CIVIL AND ENVIRONMENTAL ENGINEERING DEPARTMENT

MD1-3

Infrastructure for Advanced Driver-Assistance Systems

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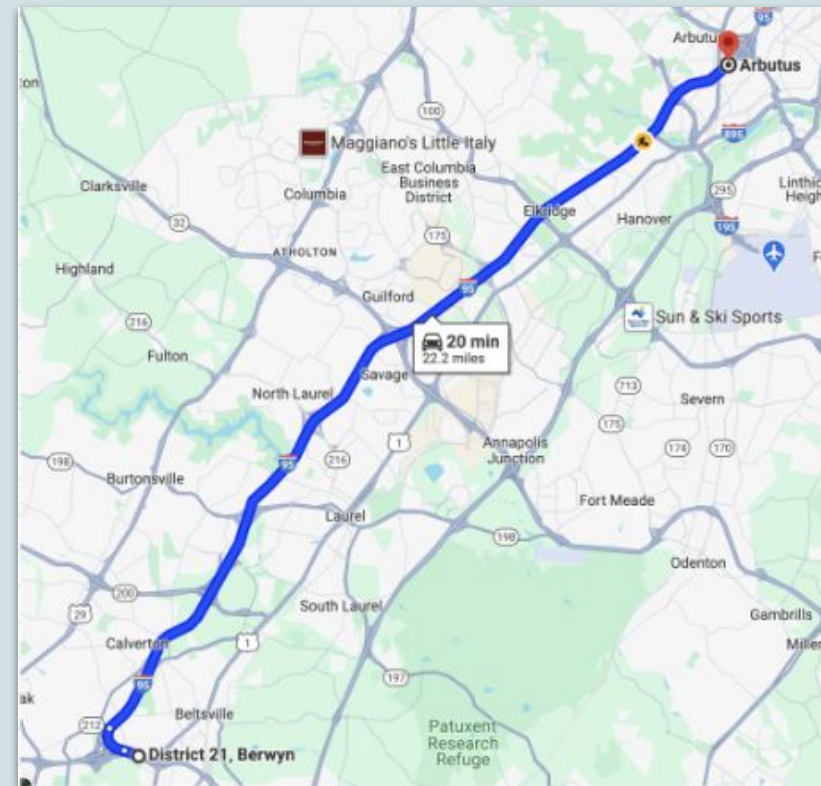
A. JAMES CLARK SCHOOL OF ENGINEERING

Routes of Observation
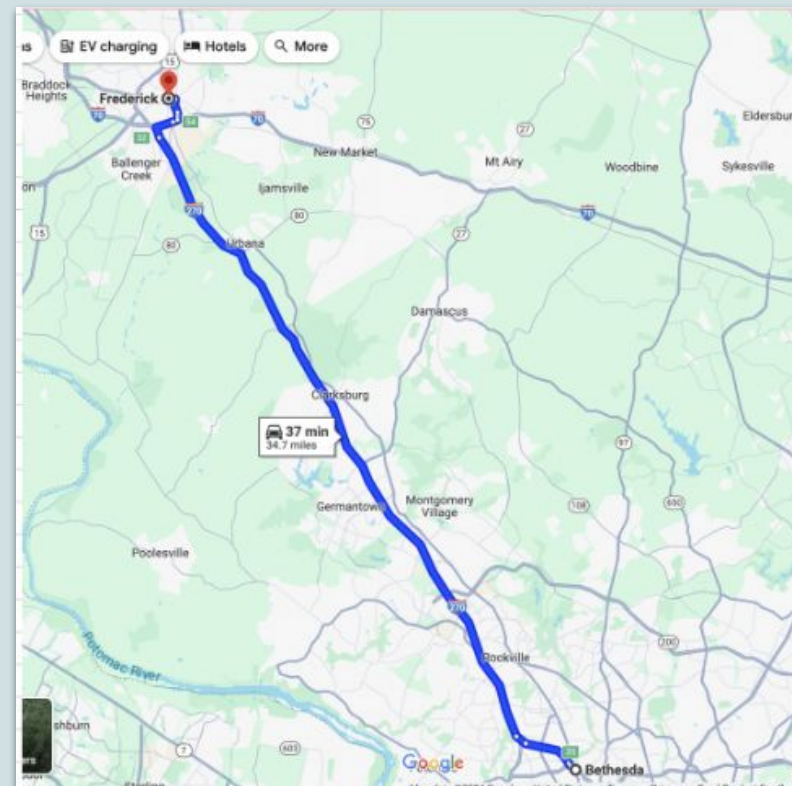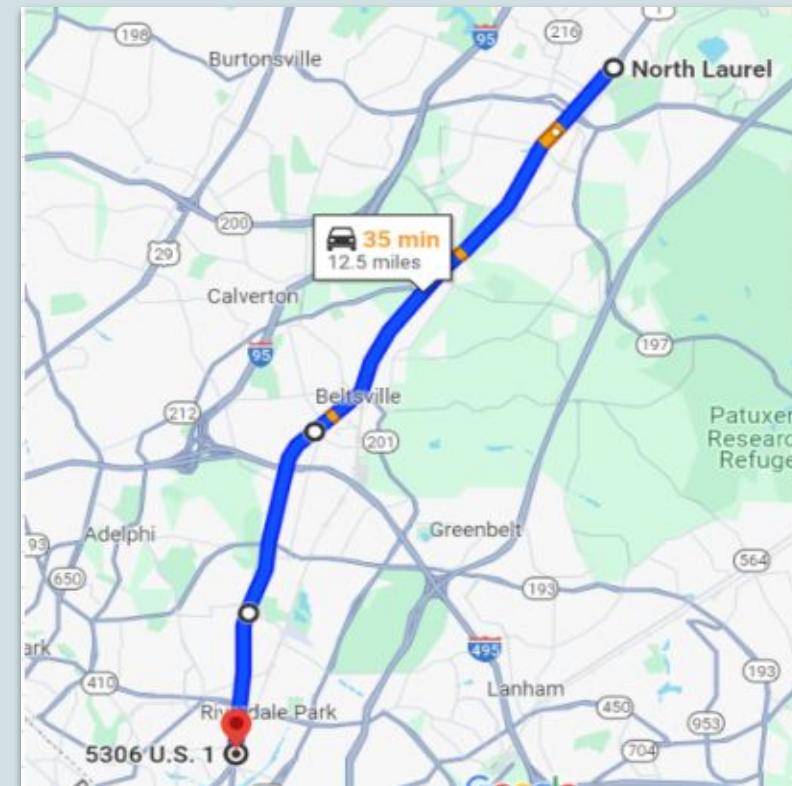
I-95   I-270   Route 1   Kenilworth Ave

