

Research topics:

Advanced Vehicle Systems

- Adaptive cruise control
- Blind spot warning systems
- Collision warning systems
- Adaptive cruise control

Driver Performance and Behavior

- Cell phone use
- Tire blowout
- Older drivers
- Teen drivers

Pharmaceutical Research

- Assessment of intraocular and contact lenses in low visibility and nighttime driving
- Assessment of drugs and alcohol on driver impairment



Notable accomplishments:

• NADS played an integral part in the National Highway Traffic Association (NHTSA) recommendation to mandate Electronic Stability Control as a standard feature on all passenger vehicles sold in the U.S. by 2009 (Dept. of Trans; Natl Highway Traffic Safety Admin., 49 CFR 571 and 585; Docket No. NHTSA-2006-25901; RIN 217-AJ77).

• NADS staff was involved in a study for Hoechst Marion Roussel, Inc. (HMRI; now Sanofi-Aventis) that compared the effects of driver impairment with the use of two antihistamines. Results of the study concluded that the sponsor's drug, Allegra, did not impair driving performance or cause subject drowsiness.

• In 2006, NADS conducted a Food and Drug Administration study that validated the use of our simulators for performing vision-based research. The NADS-2 simulator was later used to assess the performance of intraocular and contact lenses in low visibility and nighttime driving conditions for a major eye health care pharmaceutical company.

Contact Information:

General inquiries may be made to:

contacts@nads-sc.uiowa.edu

voice: (319) 335-4838

fax: (319) 335-4658



The National Advanced Driving Simulator
at The University of Iowa

email: contacts@nads-sc.uiowa.edu

web: <http://www.nads-sc.uiowa.edu>

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The National Advanced Driving Simulator

2401 Oakdale Blvd.

The University of Iowa

Iowa City, IA 52242-5003

<http://www.nads-sc.uiowa.edu>



The NADS-1 and NADS-2 simulators can be configured to accommodate additional visual channels as needed





The National Advanced Driving Simulator (NADS) is a world-

class research center affiliated with The University of Iowa and the United States Department of Transportation. Research conducted at the NADS in collaboration with government, military and industry partners saves lives, reduces property loss, and improves the efficiency and productivity of the vehicle manufacturing sector. As a national, shared-use facility, the NADS is available for use by any group interested in utilizing driving simulation as a tool to advance productivity, promote safety and foster innovation.

The NADS-1 simulator



Every year in the United States over 40,000 lives are lost and 1.7 million people are injured in motor vehicle crashes. Ninety percent of these crashes are attributed to human error. Traffic safety researchers at the NADS use driving simulation to examine driver performance and behavior, as well as technological innovations designed to make vehicles and driving safer.

Why simulation? Simulation provides the ideal tool to conduct research that is infeasible, too costly, or unsafe in the real world. In a simulated environment, researchers at the NADS can examine the



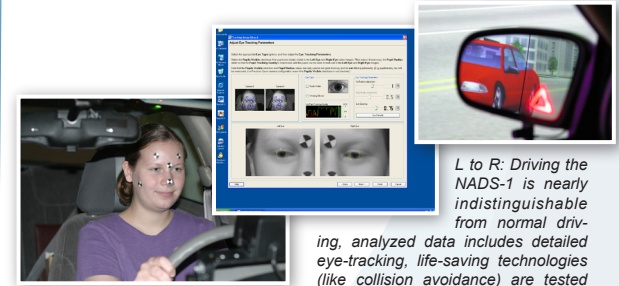
L to R: The NADS-1 control room, a look inside the NADS-1 simulation bay, a NADS-1 driver's view



L to R: The NADS MiniSim system used as a base for a fully-mobile corvette simulator, the NADS-2 simulator (Freightliner cab loaded), an example of the visual system of the NADS MiniSim

effects of "carry-on" technologies (e.g., MP3 players and cell phones), fatigue, poor vision, risk-taking, age, and physical and mental impairment due to alcohol or medication use without harming the driver, experimenter, or other vehicles and pedestrians populating real roadways. Driving simulation can also assist with driver training, accident reconstruction and forensic simulation. With three simulation platforms offering differing levels of realism, the NADS is uniquely positioned to address these needs and issues.

The NADS is home to the world's most sophisticated driving simulator, the NADS-1, which provides the most realistic driving experience in a simulated environment. The driver is



L to R: Driving the NADS-1 is nearly indistinguishable from normal driving.

analyzed data includes detailed eye-tracking, life-saving technologies (like collision avoidance) are tested at NADS

fully immersed in a virtual environment that includes wrap-around visuals, surround sound, and an expansive motion base. Features in the virtual environment include detailed roadways, various environmental conditions (including wet and snow-covered road surfaces), intelligent traffic, and pedestrians. Using the same software and technology developed for NADS-1, we have built two additional simulators that are ideal for research and training at lower levels of fidelity. In all of our simulation platforms, we provide a complete "human-in-the-loop" environment that is safe, controlled and repeatable.

As part of The University of Iowa, we are committed to academic advancement, technological innovation, and the transfer of research results to industrial and governmental communities. We routinely team with a host of multi-disciplinary researchers through our partnerships with the Colleges of Engineering, Medicine, Pharmacy, and Liberal Arts, and through the Public Policy and Injury Prevention Research Centers at The University of Iowa.

R: Video is just one aspect of the recorded data of each simulator drive



L: A comparison of motion bases of several modern simulators