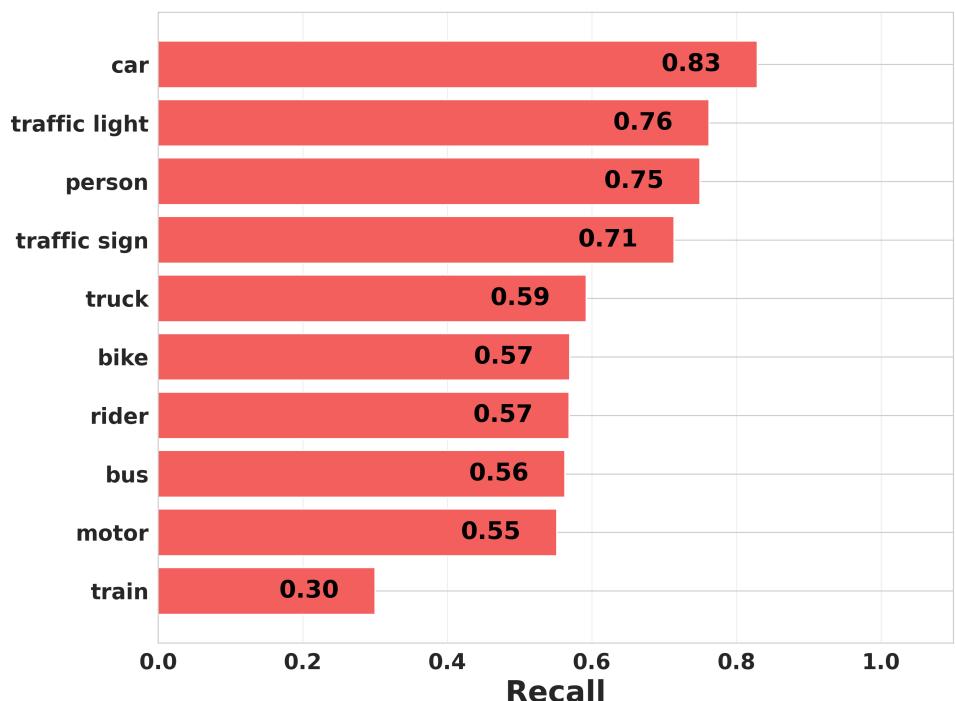
Note: Values are normalized by the number of ground truth instances per class. Shows the proportion of correct vs incorrect classifications.

