

**MICHIGAN STATE**  
**UNIVERSITY**

**Beta Presentation**

**Classifying Target Vehicles for Adaptive  
Cruise Control  
The Capstone Experience**

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Spring 2020



*From Students...  
...to Professionals*

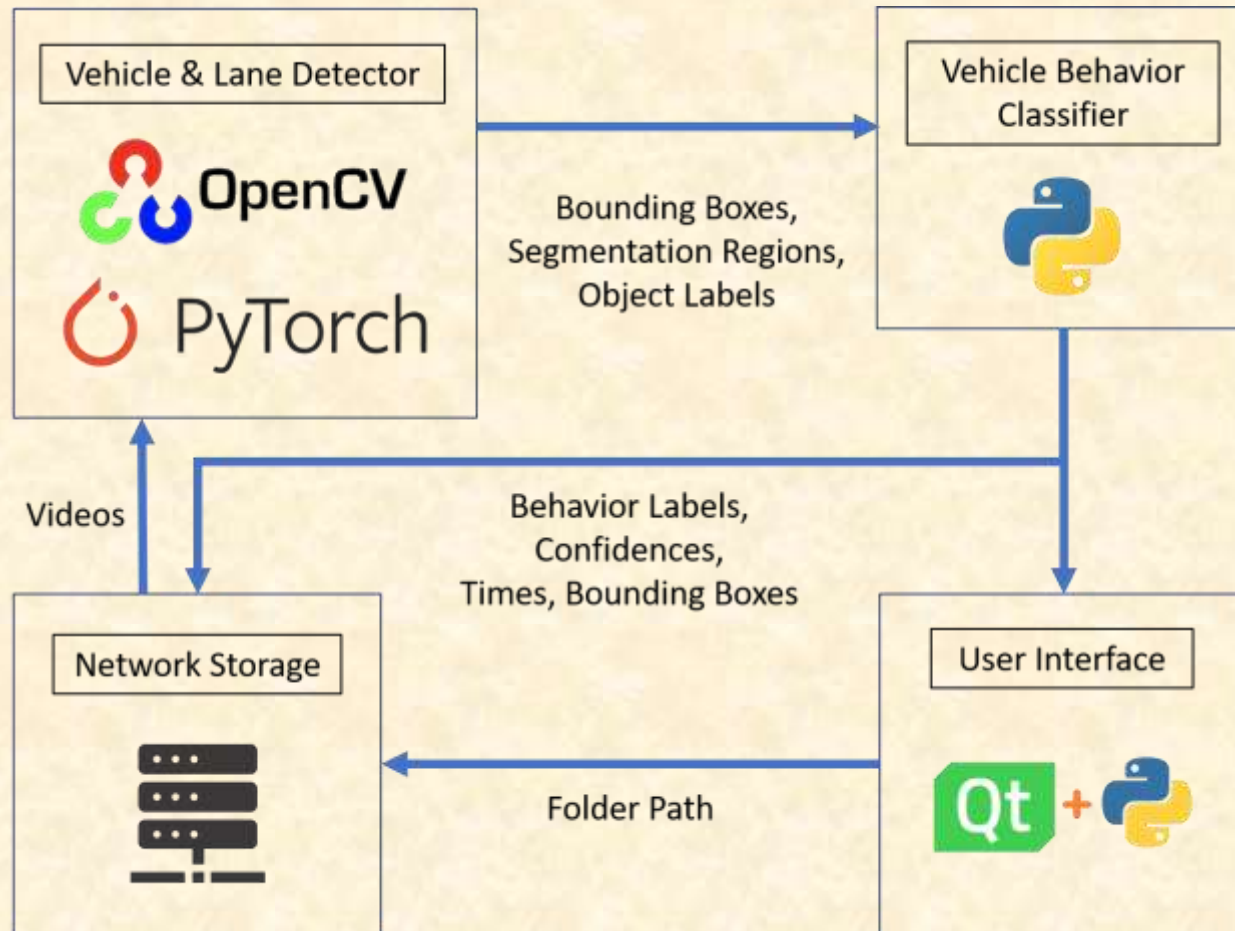
