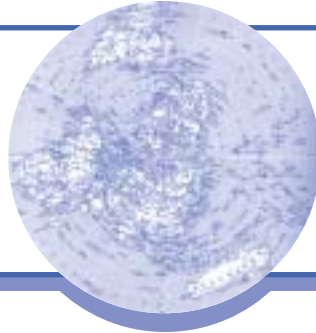


Intelligent Transportation Systems Institute

HUMAN-CENTERED TECHNOLOGY TO ENHANCE SAFETY AND MOBILITY

NORTHLAND ADVANCED TRANSPORTATION SYSTEMS RESEARCH LABORATORIES

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Purpose

The Northland Advanced Transportation Systems Research Laboratories (NATSRL) is a research program that studies comprehensive winter transportation systems and the transportation needs of cities in small urban areas. NATSRL research covers a wide range of topics, including visual and electronic traffic and road sensors, increased road life, inventory management of transportation infrastructure, and traffic density. NATSRL collaborates with the Minnesota Department of Transportation (Mn/DOT), city and county engineers, and the university research community to address transportation-related needs, especially those that are specific to northern areas and climates.

Facilities and Research

NATSRL's initial laboratories are the Advanced Sensor Research Laboratory and the Transportation Data Research Laboratory.

The Advanced Sensor Research Laboratory has facilities in the University of Minnesota Duluth's (UMD's) Electrical and Computer Engineering (ECE) Department and an off-campus field laboratory where newly developed or existing transportation sensors can be installed and evaluated. Goals of this laboratory include:

- Development and testing of advanced sensing technologies for pavement and road conditions (speed, slipperiness, and traffic density)
- Development of new techniques to detect incidents and abnormal traffic conditions
- Real-world analysis and real-time measurements



The Northland Advanced Transportation Research Laboratories program, based at the University of Minnesota Duluth, addresses transportation-related needs specific to northern climates and small urban areas.

of road, weather, and traffic information using a building constructed along Highway I-35 south of Duluth

The Transportation Data Research Laboratory is housed in the ECE Department laboratory facilities, and receives project support and laboratory space within the Industrial Engineering Department in the areas of human factors, material handling, and operations management. This laboratory works toward:

- Development of a statewide traffic data archival and analysis system
- Development of an automatic inventory management system for transportation infrastructure

- Design of efficient management strategies for small urban and large-scale event traffic flow using modern visualization and management tools

Additional NATSRL research objectives include:

- Development of a real-time decision support system for winter road and snowplow fleet management
- Efficient real-time detection of, and a warning system for, hazardous road, weather, and traffic conditions
- Development of a large-scale data management system for on/offline assessment of system performance

Education and Outreach

NATSRL serves as an important resource for University of Minnesota Duluth undergraduate and graduate students conducting transportation-related research and as a place for developing and testing new traffic information systems. In addition, students from the Fond du Lac Tribal and Community College, Iron Range community colleges, and UMD will work on NATSRL research projects under funding obtained from a National Science Foundation Computer Science, Engineering, and Mathematics Scholarships grant (“A Collaborative Infrastructure that Fosters the Pursuit of Computer Science Careers for Financially Disadvantaged Students”), awarded to the UMD Computer Science Department.

Partners

NATSRL is a cooperative research and education initiative of the University of Minnesota’s Center for Transportation Studies and its Intelligent

Transportation Systems Institute, Mn/DOT, and the University of Minnesota Duluth’s College of Science and Engineering.

For More Information

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