MnCAV Ecosystem

Advancing future mobility for all

The MnCAV Ecosystem is a collaborative environment for advancing research, engagement, and workforce development to prepare Minnesota and the world for broad-scale CAV deployment as part of a safe and equitable mobility system.

Overview

As technologies are developed to move vehicles closer to full automation, a parallel effort is needed to ensure that the supporting infrastructure, policies, regulations, and standards are developed for successfully deploying connected and autonomous vehicles (CAVs).

Led by the Center for Transportation Studies at the University of Minnesota, the MnCAV Ecosystem brings together interdisciplinary researchers, government, and industry partners. Ecosystem research will focus on creating and testing CAV technologies under the real-world conditions in which they will operate, while education and outreach efforts will help develop the needed workforce and further public trust and acceptance of these technologies.

Research

Leveraging University of Minnesota expertise with external partners, MnCAV Ecosystem research will draw on our unique strengths to conduct research in the following areas:

Cold weather conditions. Minnesota's climate offers the ideal environment to conduct research and test capabilities to safely operate CAVs in cold weather conditions—critical for taking CAVs from the lab into the streets.

Equity. CAVs carry the potential to improve the livelihood of underserved populations. Our research will explore the daily needs of all communities to inform the design of an equitable mobility system.

Public perception and trust. Full integration of CAVs into society will require people to believe they are safe. Work in this area will aim to foster awareness of CAV technologies and design vehicles that humans can trust.

The connected environment. A successful transition to CAV will require a strategy that integrates both the hard infrastructure (such as roadways, traffic lights, and curbs) and companion road uses (such as light rail) to build a connected ecosystem.

Vulnerable road users. Safely integrating CAVs into the urban and rural transportation networks will require ways to detect and identify vulnerable road users such as bicyclists and pedestrians, as well as learning how these road users will interact with CAVs.

To view active or completed University of Minnesota CAV research projects, see **cts.umn.edu/research/topics/connected-automated-vehicles-research**

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MnCAV Ecosystem
University of Minnesota

Supporting Infrastructure

MnCAV Ecosystem facilities enable research, development, education, and outreach opportunities to safely explore connected and automated vehicle technology in all weather conditions. These include:

- A connected and automated Chrysler Pacifica minivan serving as a customizable, experimental testbed for investigating topics such as sensing technologies, vehicle control, V2V platooning, and traffic patterns
- A transit shuttle for gathering public perception data through engagement, outreach, and demonstration initiatives
- On- and off-road test sites

Outreach and Workforce Development

The public is intrigued by, but also wary of, CAV deployment. The MnCAV Ecosystem will aim to inform and engage communities through demonstrations and other public-facing events.

Additionally, private industry and the public sector will need a skilled workforce to design, build, and operate the CAV transportation system. MnCAV Ecosystem initiatives will help educate students in the multiple CAV-related disciplines through University curricula and experiential opportunities, including a Career Pathways Camp in summer 2021.

Partners

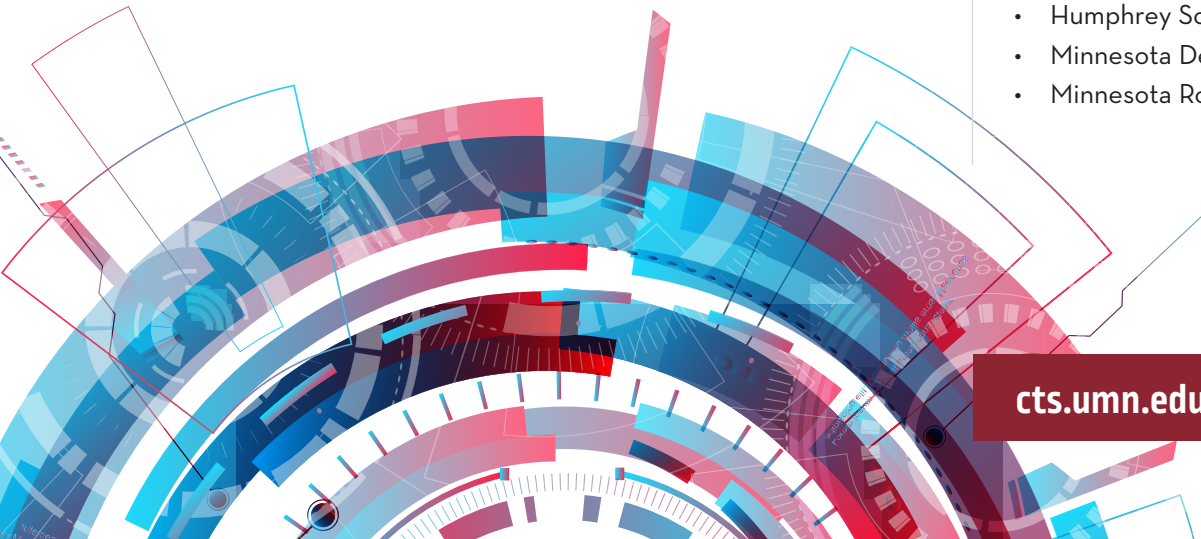
- Dataspeed
- Minnesota Department of Transportation
- Minnesota Local Road Research Board
- The Plum Catalyst
- VSI Labs
- White Bear Lake AV Shuttle Pilot

U of M Financial Contributors

- Office of the Vice President for Research
- Center for Transportation Studies
- College of Science & Engineering
- College of Design
- Parking & Transportation Services

Individuals from the following:

- Dept. of Civil, Environmental, & Geo-Engineering
- Dept. of Computer Science & Engineering
- Dept. of Industrial Systems & Engineering
- Dept. of Mechanical Engineering
- Humphrey School of Public Affairs
- Minnesota Design Center
- Minnesota Robotics Institute



cts.umn.edu/programs/MnCAV