# Project Overview

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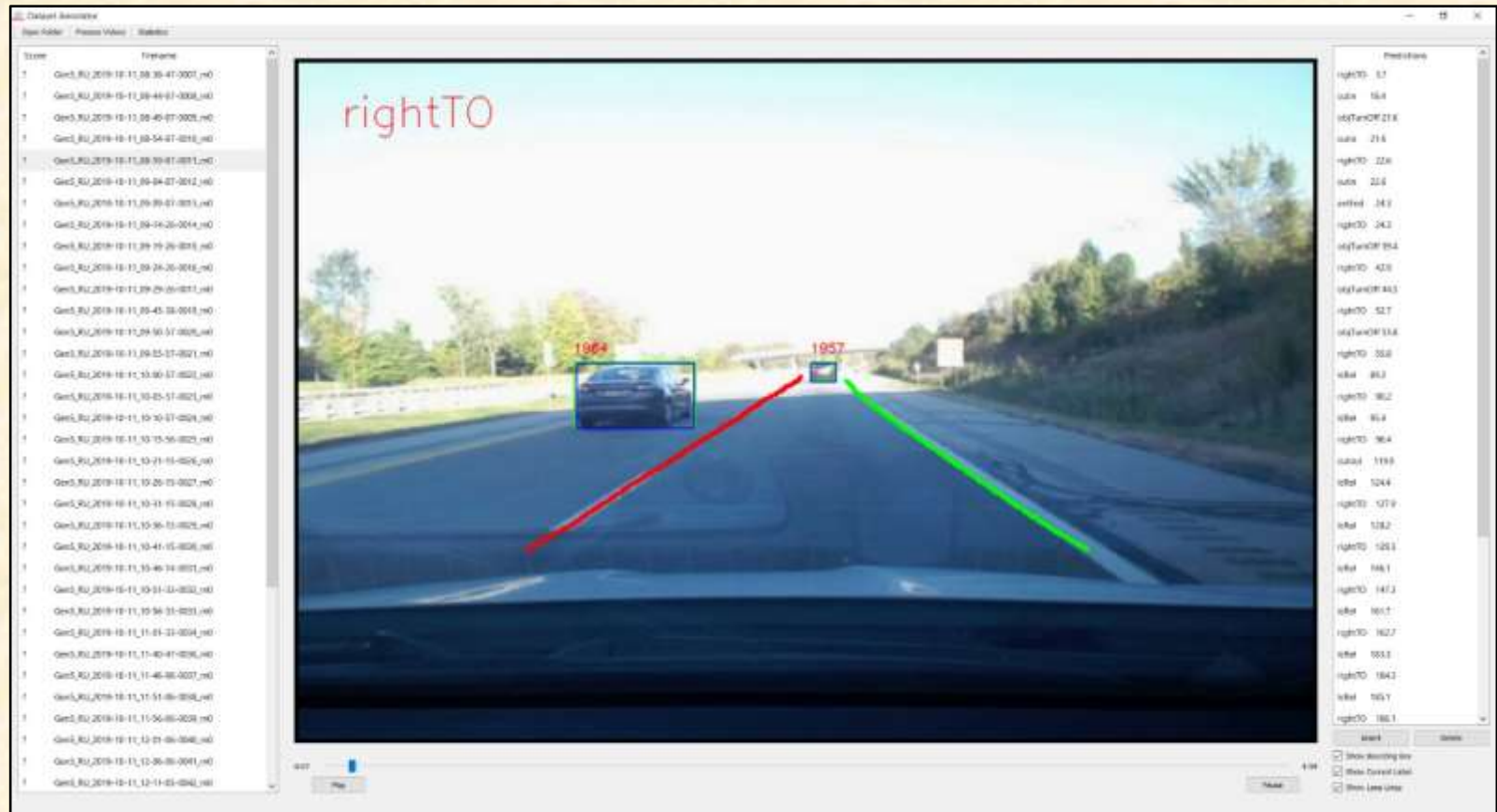
- Use video recognition to identify the current target object throughout the video
- Generate a list of labels describing the behavior of the current target object
- Labels are used to check the accuracy of radar sensory data
- Display performance statistics



