MICHIGAN STATE UNIVERSITY

Alpha Presentation

Classifying Target Vehicles for Adaptive Cruise Cotrol

The Capstone Experience

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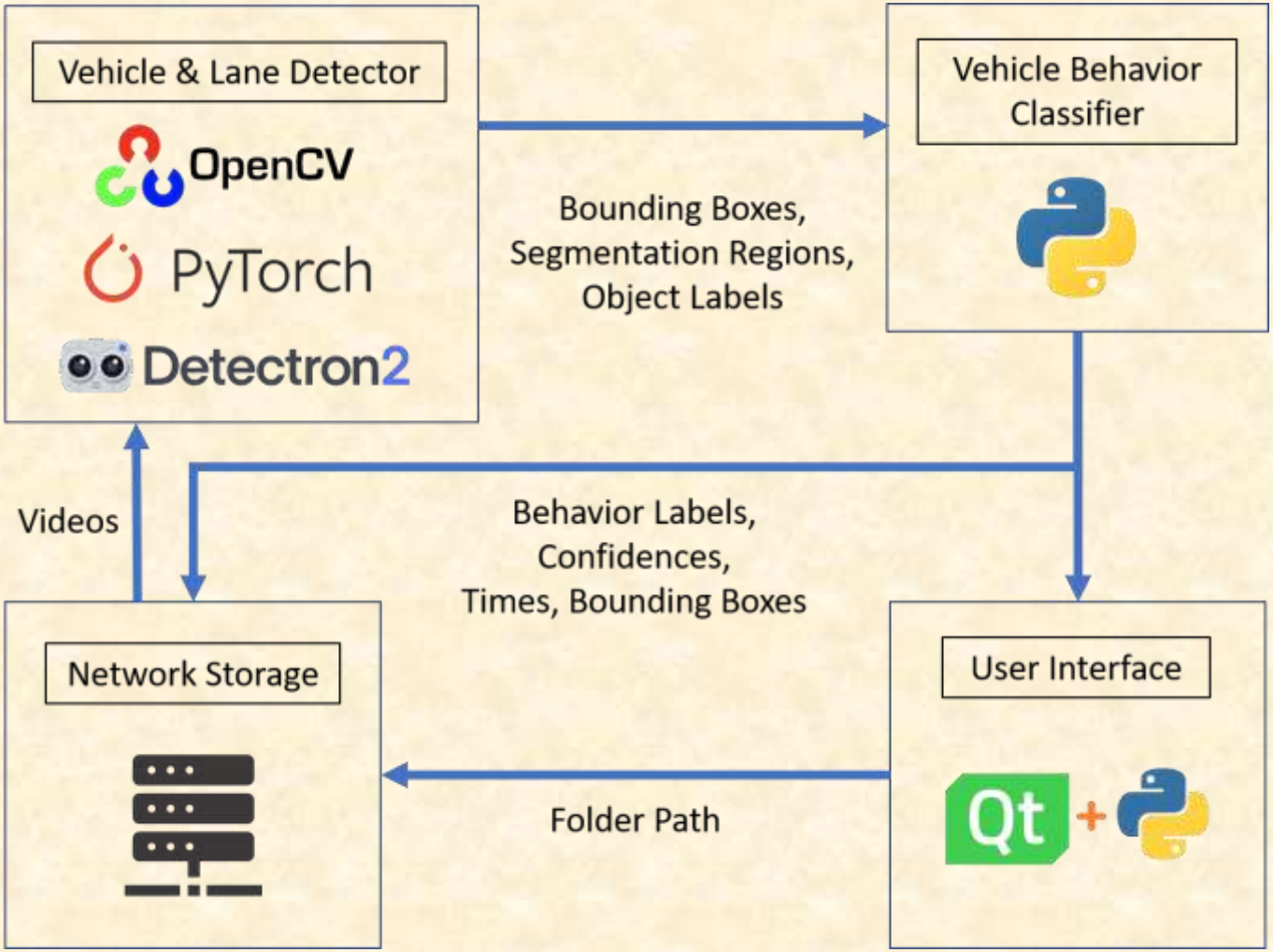
From Students…
…to Professionals

