HumanFIRST Program
The HumanFIRST Program focuses on human factors research, bringing together a core staff of cognitive psychologists and a multidisciplinary network of researchers to support research that improves safety and efficiency.
Capabilities include:
- An immersive, virtual-reality simulation environment for evaluating driver performance. This simulator can create virtual environments that precisely reproduce any geospecific location.
- A bus driving simulator for testing and evaluating bus driver-support systems and training protocols.
- Access to a variety of test track and operational research settings.
- A wide range of data collection systems, including eye tracking, psycho-physiological monitoring, multimedia in-sim observation, and blood-alcohol measurement.

Director: Michael Manser
www.humanfirst.umn.edu • 612-625-6023 • humanfirst@umn.edu

Intelligent Vehicles Laboratory
The Intelligent Vehicles Laboratory (IV Lab) develops and tests innovative technologies that improve traffic safety by reducing driver error. IV Lab research focuses on improving driver safety through the use of vehicle-guidance, driver feedback, and collision-avoidance technologies. Capabilities include:
- Multiple intelligent vehicles that serve as testbeds, including two passenger cars, a snowplow, a state highway patrol car, and a transit bus.
- The ability to develop, test, and integrate advanced technologies such as centimeter-level differential global-positioning systems (DGPS), high-accuracy digital mapping, radar and laser-based sensors, windshield head-up displays and other graphical displays, and haptic and tactile feedback mechanisms.

Director: Craig Shankwitz
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Minnesota Traffic Observatory
The Minnesota Traffic Observatory supports a wide range of research in traffic operations, safety, modeling, and transportation planning. Capabilities include:
- A dedicated system of cameras overlooking the I-94/I-35 Commons, supporting research in crash prevention and traffic flow modeling.
- Portable traffic measurement and surveillance stations capable of long periods of unsupervised operation.
- In-house facilities such as a virtual traffic control center, the Geographic Information Systems (GIS)/MAP planning table (pictured at right) and the Digital Immersive Environment (DEN).
- Multiple traffic simulation software packages supporting research in traffic flow modeling, surrogate measures of safety, and evaluation of traffic operations alternatives for ITS, construction, and planning purposes as well as hands-on hardware-in-loop simulation.

Director: John Hourdos
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What is the ITS Institute?

- The Intelligent Transportation Systems (ITS) Institute is a national university transportation center advancing technology and expertise in transportation through education, research, and technology transfer.
- The mission of the Institute is “to enhance the safety and mobility of road- and transit-based transportation through a focus on human-centered technology.”
- The Institute unites technologists with those who study human behavior to ensure that Institute-developed technologies become tools that optimize human capabilities as they relate to transportation.

Research

- The Institute directs the work of researchers from multiple disciplines to advance the state of the art in the core ITS technologies of computing, sensing, communications, and control systems to solve today’s challenging transportation problems.
- The ITS Institute advances the knowledge needed to address transportation issues and to accelerate the deployment of solutions through research in the following areas:
  - driver distraction and behavior
  - driver-assistive systems
  - intersection surveillance
  - congestion management and mitigation
  - rural safety
  - cold weather operations
  - collision avoidance
  - vehicle detection and traffic monitoring
  - socioeconomic implications of ITS technology
  - public policy related to ITS

Funding

- The ITS Institute was established by ISTEA in 1991 and reaffirmed as one of the federally designated university transportation centers through SAFETEA-LU in 2005.
- The ITS Institute has used its annual budget from SAFETEA-LU—approximately $3+ million—to attract and leverage matching funds.
- Our successes are a result of partnerships with federal agencies, the Minnesota Department of Transportation, counties, transit providers and other local agencies, and private companies.

Program Value

- Advances by the ITS Institute will ensure that U.S. leadership in the development of ITS will be maintained. Academic leadership in research and education leads to new transportation solutions by agencies and to technology innovations and economic development by the transportation industry. It also leads to enhanced educational opportunities for future professionals.