Creating trust with collaborative driving

4月 10, 2019

The autonomous vehicle revolution is gaining momentum. The technology promises to make our lives far easier, taking the stress out of traveling, make commuting time more productive and entertaining, while at the same time making our roads safer. But there's one aspect of the technology that still needs addressing: building trust between car and driver.

With our multimodal mobility assistant platform, Cerence is helping face this challenge, offering solutions that promise to make the transition between human-controlled vehicles and highly automated cars as seamless as possible.

Debut at CES: Veoneer's third-generation Learning Intelligent Vehicle

Giving vehicle occupants feedback is crucial to achieve trust in vehicle decisions and to support the transfer of control. Cerence's competencies – both tech-wise and with respect to user interaction and preferred experiences are fundamental to achieving this.

At CES 2019, visitors got a chance to witness our technology in action at on-track demonstrations offered by autonomous technology firm Veoneer. Striving to develop advanced systems that enhance the driving experience and help occupants trust and enjoy the autonomous drive, Veoneer integrated Cerence technologies into their third generation Learning Intelligent Vehicle (LIV) research platform. That research platform integrates a number of advanced systems to ease the interaction between human and vehicle.

Enhanced safety

Cerence supported Veoneer by supplying our advanced 3D attention analysis technology. That technology leverages different data sources and sensor information such as driver's gaze and vehicle GPS and fuses the information with data from the external environment. "By doing so, our system is able to match the driver's visual focus of attention to each object in the outside environment multiple times per second" explains Dr.-Ing. Mohammad Mehdi Moniri, Manager Multi-modal solutions at Cerence. "While in our own demo showcase we are using this technology to enable the interaction with points of interest by combing voice and gaze, with our partner Veoneer we are taking a different approach: We are providing the matching results to their LIV system for further processing and calculation of driver distraction and cognitive load."

If the LIV system detects that the driver is distracted or reaching the cognitive load, the vehicle's autonomous functionality can take control, enhancing vehicle safety, and increasing users' confidence in the technology.

A richer user experience

In addition to generating trust, enhancing the driving experience in autonomous cars is a focus for Cerence, and implemented in Veoneer's LIV research platform. The system can identify what the occupant is looking at. In their demo, Veoneer used this information to trigger certain functions inside the vehicle. When the user looked at something outside of the car, an advertisement, for example, related music was played. In the future, additional or more information could be provided to enrich the user experience.

The closer we come to vehicles that offer high levels of autonomous functionality, the more trust will be needed between the driver and the car, and greater opportunities present themselves for offering a wider range of functionality. Working closely with partners and customers and doing extensive user experience research in our DRIVE Lab, Cerence is helping meet this challenge, fostering trust between vehicle and human, making the interaction a collaboration.