

NADS MiniSim™

High Performance Simulator in a PC Package



The NADS MiniSim™

National Advanced Driving Simulator MiniSim™

The NADS MiniSim™ is a portable, high-performance driving simulator designed for research, development, clinical and training applications. This simulator is based on the state-of-the-art driving simulation technology that has been developed through decades of research at the National Advanced Driving Simulator and The University of Iowa. The MiniSim™ harnesses the technology found in the world's most advanced driving simulator, the NADS-1, into a smaller footprint at a lower cost.

The MiniSim™ has been designed to be packaged with a variety of hardware and software components tailored to suit client requirements. The standard MiniSim™ configuration uses a single 42" inch display with steering, pedals, shifter and seat from an actual vehicle. This quarter-cab configuration also features high-fidelity surround sound audio, a LCD-based "glass dash" instrument panel and a touch-screen based operator console. Optional configurations include multiple displays, floor-mounted gear selectors and the addition of a center dash console for driver infotainment systems.

The MiniSim™ hardware platform has been constructed using extruded aluminum channels. These provide a solid platform and yet weight less than other materials. The body of the simulator is mounted on casters that allow a single person to move and position the simulator. The simulator has been designed to be portable and is easy to setup, configure, operate and take down. A specially designed multiple-use crate is also available for shipping and transportation needs.



Key Facts

- Portable
- Easy to set up, operate and take down
- Customized for specific requirements or needs
- Showcase specific situations
- Single or multiple displays
- Baseline scenarios
- Operates on two PCs
- Available with realistic steering wheel and pedals
- Available with realistic seating



Compelling Visuals

The MiniSim™ features the same virtual environments that have been developed and used in the more advanced NADS-1 and NADS-2 simulators. The driving environments feature urban, sub-urban, rural and interstate/highway driving areas. All roads in these environments have been designed to meet road construction standards complete with signs and traffic lights. The environments feature a variety of controlled and uncontrolled intersections including 3-ways, 4-ways and roundabouts. Non-US based driving environments are available.

Time of day can be adjusted to represent day, night, dawn and dusk. Environmental conditions include dry, wet and snowy conditions. The virtual environments come with an extensive library of models of various types of car, trucks, vans, construction equipment, farm vehicle and utility vehicles. Each vehicle model has unique colors, headlights, turn/hazard signals, brake lights and 26 unique license plate combinations. The model library also comes with hundreds of signs including speed limit, construction, route marking and informational signs.

Realistic Vehicle Dynamics

The MiniSim™ utilizes NADSDyna™ -- the same high-fidelity vehicle dynamics software used in the high-fidelity NADS-1 and NADS-2 driving simulators. Vehicle dynamic models are available for several types of vehicles including cars, trucks, SUVs, military vehicles, construction and farm equipment. A number of the vehicle dynamics models have been independently validated by 3rd parties.



Virtual dash instrument cluster



The National Advanced Driving Simulator

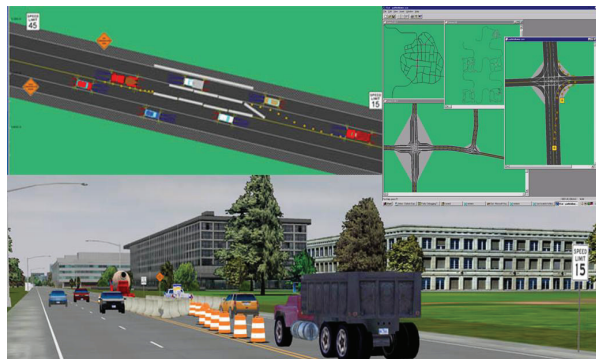
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Scenario

Scenario authoring controls the real horsepower of the MiniSim™. The MiniSim™ is packaged with scenarios that have been designed to evaluate and test driver behavior. The scenario events include vehicle following, intersection navigation, yellow light dilemmas and drives that are designed to detect driver drowsiness and impairment.



Users can also author their own scenarios by using the ISAT™ (Interactive Scenario Authoring Tool). This is a mature GUI-based tool that has been used by researchers and experiments to design scenarios for over a decade. The ISAT™ is currently in its 4th major revision and the newly updated interface allows users to even more quickly author scenarios of varying levels of complexity. The interface provides complete control over every single dynamics object in the virtual environment. The extensive toolset includes geographical triggers, time-based event sequencing, global timers, time-to-arrival triggers and traffic light sequencing to name a few.

All autonomous scenario objects contain built-in default behaviors. Vehicles and objects general traffic rules, signs and signals. The autonomous vehicles have the ability to recognize and react to each other and the driver. These vehicles traverse the road network with little or no interaction from the user. However, every parameter may be overridden by the user by using the ISAT™.



Portable and Configurable

The NADS MiniSim™ can be created in a form factor that is specialized to particular client requirements. The standard configuration employs 2 PCs that are housed within the structure of the MiniSim™. Other configurations can include actual vehicle cabs (partial or full). Installation in mobile vans or trailers is also available.



Features

- Quarter cab set-up with adjustable seat
- Single channel 42 inch plasma display
- Real automobile steering column, accelerator, brake and gear selector controls
- Passive steering loader (spring/damper mechanism, 1.5 turns lock-lock)
- 12 inch 16:9 LCD "glass dash" instrument cluster
- Audio system: 2 front channels, 1 sub
- Touch-screen simulator control panel
- Compatibility with the NADS family of simulators
- Realistic vehicle dynamics model for the driver's vehicle
- Scenario control for traffic and dynamic elements
- A suite of scenarios and road networks
- Data acquisition (driver inputs, vehicle dynamics, scenario variables)
- 100 hours of technical support

Options

- Three-channel 42 inch plasma display and stand
- 48 in (1220 mm) eye relief, 130° FOV
- 33.5 in (850 mm) eye relief, 180° FOV)
- Floor-mounted gear selector and handbrake
- Center dash console with touch screen LCD and radio cutout

Advanced Configurations

Customized systems, built exactly to client specifications. Examples of previous customizations:

- Instrumented whole, half or quarter cab built from actual vehicles
- Projection displays
- Specific road networks and scenarios (domestic and international)
- Installation in moveable vans or trailers
- Active steering loader
- Standard table-mounted steering wheel and pedals (ECS)
- Surround Sound

Specifications

Cab:

Dimensions (L x W x H):

72 x 26 x 42 in (1830 x 660 x 1070 mm)

Weight: 350 lb (160 kg)

Power: 1500 W (850W and 650W PC Supplies),

100-240 VAC 50/60 Hz

One Monitor Stand:

Dimensions (L x W x H):

22 x 40 x 66 in (560 x 1020 x 1680 mm)

Weight: 105 lb (48 kg)

Power: 380 W, 120 VAC 50/60 Hz

Three Monitor Stand:

Dimensions (L x W x H):

50 x 112 x 74 in (1270 x 2850 x 1830 mm)

Weight: 310 lb (140 kg)

Power: 1140 W, 120 VAC 50/60 Hz