Performance Visualizations

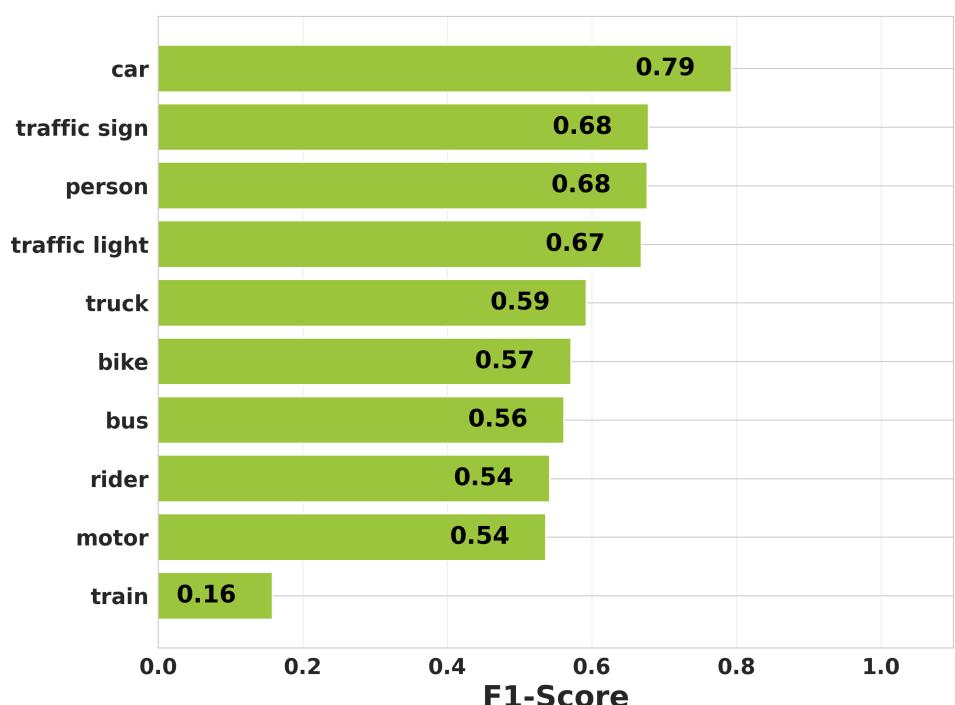
Precision by Class



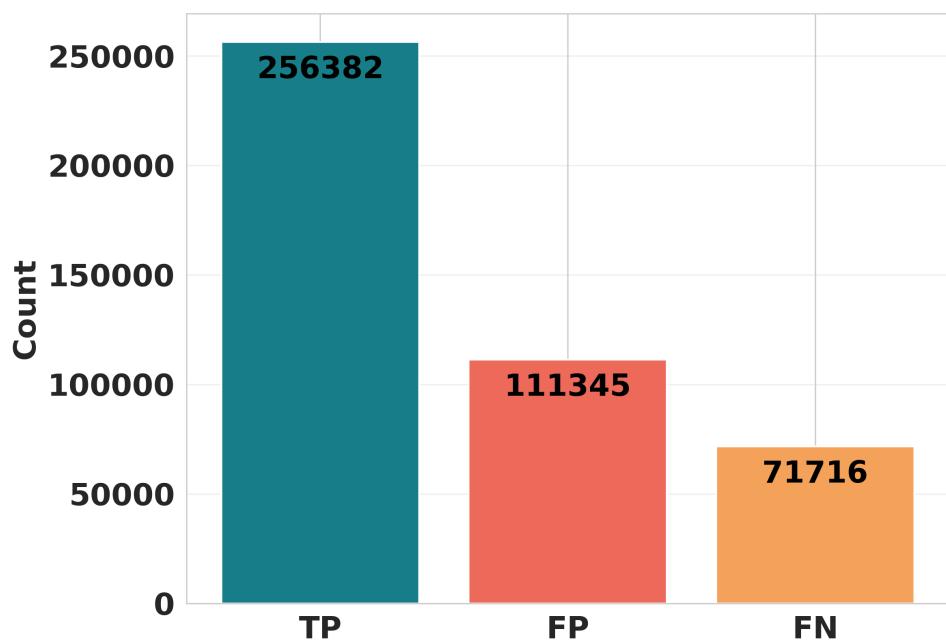
Recall by Class



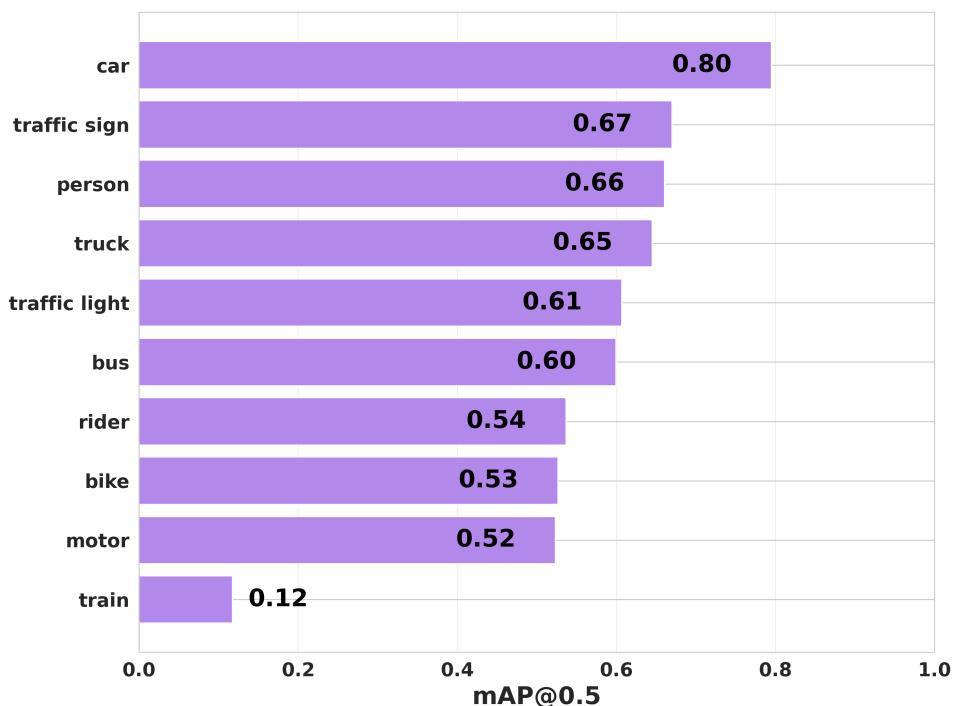
F1-Score by Class



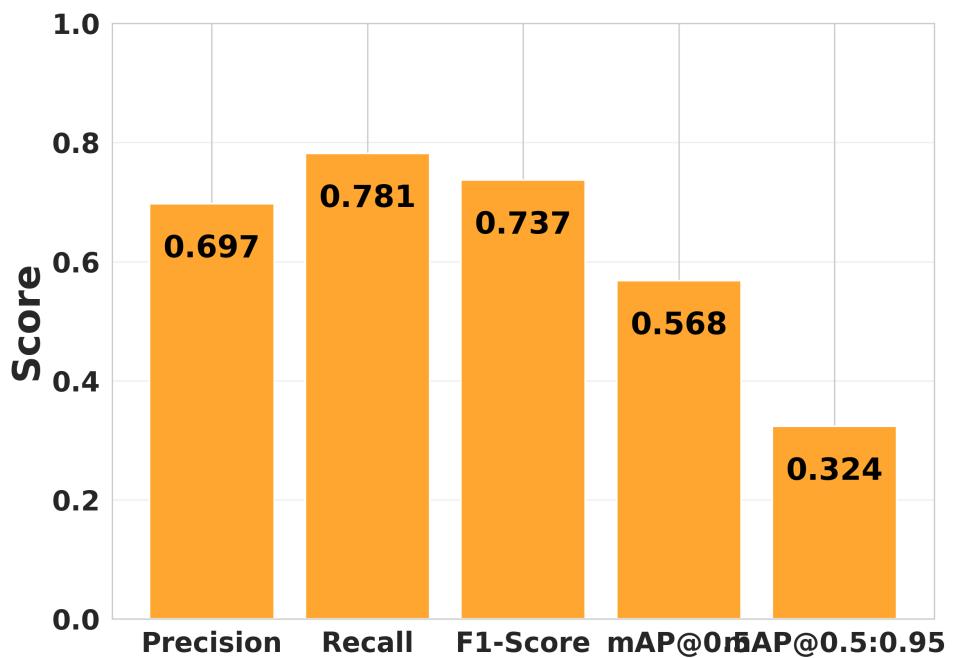
Overall Detection Outcomes



mAP@0.5 by Class



Overall Metrics



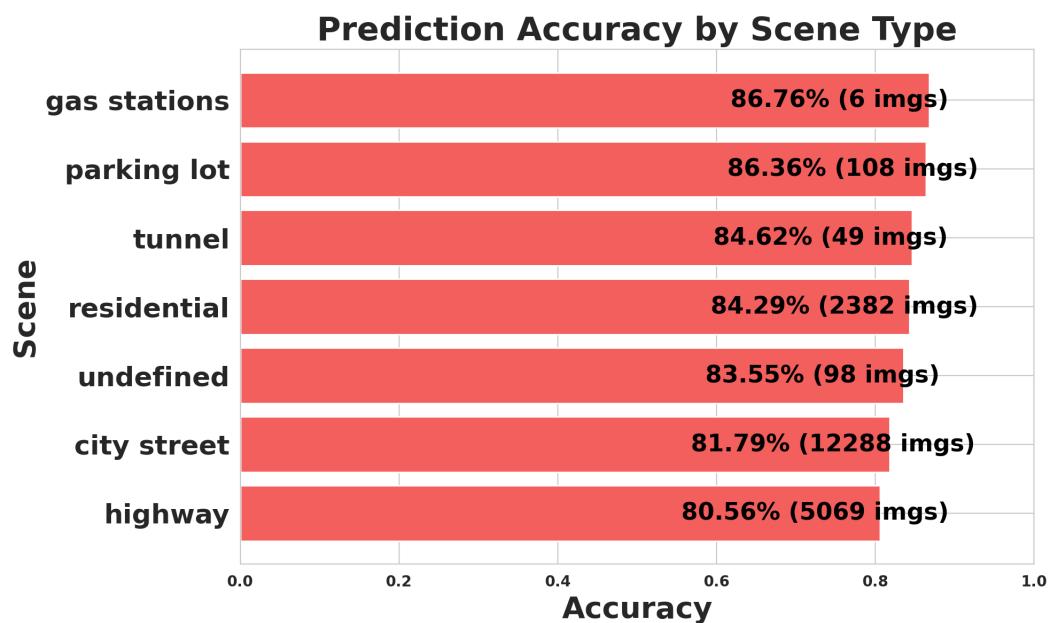
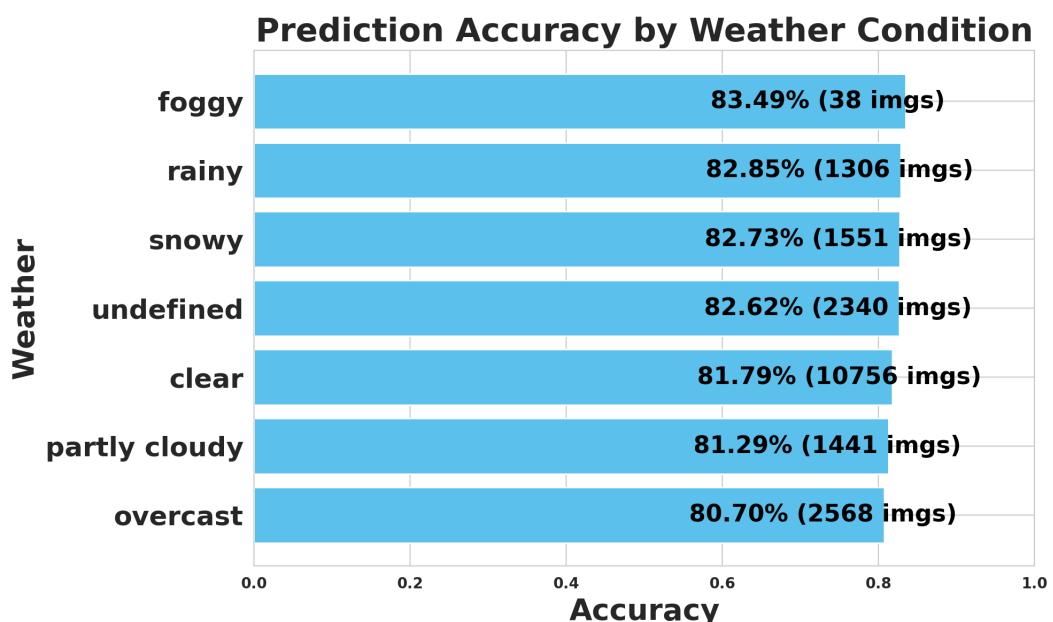
Per-Class Performance

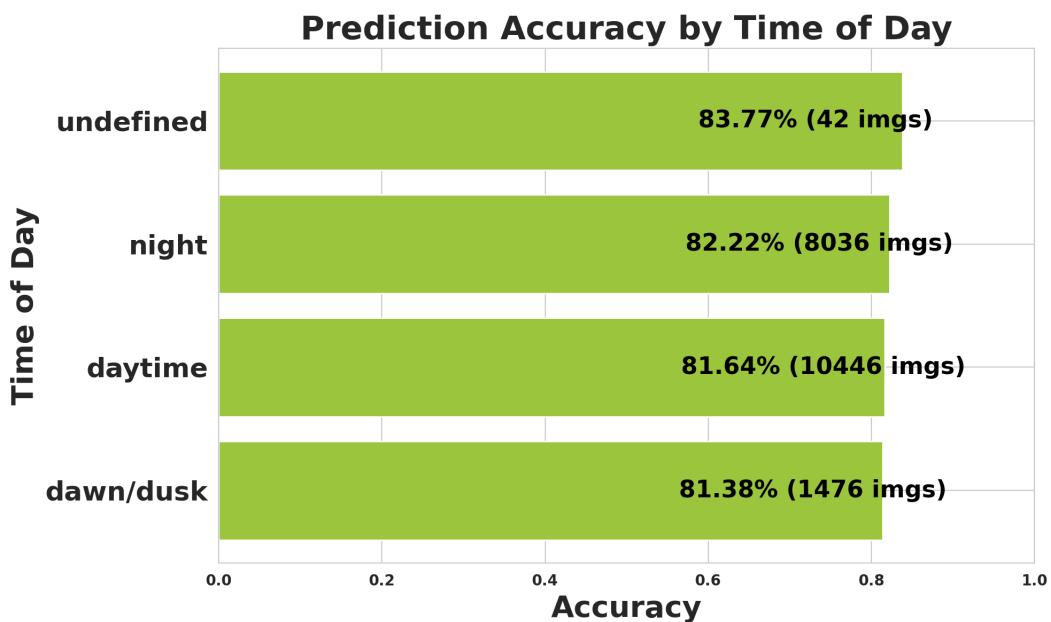
Class	TP	FP	FN	Precision	Recall	F1-Score	mAP@0.5
person	15187	9463	5071	0.6161	0.7497	0.6764	0.6605
rider	669	625	508	0.5170	0.5684	0.5415	0.5368
