

Near-Crash Warning System for Connected-Vehicles

(STRIDE Project F4)

PROJECT OVERVIEW

Highway crashes cause serious social and economic problems and, therefore, preventing them is a primary task for transportation systems. Many new cars have systems to alert drivers of near-crashes that rely on built-in sensors such as cameras, LIDAR, and radar. This project developed a warning system for connected-vehicles (CVs) that does not rely on the car's sensors and can function regardless of whether built-in sensors are functioning properly.

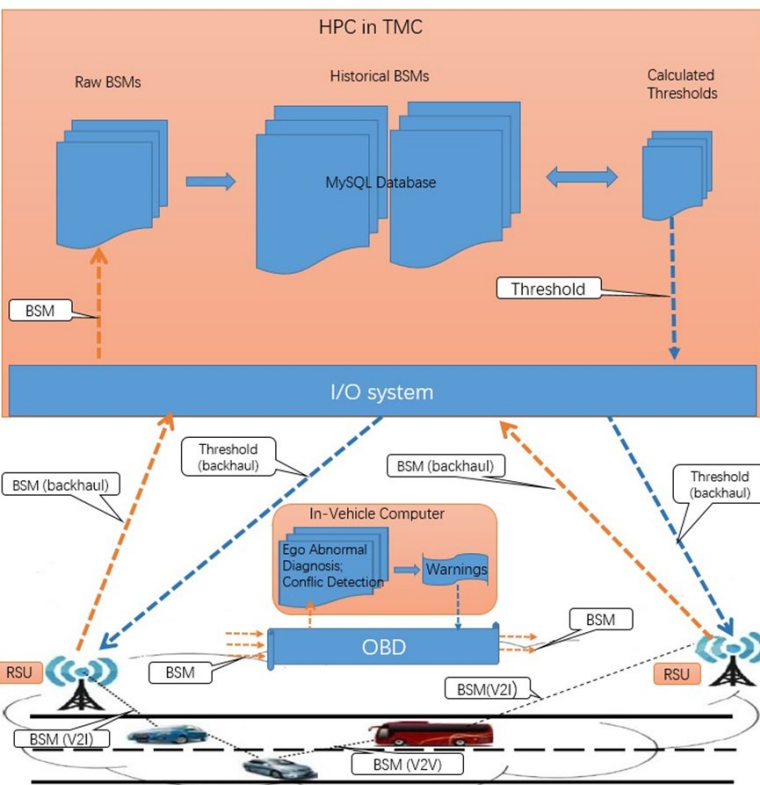
GOAL

The goal was to construct a near-crash warning system using only the basic safety messages (BSMs) generated by connected vehicles (CVs).

PRODUCT DESCRIPTION

Automatic Safety Diagnosis System for the Connected-vehicle Environment (ASDSCE)

The ASDSCE is a computational near-crash warning system that uses only the basic safety messages (BSMs) generated by connected vehicles (CVs). BSMs are data that connected vehicles record such as vehicle position, heading, and speed.



PRODUCT

A warning system, designed for connected vehicles, alerts drivers of potential collisions and remains operational even if the car's sensors are not working properly.

IMPACT

The warning system can reduce crashes resulting in fewer deaths.

The system can improve the overall safety of transportation automation.

WHO BENEFITS?

- Departments of Transportation
- Automotive industry

RESEARCH TEAM

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The ASDSCE consists of 1) a dedicated cloud-based subsystem, 2) an in-vehicle subsystem equipped in all the connected vehicles (CVs) under its surveillance, and 3) the datapath between them.

The ASDSCE determines the threshold of normal behavior of each vehicle using historical data from the BSMs. It then checks the real time BSMs against the thresholds to detect abnormal driver behavior. With the real time BSMs, the system also detects potential conflicts between two vehicles. A near-crash warning is generated when at least one vehicle exhibits abnormal behavior and is predicted to conflict with another vehicle's path.

For more information, contact the Lead PI or visit [STRIDE Project F4](#).

About STRIDE

The Southeastern Transportation Research, Innovation, Development & Education Center (STRIDE) is the 2016 Region 4 (Southeast) U.S. Department of Transportation University Transportation Center headquartered at the University of Florida Transportation Institute (UFTI). STRIDE Partners include Auburn University, The Citadel, Florida International University, Georgia Institute of Technology, Jackson State University, Tennessee Tech University, North Carolina State University, University of Alabama at Birmingham, University of North Carolina at Chapel Hill.