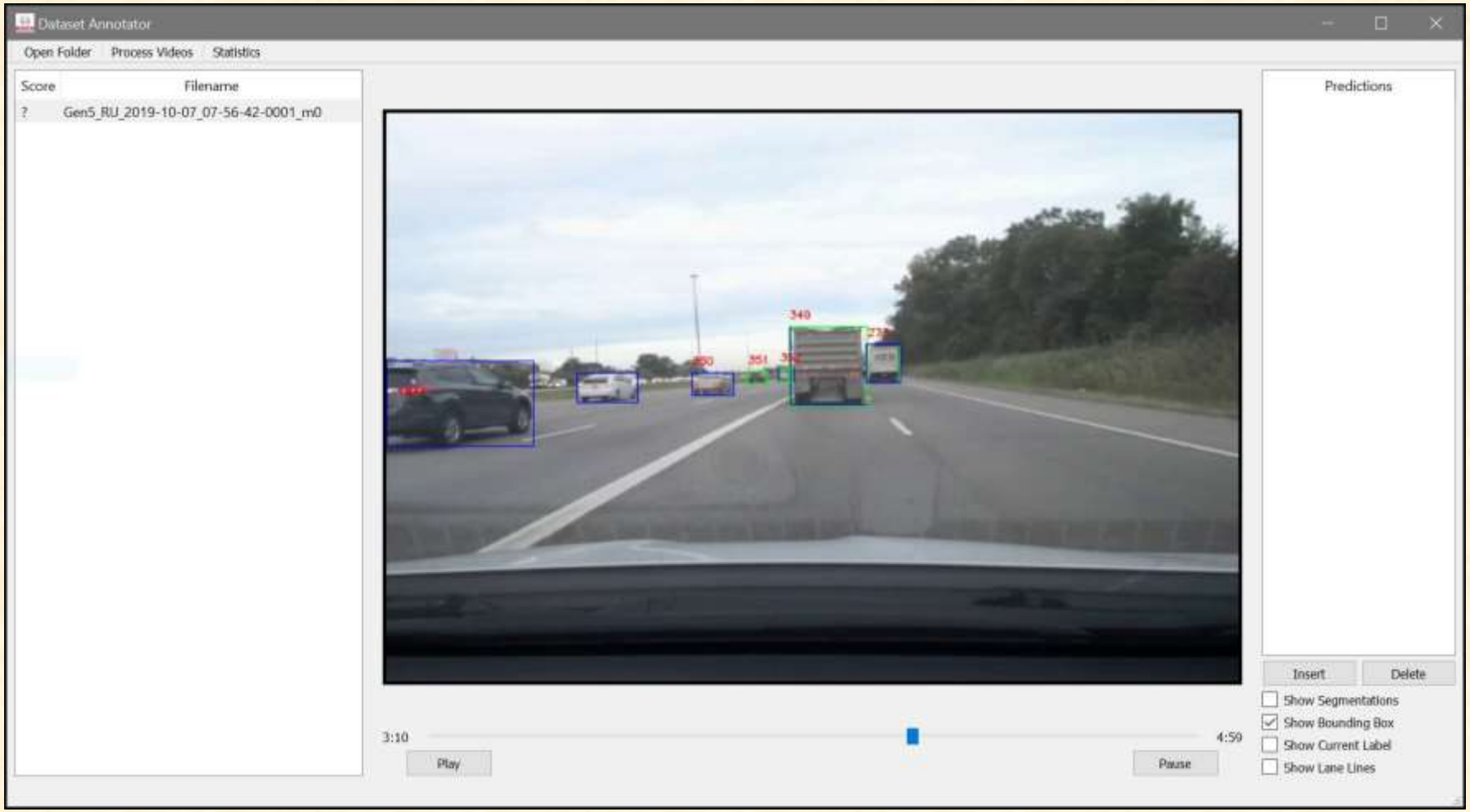
Project Overview

- Use video recognition to identify the current target object throughout the video
- Generate a list of labels describing the behavior of the current target object
- Labels are used to check the accuracy of radar sensory data
- Display performance statistics