car	155933	49216	32234	0.7601	0.8287	0.7929	0.7951
truck	5157	3547	3553	0.5925	0.5921	0.5923	0.6452
bus	1801	1416	1399	0.5598	0.5628	0.5613	0.5998
train	3	25	7	0.1071	0.3000	0.1579	0.1174
motor	439	402	357	0.5220	0.5515	0.5363	0.5235
bike	1144	854	865	0.5726	0.5694	0.5710	0.5267
traffic light	31460	21380	9822	0.5954	0.7621	0.6685	0.6072
traffic sign	44589	24417	17900	0.6462	0.7135	0.6782	0.6702

Comprehensive Failure Analysis

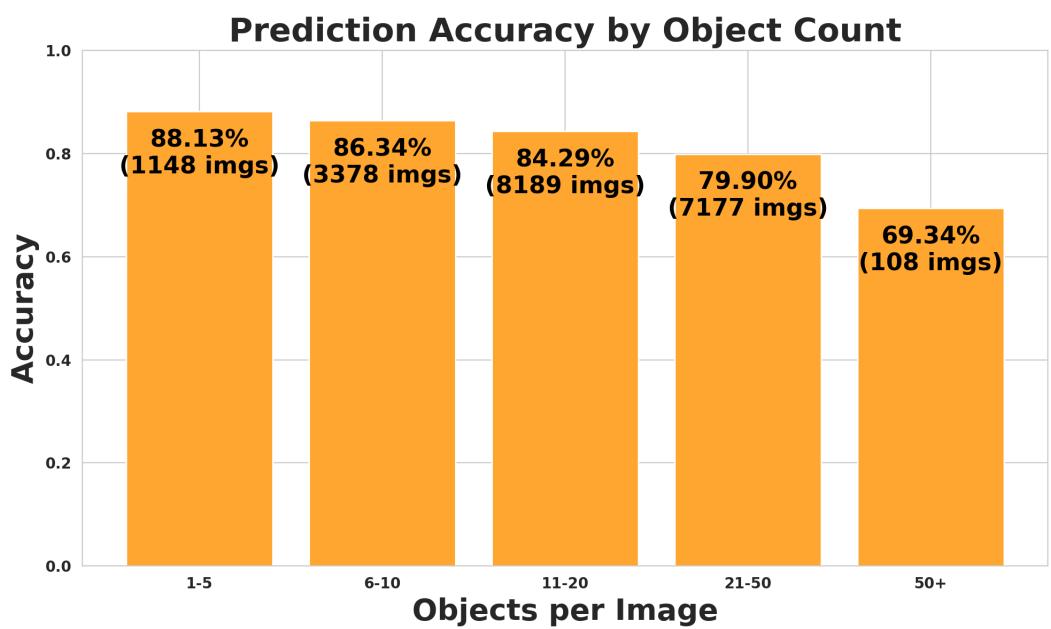
Metric	Value
Total Images Analyzed	20000
Total Expected Objects	367728
Total Matched Objects	300926
Overall Accuracy	81.83%

