Carnegie Mellon
Human-Computer Interaction Institute

Driving Simulator Lab

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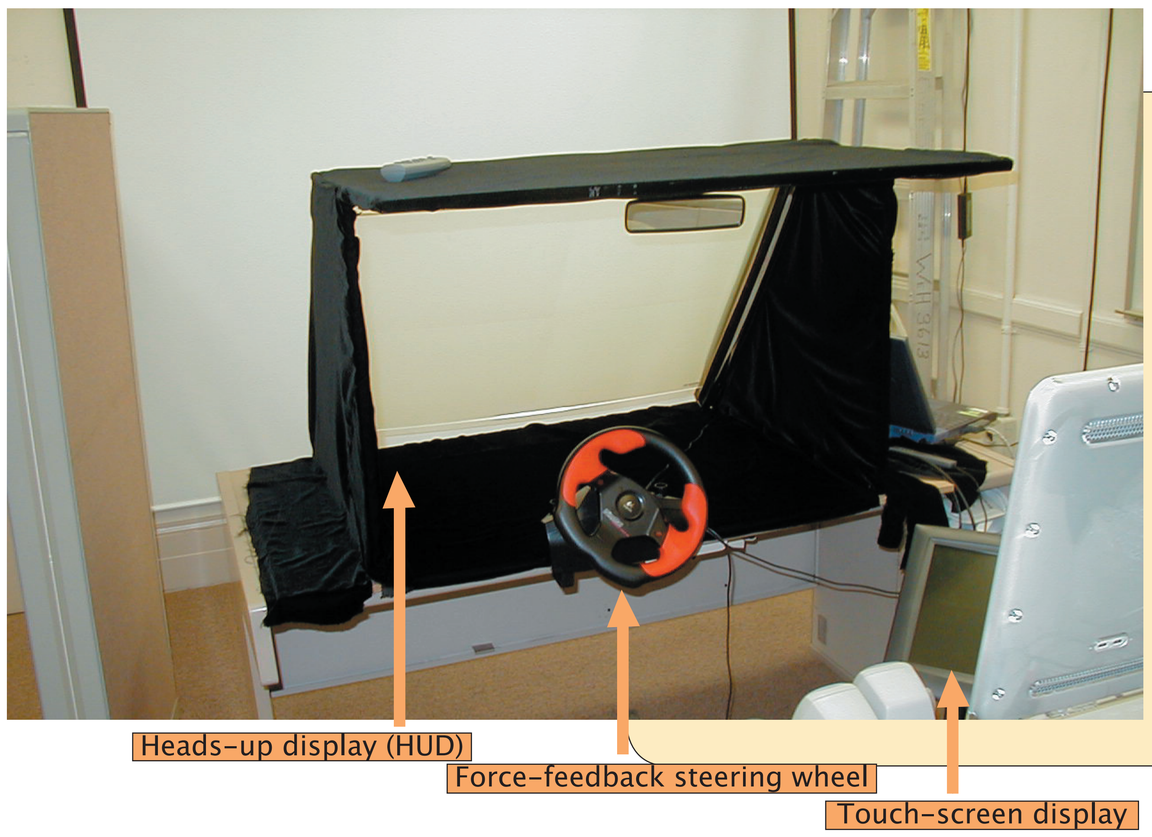
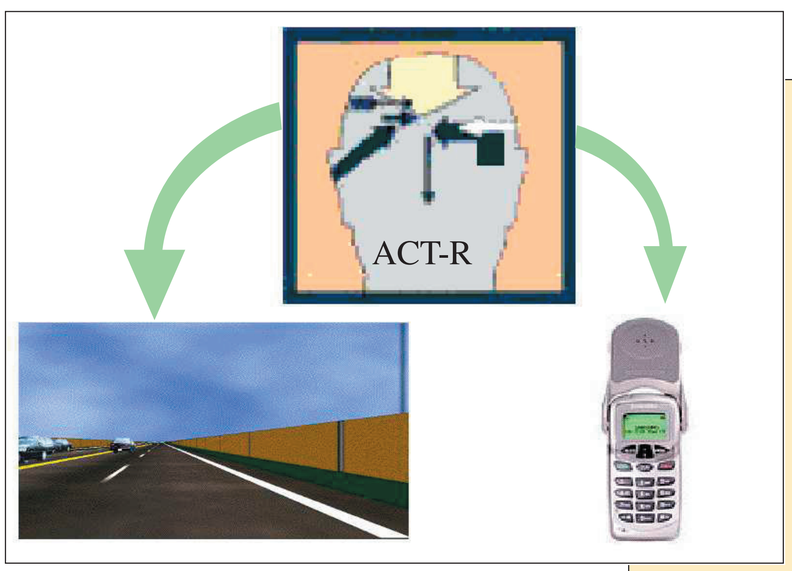


We have constructed a driving simulator for use in user testing of secondary task interfaces, empirical studies of driver distraction, and validation of cognitive models. Users operate the simulator using foot pedals and a force-feedback enabled steering wheel. The simulator includes a functioning rear-view mirror, which reflects an image displayed on a monitor behind the driver.

Support for secondary tasks includes a heads-up display (left) for presenting information to the driver, which is projected from a standard projector onto a specially coated windshield so as to appear translucent, and a touch-screen display (right) allowing driver interaction.

The simulator hardware uses standard VGA and USB connections, and may be hooked up to any software. Students and researchers create innovative devices for HUD, touch-screen, gesture or voice interaction. The simulator allows rapid testing of these ideas through automatic data collection and Wizard-of-Oz studies when these devices are combined with commercial or research driving simulators.



The MindTrack simulation software, developed by Dr. Dario Salvucci at Drexel University, provides detailed data collection and allows for easy integration with the ACT-R cognitive architecture for cognitive modeling. By comparing data from cognitive models to data from real users, the models can be validated, then used to evaluate design ideas without the need for human drivers.