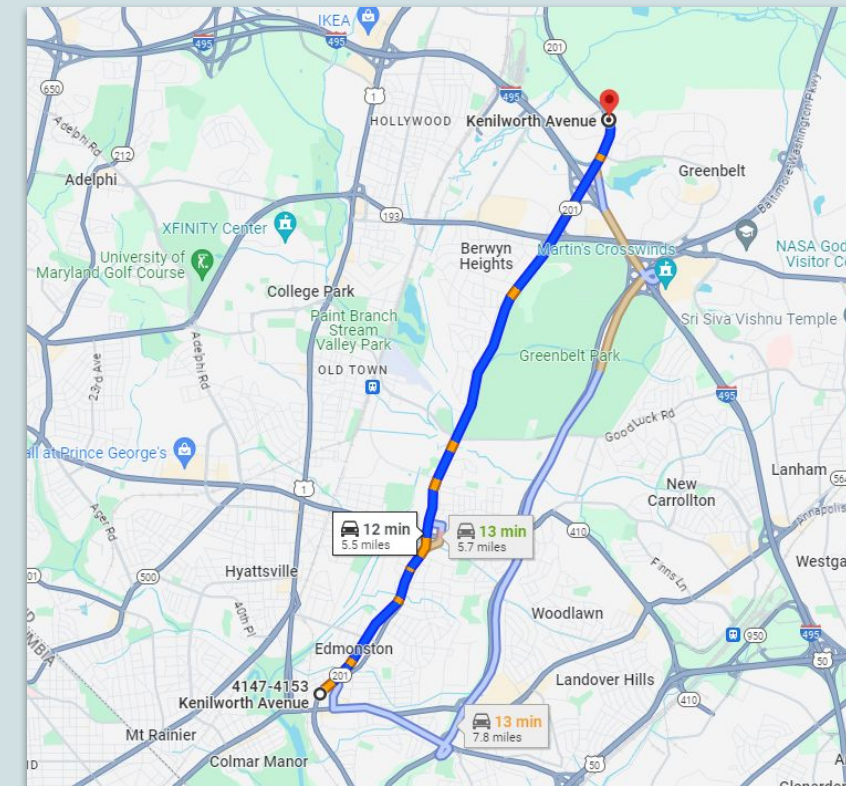## Software

ADAS
ADVANCED DRIVER ASSISTANCE SYSTEMS

ultralytics YOLOv5

Intended Audience

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION — STATE HIGHWAY ADMINISTRATION