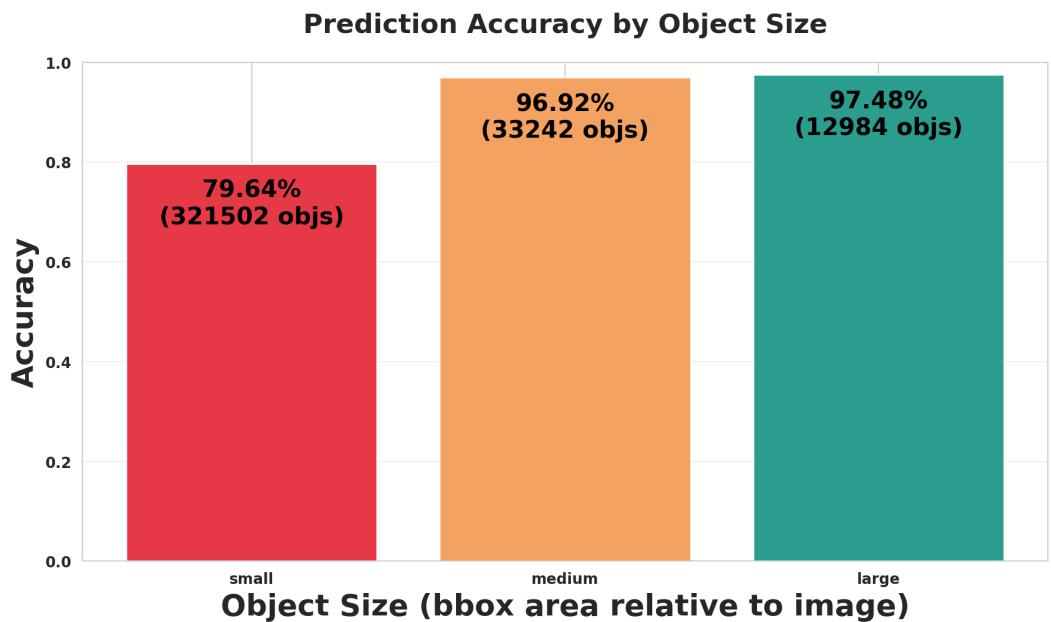
Accuracy by Environmental Attributes





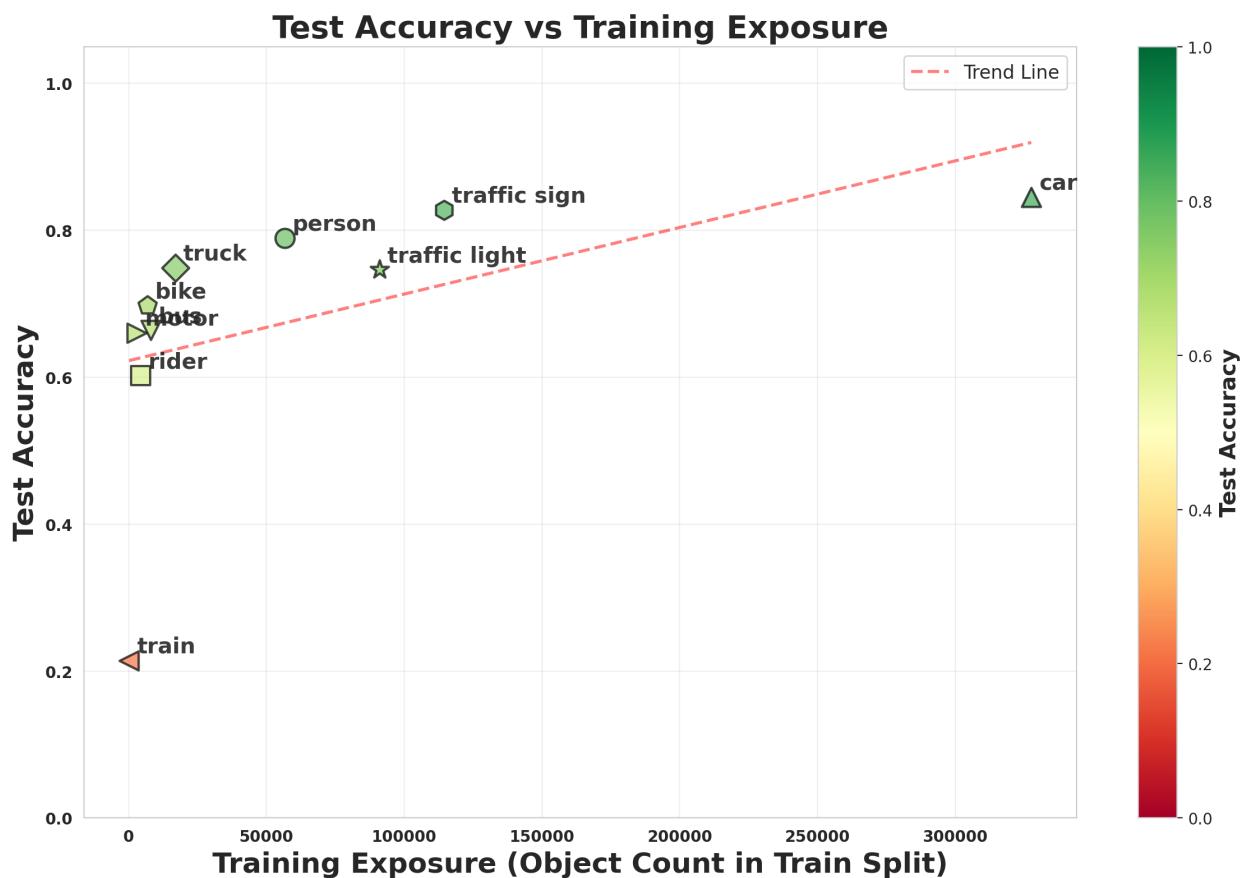