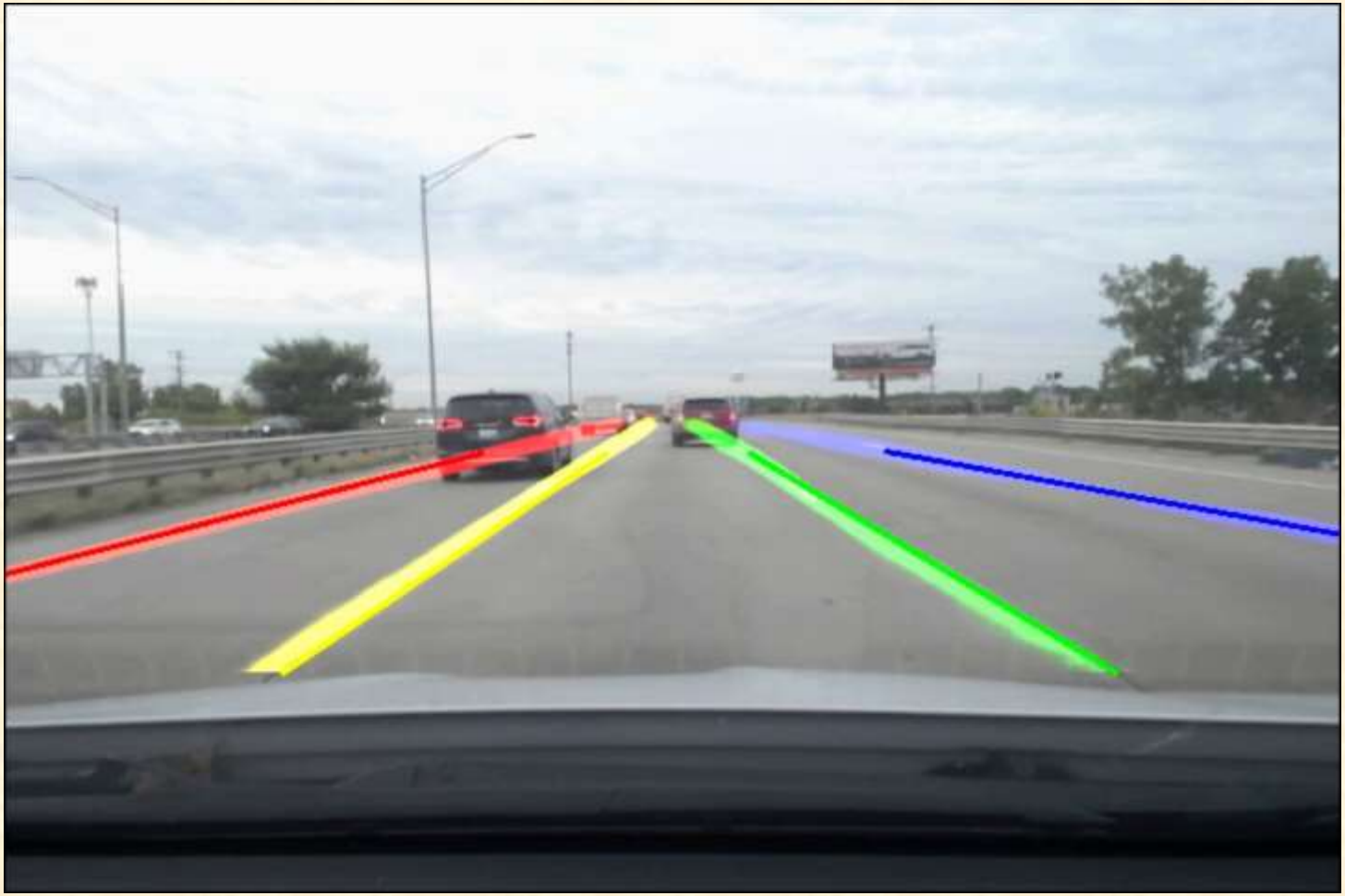
System Architecture



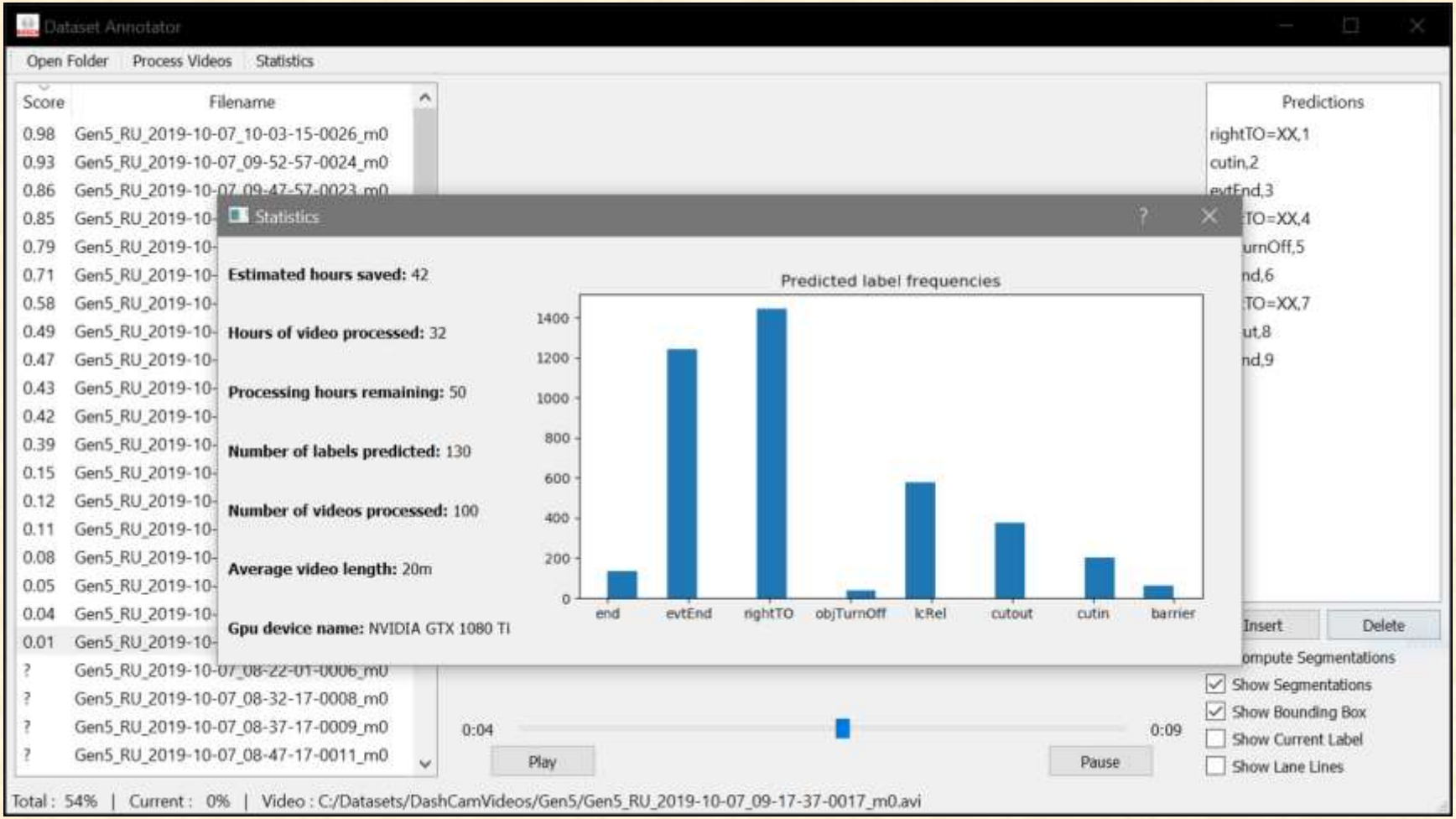
Vehicle Tracking



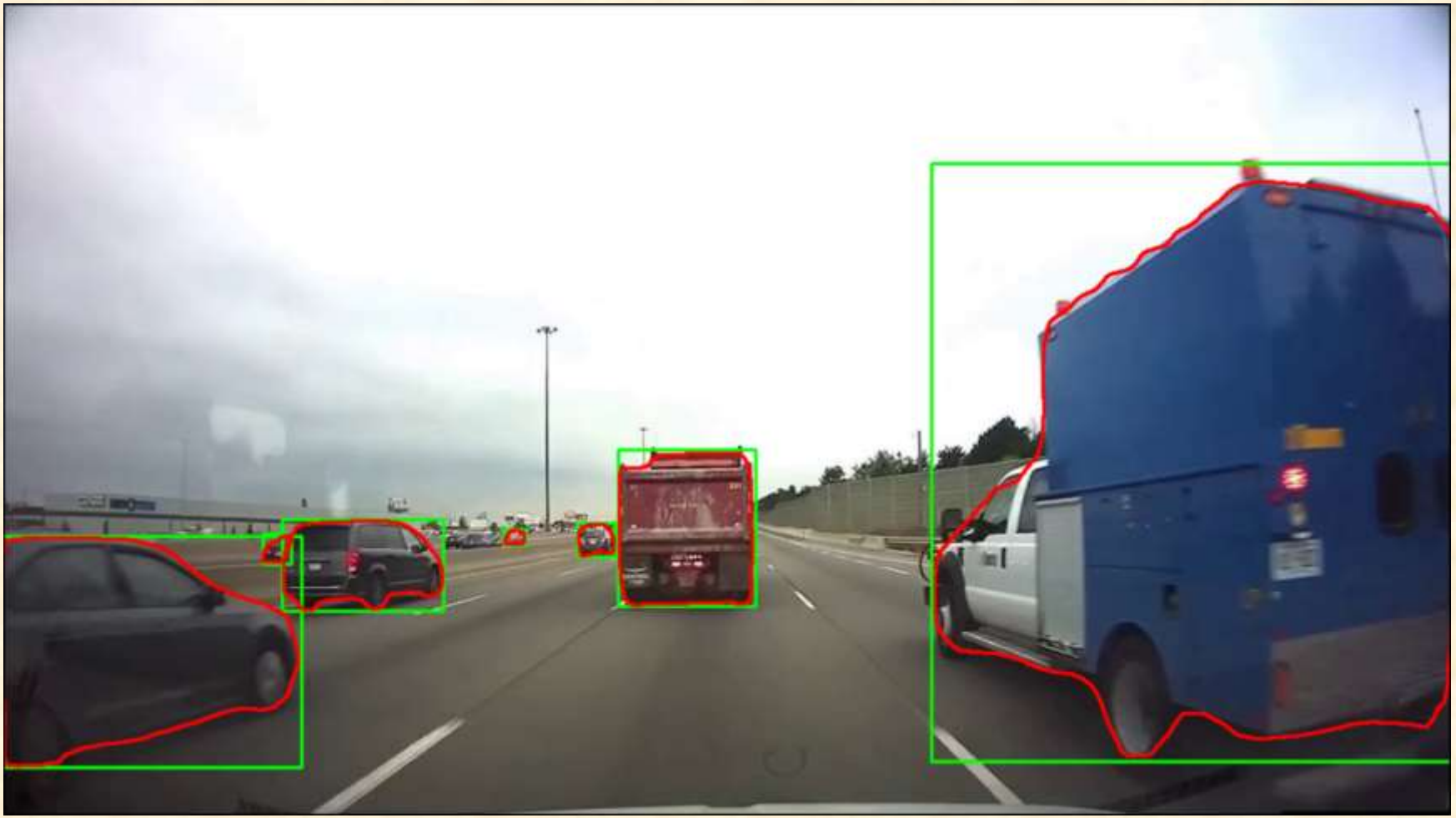
Lane Line Tracking



Statistics


Dataset Annotator
Open Folder
Process Videos
Statistics
Score
Filename
0.98 Gen5_RU_2019-10-07_10-03-15-0026_m0
0.93 Gen5_RU_2019-10-07_09-52-57-0024_m0
0.86 Gen5_RU_2019-10-07_09-47-57-0023_m0
0.85 Gen5_RU_2019-10-
0.79 Gen5_RU_2019-10-
0.71 Gen5_RU_2019-10-
0.58 Gen5_RU_2019-10-
0.49 Gen5_RU_2019-10-
0.47 Gen5_RU_2019-10-
0.43 Gen5_RU_2019-10-
0.42 Gen5_RU_2019-10-
