Accident Research Enables Road Safety

Dr Ronald Schroeter and doctoral researcher Fabius Steinberger from Queensland University of Technology (QUT) are working closely with students from Germany to make safe driving more engaging and fun. The multidisciplinary project is being undertaken as part of an ARC DEGRA fellowship awarded to Dr Schroeter at the Centre for Accident Research and Road Safety – Queensland (CARRS-Q), in a cross-faculty collaboration with the QUT Design Lab. The innovative research takes place at the intersection of design, games, augmented reality, engineering, human factors and road safety psychology. It aims to design new technology interventions that tackle today’s road safety problems and possibly those of the future.

One problem is that safe driving on routine trips is not exciting enough, particular for young drivers. That’s where the research aims to borrow from computer games, which are designed in a way that keeps players engaged.

“We try to apply similar mechanisms to the car, where the car becomes the game controller, the driving situation represents the game, and safe driving is the objective”, Dr Schroeter said. A similar approach can also be applied to semi-automated driving to increase a driver’s situational awareness. “We have recently seen the first deadly crash involving a Tesla car in AutoPilot mode, which highlights the difficulty of making the monitoring of a semi-automated system appealing to the driver. A simple warning message telling the driver to monitor the car at all times is not a good solution.”

Instead, the interaction design researchers at QUT are looking at ways to keep drivers interested using Augmented Reality, which means overlaying information on the windscreen so that drivers stay aware of their environment.

“The driver of the Tesla in AutoPilot mode might have had a better chance avoiding the crash if they had been scanning the environment, for example, playing a Pokémon Drive type of game, which requires them to look for Pikachu projected on the windscreen display”, said Dr Schroeter. Another gaming application may be to keep skilling drivers as automation may have a deskillling effect.

Dr Ronald Schroeter and his colleague Marcus Foth, Professor of Urban Informatics in the QUT Design Lab both studied “Medieninfomatik” in Furtwangen, Germany, before they moved to Australia over 15 years ago. They have been keeping close links to German academics through the Centre for Digital Technology & Management (CDTM), and Munich universities LMU and TUM. To date, they have hosted over 20 students from Germany as part of internships or the students’ thesis projects.

“It’s great to be able to give something back to today’s student community. 15 years ago, we were in their situation looking for internationa contacts who were willing to take us on as study-abroad students or interns. Today, we are in a position to offer such opportunities. It helps that Australia is a highly sought-after destination”, Prof. Foth said.

The QUT researchers are open for business and welcome enquiries for research-industry collaborations. “We have existing links to companies like BMW, Bosch, Tesla and Honda, and while we have been successful in obtaining an ARC Linkage grant with the Honda Research Institute, we have not yet been able to do any projects with German companies”, Dr Schroeter said. “In addition to the links to Germany, we have close international ties with researchers from Tongji University in China and Stanford University in the U.S., which are interested in related AutoUI and in-vehicle User Experience Research.”

Michael Rosemann, Professor and Head of the Information Systems School at QUT, and Honorary Consul of the Federal Republic of Germany added: “QUT has a long history of working closely with companies in Germany such as SAP and Siemens. Germany is a high-priority country for QUT building university-industry partnerships. Our German collaborators appreciate the cross-disciplinary nature of QUT’s research portfolio and the opportunities related to the geographical location of Brisbane.”

Written by Dr Ronald Schroeter, QUT

ABOUT CARRS-Q

The Centre for Accident Research and Road Safety – Queensland (CARRS-Q) is the leading centre in Australia dedicated to research, education and outreach activities in road safety, and is a vital player in the international pursuit of road safety. A multidisciplinary team conducts commercial and consultancy research into areas such as intelligent transport systems, work-related road safety, school and community injury prevention, vulnerable road users, regulation and enforcement, and road safety infrastructure. This research is complemented by the use of Queensland’s first state-of-the-art Advanced Driving Simulator.

The QUT Design Lab employs bold, fresh, and rigorous design-led research to tackle major societal challenges across health & wellbeing, community, sustainability, social entrepreneurship, and culture & environment. Acting as a hub and home for a diverse team of academics, research students, and industry professionals, the Design Lab supports transdisciplinary collaborations that result in tangible impact and engagement, and which transfer knowledge and technology into beneficial applications for industry and society. Our mission is "Change by Design."