Accuracy by Object Characteristics



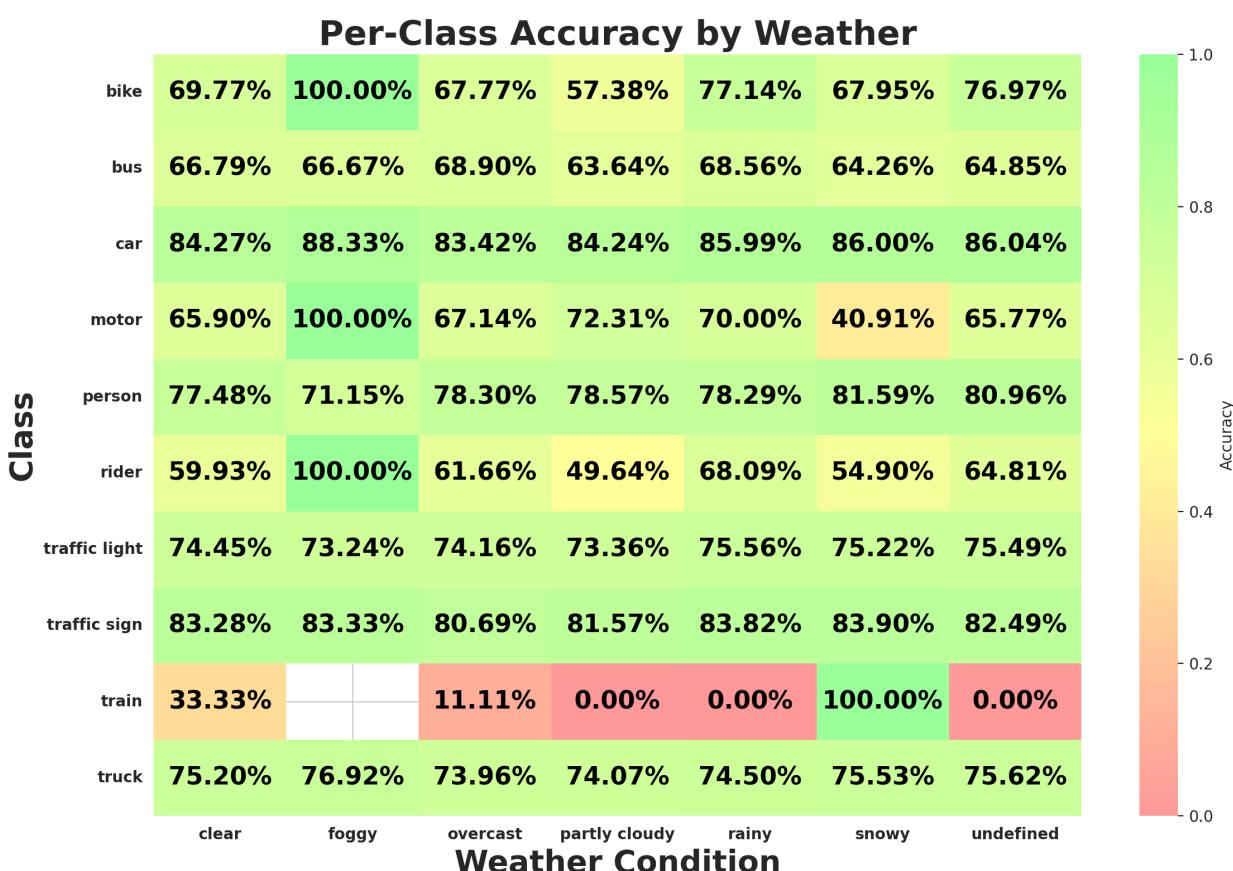
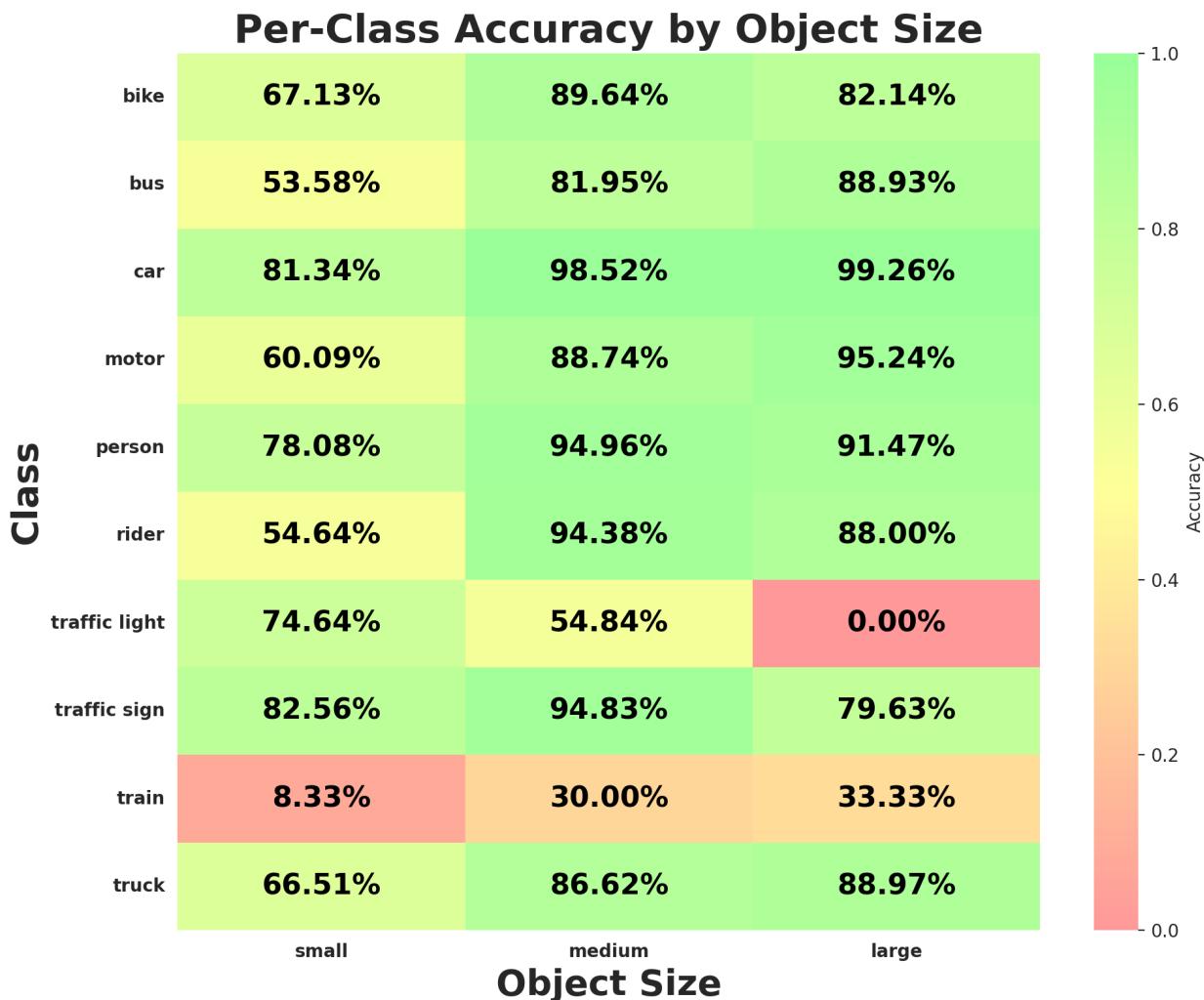