DEPARTMENT OF TRANSPORTATION · UNITED STATES OF AMERICA

HC

Accurate Data Detection

w_faded 0.48

w_faded 0.34

Goals

Improvement
- Maryland roads markings via higher ADAS systems efficiency.
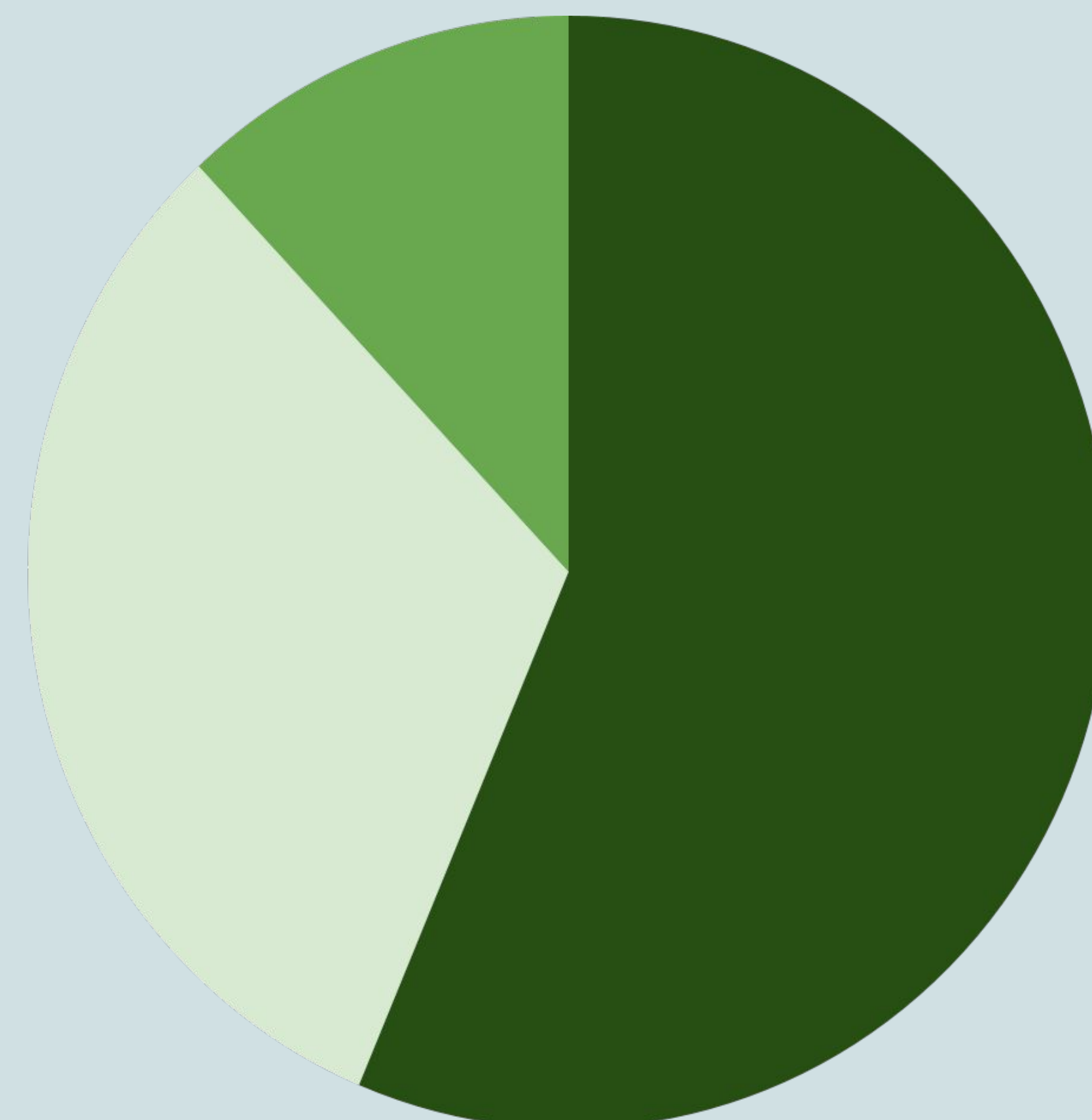- Vehicle mobility and operational safety in Maryland.

Incentivization
- Local and federal government agencies to improve transportation infrastructure deficiencies.

Outcome

- Correct detection: 56.3%
- Incorrect detection: 31.7%
- Missed detection: 12%

Inaccurate Data Detection

y_faded 0.26

w_faded 0.33

Analysis

- Weather, such as rain, played a big roll on YOLO's detection efficiency.
- Compared to ADAS features, YOLO's detection rate malfunctioned on rainy days the most and was more affected by colors.

Notes

- We have observed that when YOLO's detection software runs more than 2 videos per session, the software loses efficiency.
- Glare on windshields also affected YOLO's capabilities, reflecting parking passes.