TJA4
Software Engineering CSE 435
Michigan State University
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Traffic Jam Assist (TJA) is an extension of current Adaptive Cruise Control (ACC) systems.

**Project Overview**

- Minimize frustration while stuck in traffic
- Alleviate driver fatigue on Limited Access Highways
- Mitigate driver error during bumper to bumper traffic
Overview of Features

● Maintain set distance from target vehicle
● Match speed of surrounding vehicles in slow traffic
● Alert driver when sensors are obstructed
● Allow for driver override
● Prevent unauthorized access to the system
Domain Research

- Investigated automotive vehicles with similar embedded features - Automatic Cruise Control and Traffic Jam Assist
- Applied improved hardware, software, and security requirements
- Project Constraints
  - Driving on other roads besides limited access highways
  - Poor weather conditions
  - Be active only if ACC is active
  - TJA set speed cannot exceed 35 mph
Part II: Model-based View of System
Part III: Demonstration

- The prototype interface displays a top-down view of the driver’s vehicle and the target vehicle
- Sample scenarios
  - When target vehicle slows down, the driver’s vehicle also slows down
  - When surrounding vehicles move above 35 mph, TJA is disabled
  - When vehicle is stopped for more than 30 seconds, the driver must re-engage the TJA system
Sample Scenario 1

- The driver’s vehicle was at the set distance from the target vehicle moving at the same speed, and the target vehicle slows down, thus the user vehicle must slow down as well.
Sample Scenario 2

- When detected vehicles are moving above 35 mph (approx. 56.3 km/h), the TJA system is disabled within 0.5 seconds.
Sample Scenario 3

Vehicle has been stopped for more than 30 seconds and the driver must re-engage the TJA system.

After re-engaging the vehicle will start moving again if traffic moves.
We gratefully acknowledge and appreciate the participation of our customer, Mr. William Milam from Wmilam Consulting LLC.