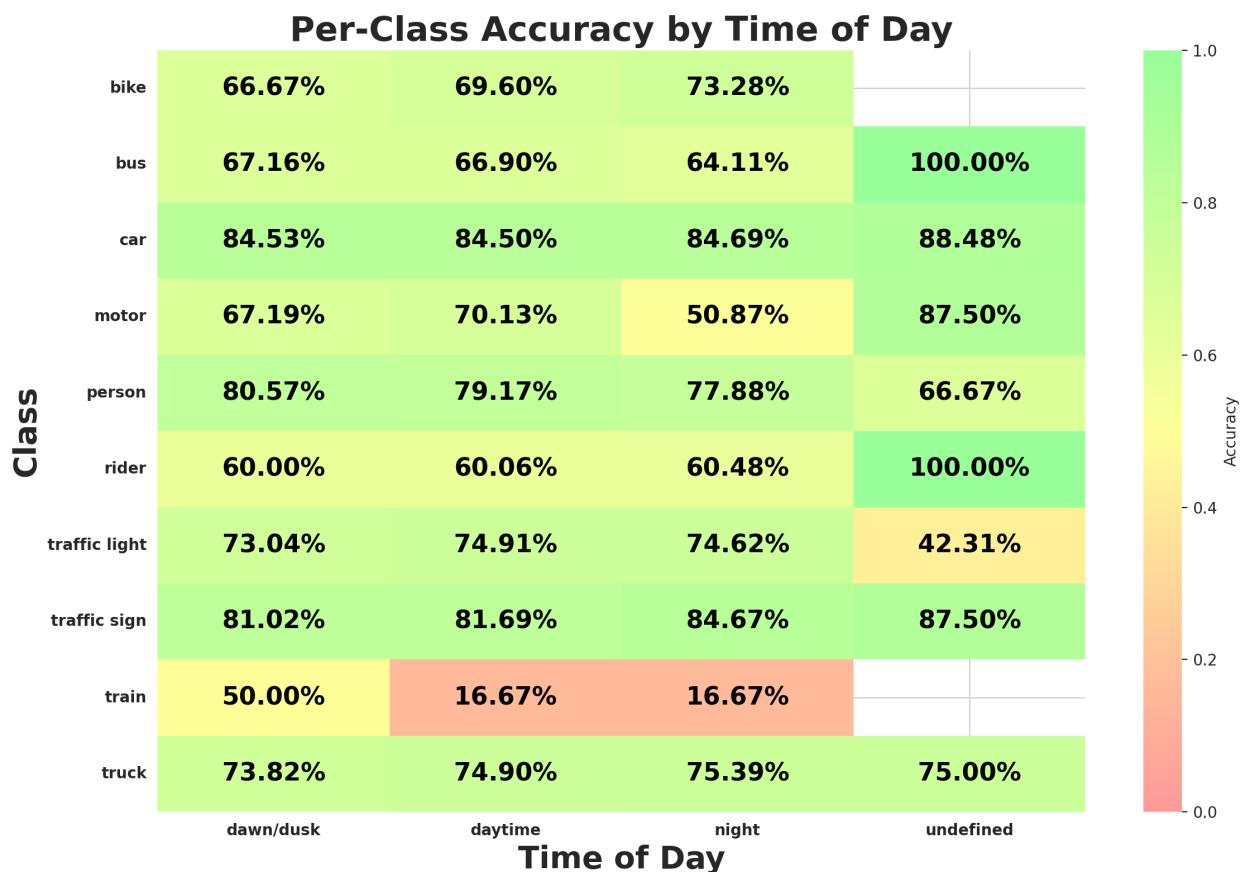
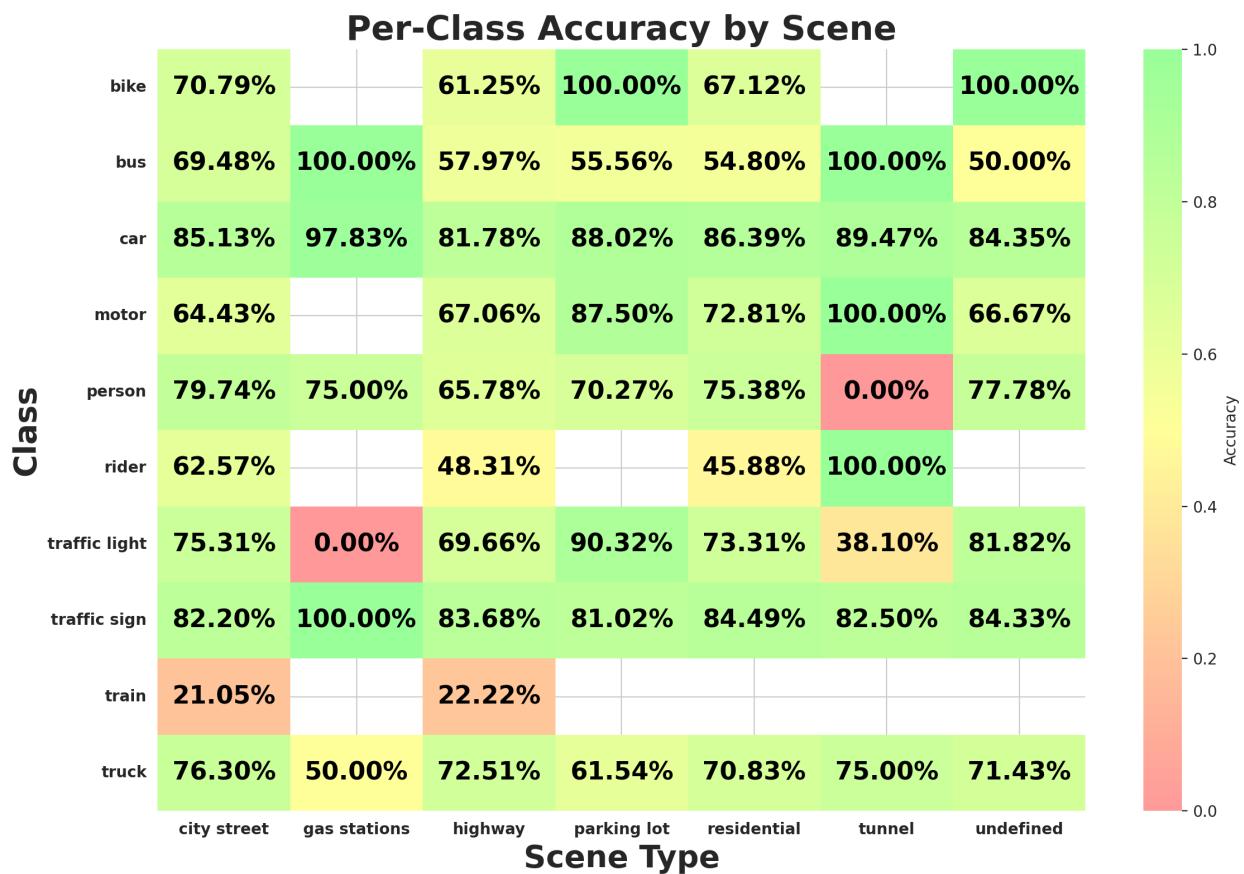
Note: Object size categories are defined based on bounding box area as a percentage of total image area: **Small** objects occupy less than 1% of the image (typically distant or small objects), **Medium** objects occupy between 1% and 5% of the image (moderate-sized objects at medium distances), and **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