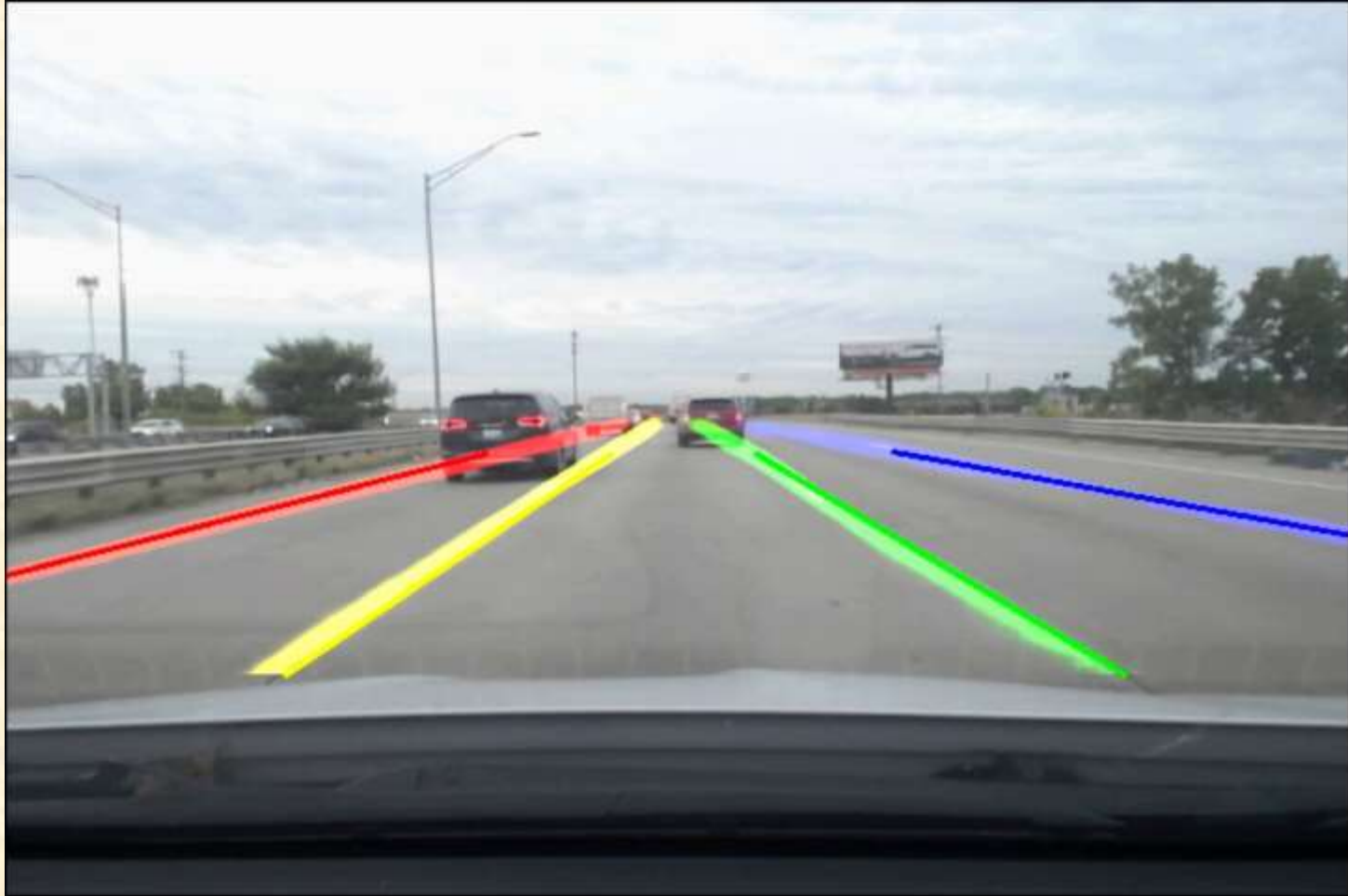
# System Architecture



# Vehicle Tracking



# Lane Line Tracking





# Statistics

The screenshot displays the Dataset Annotator software interface. The main window shows a list of video files with columns for Score and Filename. A 'Statistics' window is overlaid, providing processing metrics. A 'Predicted label frequencies' bar chart shows the distribution of predicted labels. A 'Predictions' list on the right shows the detected labels for a selected video. The interface also includes a video player at the bottom with a progress bar and playback controls.

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_2019-10-07_09-47-57-0023_m0
0.79	Gen5_RU_2019-10-07_09-47-57-0023_m0
0.71	Gen5_RU_2019-10-07_09-47-57-0023_m0
0.58	Gen5_RU_2019-10-07_09-47-57-0023_m0
0.49	Gen5_RU_2019-10-07_09-47-57-0023_m0
0.47	Gen5_RU_2019-10-07_09-47-57-0023_m0
0.43	Gen5_RU_2019-10-07_09-47-57-0023_m0
0.42	Gen5_RU_2019-10-07_09-47-57-0023_m0
0.39	Gen5_RU_2019-10-07_09-47-57-0023_m0
0.15	Gen5_RU_2019-10-07_09-47-57-0023_m0
0.12	Gen5_RU_2019-10-07_09-47-57-0023_m0
0.11	Gen5_RU_2019-10-07_09-47-57-0023_m0
0.08	Gen5_RU_2019-10-07_09-47-57-0023_m0
0.05	Gen5_RU_2019-10-07_09-47-57-0023_m0
0.04	Gen5_RU_2019-10-07_09-47-57-0023_m0
0.01	Gen5_RU_2019-10-07_09-47-57-0023_m0

