

TheDriverSeat

NADS - THE NATIONAL ADVANCED DRIVING SIMULATOR - FEBRUARY 2015

NADS Virtual Proving Ground & the Trajectory to Automated Vehicles

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NADS Virtual Proving Ground & the Trajectory to Automated Vehicles

Iowa City is projected to become a hub for automated driving and research. During an event, "Iowa Test Drive: See, Ask, Try," which kicked off at NADS this past November, several key stakeholders met to discuss what it will take to get automated vehicles on Iowa City's roads over the course of the next three years.

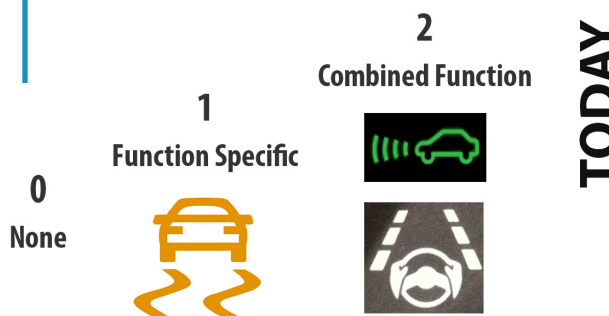
Gaining quick support by lawmakers and experiencing rapid advancements in vehicle technology, the demand to understand the automated driving model – the relationship between the driver, the vehicle, and the environment – is the key to integrating automated vehicles into our transportation systems.

The NADS facility sits at the intersection of this model and has

created an automated vehicle virtual proving ground (VPG) to see what happens when the transfer of control shifts between the vehicle and the driver. NADS VPG can implement simulations of various Connected Vehicle (CV) driver-vehicle interface designs and collect physiological data to estimate drivers' workload, complacency, and time to regain situational awareness during critical on-road interactions.

Additionally, NADS VPG provides the capability to test thousands of combinations of scenarios in a short period of time using built-in driver models. This enables quick and thorough testing of devices, algorithms and/or traffic situations. These capabilities are just the beginning in what we believe to be a pivotal time in autonomous transportation.

NHTSA's Levels of Vehicle Automation



3 Limited Self-Driving



Driver-Interface
Research

Truck Industry
Adoption

Level 3 & 4
On Roads in Select Cities

Moving the Trucking Industry Closer to CV

With nearly 3.5 million truck drivers in the U.S.¹, truck driving is one of the most common jobs in the country. Despite this fact trucking companies are experiencing a shortage of drivers. Therefore, the industry is predicted to be one of the first adopters of automated vehicles and CV technology. This past fall, NADS held a meeting with heavy truck drivers and safety directors to hear concerns about the future role of technology in trucking, and its potential benefits and pitfalls.

This discussion brought up challenges that would need to be overcome before 100% acceptance. These include issues concerning the user-friendliness of safety technologies and

whether their interface design will be more distracting than beneficial, how the technology could affect drivers' labor hours, and implications on how privacy and insurance policies would be handled.

Commercializing these technologies offers enormous potential to many industries, especially trucking. NADS is doing its share in conducting research and we are currently half-way through a study on CV in heavy trucks. Since Iowa is home to several trucking companies we look forward to seeing the impact this process will have on the trucking industry and CV adoption as a whole.

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¹ www.alltrucking.com/faq/truck-drivers-in-the-usa/

The miniSim's Growing Network & New Features

The NADS miniSim™ achieved a significant milestone with the completion of our largest multi-site study to date, which ran over 500 volunteers at five sites around the country. The miniSim platform enabled an efficient data collection over a broad spectrum of study participants. It also supported our goal to make the miniSim program one of the largest collaborative driving simulation networks, where users can leverage the capabilities of many compatible simulators to advance their research efforts.

To implement the project NADS performed simulator updates and testing at each site to demonstrate consistent simulator performance. It proved to be a successful, scalable approach to simultaneous, multi-site data collection. We look forward to leveraging this capability for future studies and the growth of our driving simulation community.



NADS Display in the US DOT's Booth at ITS World Congress
Attendees experienced Connected Vehicle technology on the miniSim.

We are pleased to recognize the newest members of the miniSim community, and highlight recent upgrades that keep it on pace with the advancement of the NADS-1 and NADS-2.

Welcome to the miniSim Community

- University of Virginia
- University of Wisconsin
- Westat, Inc.
- Idaho National Labs
- University of Central Florida
- Vehicle Research and Test Center (VRTC)

New Features

- High-fidelity animated humans. Exclusive DiGuy runtime license pricing available for miniSim users.
- New automation behaviors for automated vehicle research and development.
- Expanded API for the Logical Road Interface, allowing user-built applications to query the road network in real-time for connected vehicle, automation and other applications.
- Revised Logical Road Interface format supports many more static objects and more efficiently manages dynamic objects.

See Us in Person - We will be exhibiting again at Driving Assessment Conference June 22-25 in Salt Lake City, UT. We look forward to seeing you there!

NADS Develops miniSim™ for Evaluating Intraocular Lens Performance

Each year 3 million Americans undergo cataract surgery to replace their clouded crystalline lens with a synthetic intraocular lens (IOL).¹ These patients undergo changes in their vision and ability to drive both before and after surgery.

With support from one of our sponsors, NADS has developed and validated a miniSim based driving simulator for evaluating the clinical performance of IOLs in nighttime conditions. Critical measures include sign recognition and low-contrast object detection, with and without simulated oncoming vehicle glare. This work builds upon previous NADS experience with vision evaluation in the driving environment.

¹ <http://www.statisticbrain.com/cataract-statistics/>



miniSim Configuration & Vision
Application Scenarios