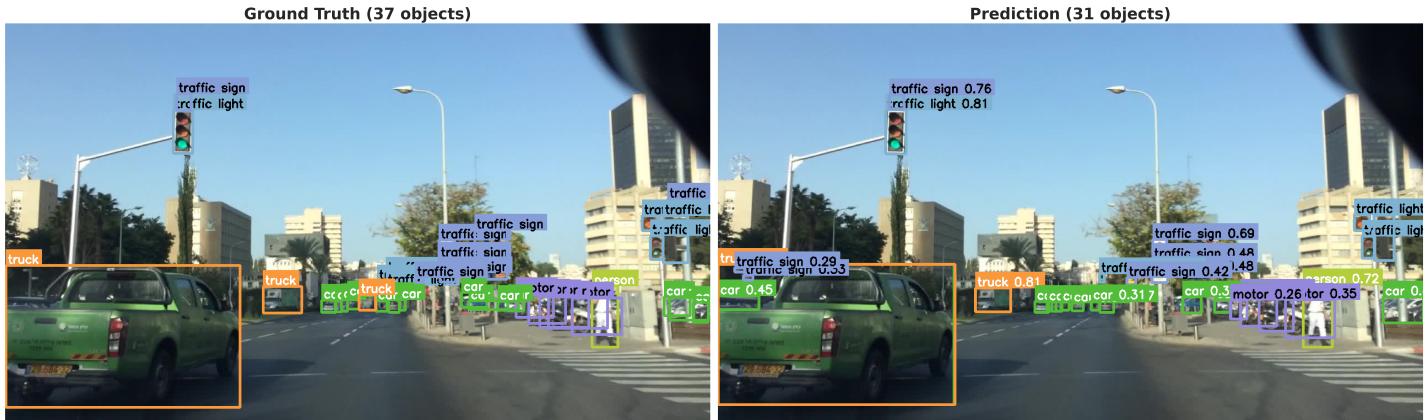




Sample Predictions: Ground Truth vs Model

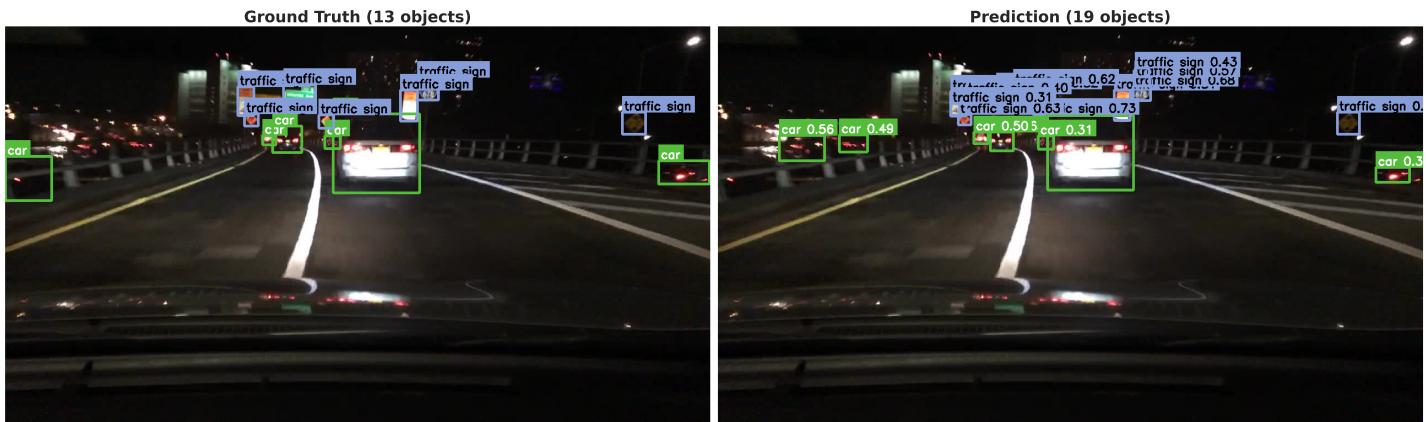
Sample #1: e25b4c93-b0ed3d48.jpg

Ground Truth Objects: 37 | Predicted Objects: 31
Weather: clear | Scene: city street | Time of Day: daytime



Sample #2: ddca03f1-1a47f761.jpg

Ground Truth Objects: 13 | Predicted Objects: 19
Weather: clear | Scene: highway | Time of Day: night