**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**

Label	Frequency
end	150
evtEnd	1250
rightTO	1450
objTurnOff	50
lcRel	580
cutout	380
cutin	200
barrier	80

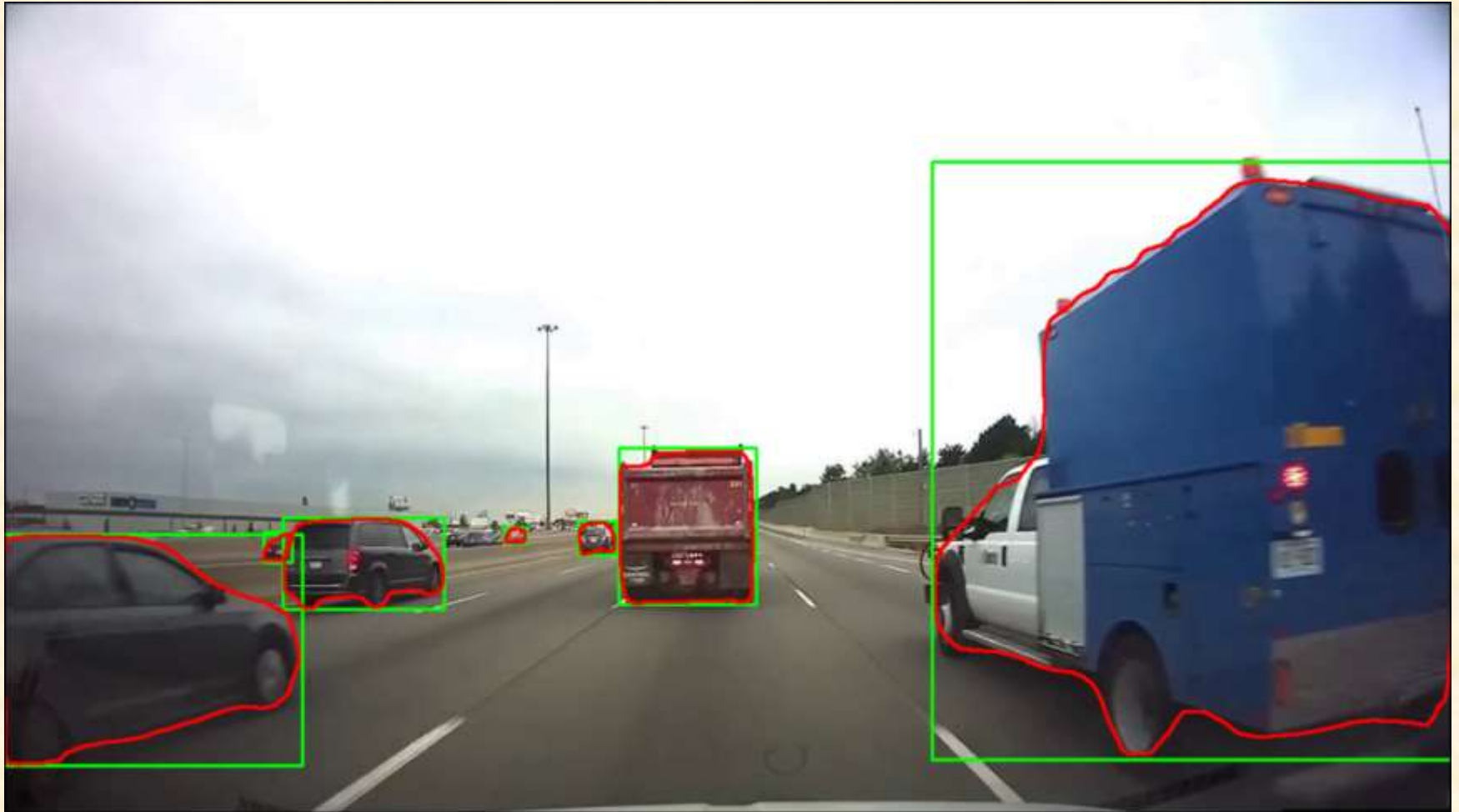
**Predictions**

- rightTO=XX,1
- cutin,2
- evtEnd,3
- rightTO=XX,4
- objTurnOff,5
- end,6
- rightTO=XX,7
- cut,8
- end,9

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?

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- Generate more accurate labels
- Compute confidence intervals
- Application deployment
- Fix bugs





# Questions?

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