

University of Iowa News Release

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UI engineer studies driver distraction in future vehicles



A University of Iowa College of Engineering researcher has received a \$698,000 contract from the U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA), to study how vehicles of the future may detect and cope with driver distraction.

John Lee, professor of mechanical and industrial engineering, will conduct the project at the UI's National Advanced Driving Simulator (NADS), where he is director of human factors research. In particular, Lee will investigate how driver distraction will likely be detected in future vehicles -- in some cases by the vehicle itself -- and how drivers may be safely alerted once it is identified.

"We are addressing the issue of the increasing complexity and number of electronic devices being brought into the car," he said. "One way to address the increased threat of driver distraction posed by iPods, cell phones and other devices is to make the vehicle aware of the devices and the driver.

"The vehicle of the future will be aware if the devices are in the car, and aware of whether the driver is looking away from the roadway. Also, the vehicle will be aware of the condition of the roadway, the type of road -- two-lane or four-lane -- the speed of surrounding vehicles, and other information."

Lee, who is also a human factors researcher in the UI Public Policy Center, plans to evaluate the performance of about 100 test participants in the safe, yet realistic, environment of the state-of-the-art NADS simulator. The study is important because driver distraction plays a role in many vehicle accidents, which annually account for nearly 40,000 U.S. fatalities.

"The study has great potential to reduce the number of deaths on the highway," said Lee, who is working on the project in cooperation with Volvo of Sweden.

While in Sweden this past summer, Lee worked with a researcher responsible for designing the algorithm that will determine how close other vehicles may approach before a sensor alerts the driver. While there, he learned that seemingly futuristic technology can be purchased today, and that it will be commonplace in the cars of the future.

"Driving is going to be a whole different experience in 10 years," he said. "In the future, all of your controls will be going through a computer, then out to the engine, the wheels and the rest of the vehicle. The car will help you steer, control the speed, and navigate."

He cautioned, however, that designers might not want to design cars that can drive themselves, even though it may be possible in some circumstances.

"Technology is making driving into a new experience. Although designers might want to automate driving, we need to use technology to augment the driver and retain the flexibility of the driver at the controls," he said.

Lee, an internationally recognized authority on driver distraction, recently addressed the National Academy of Engineering's 14th annual U.S. Frontiers of Engineering symposium, held in September 2008 in Albuquerque, N.M., on the subject of driving attention and cognitive engineering. He is also a co-author of a new book, "Driver Distraction: Theory, Effects and Mitigation," (CRC Press, 2008).

NADS, located at the University of Iowa Research Park, is the most sophisticated research-driving simulator in the world. Developed by NHTSA, it offers the highest fidelity real-time driving simulation experience.

STORY SOURCE: University of Iowa News Services, 300 Plaza Centre One, Suite 371, Iowa City, Iowa 52242-2500.

MEDIA CONTACT: Gary Galluzzo, 319-384-0009, gary-galluzzo@uiowa.edu