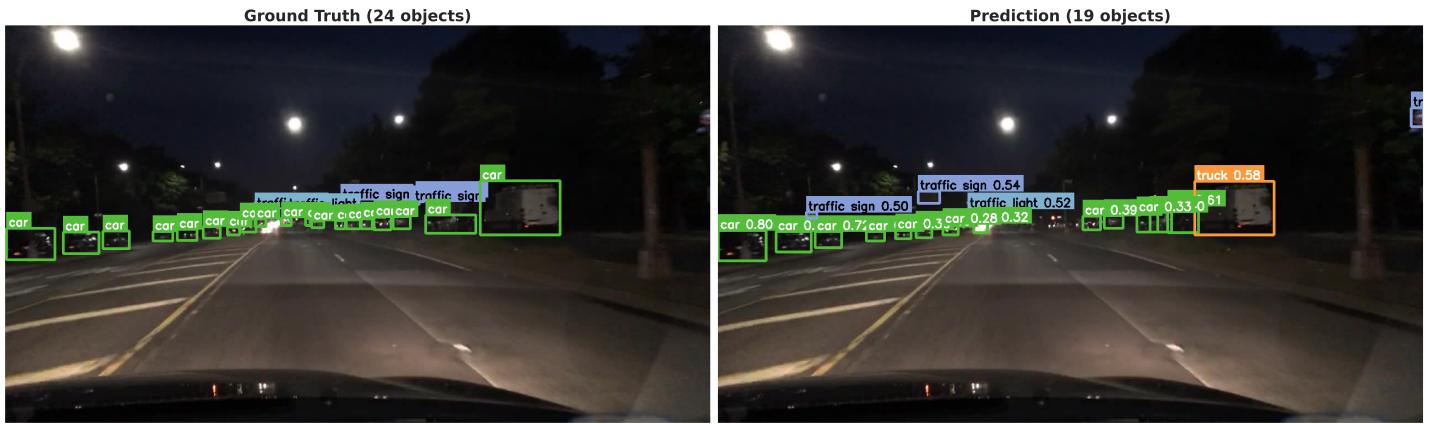
Sample #3: ecfb2a12-9e5c8600.jpg

Ground Truth Objects: 13 | Predicted Objects: 14
Weather: clear | Scene: residential | Time of Day: daytime



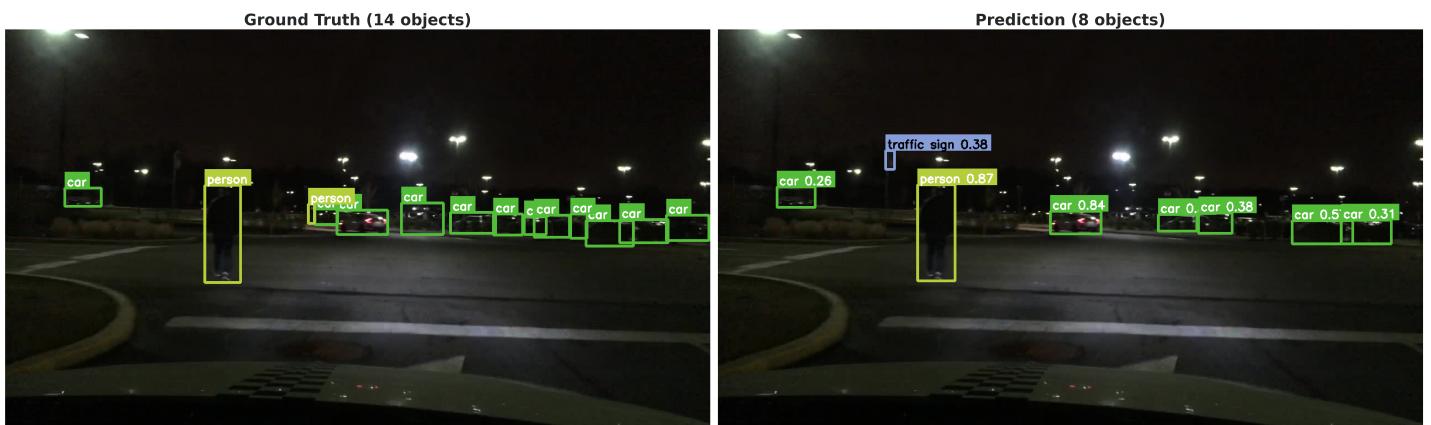
Sample #4: e5f86899-5561edca.jpg

Ground Truth Objects: 24 | Predicted Objects: 19
Weather: clear | Scene: city street | Time of Day: night



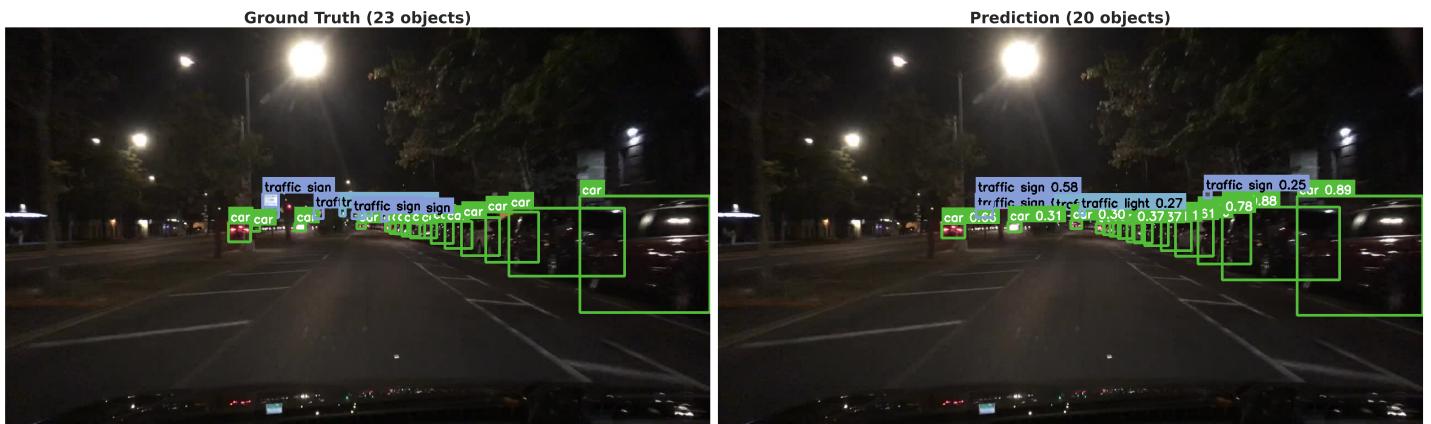
Sample #5: ddb5af91-a76c668a.jpg

Ground Truth Objects: 14 | Predicted Objects: 8
Weather: clear | Scene: city street | Time of Day: night



Sample #6: f4cb8f1f-975011f3.jpg

Ground Truth Objects: 23 | Predicted Objects: 20
Weather: clear | Scene: city street | Time of Day: night



Generated by YOLO Testing Pipeline