0.39 Gen5_RU_2019-10-
0.15 Gen5_RU_2019-10-
0.12 Gen5_RU_2019-10-
0.11 Gen5_RU_2019-10-
0.08 Gen5_RU_2019-10-
0.05 Gen5_RU_2019-10-
0.04 Gen5_RU_2019-10-
0.01 Gen5_RU_2019-10-
? Gen5_RU_2019-10-07_08-22-01-0006_m0
? Gen5_RU_2019-10-07_08-32-17-0008_m0
? Gen5_RU_2019-10-07_08-37-17-0009_m0
? Gen5_RU_2019-10-07_08-47-17-0011_m0
Predictions
rightTO=XX,1
cutin,2
evtEnd,3
TO=XX,4
urnOff,5
nd,6
TO=XX,7
ut,8
nd,9
Statistics
Estimated hours saved: 42
Hours of video processed: 32
Processing hours remaining: 50
Number of labels predicted: 130
Number of videos processed: 100
Average video length: 20m
Gpu device name: NVIDIA GTX 1080 TI
Predicted label frequencies
1400
1200
1000
800
600
400
200
0
end
evtEnd
rightTO
objTurnOff
lcRel
cutout
cutin
barrier
Insert
Delete
ompute Segmentations
Show Segmentations
Show Bounding Box
Show Current Label
Show Lane Lines
0:04
0:09
Play
Pause
Total : 54% | Current : 0% | Video : C:/Datasets/DashCamVideos/Gen5/Gen5_RU_2019-10-07_09-17-37-0017_m0.avi

Instance Segmentation



What's left to do?

- Generate more accurate labels
- Improve lane detection/vehicle tracking
- Compute confidence intervals

Questions?