

# Navigating the technical challenges of truly self-driving cars

August 4 2014, by Marie Daniels

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Self-driving cars may not be the stuff of fantasy anymore but there is a long way to go before we can programme vehicles to take us to the pub and back, according to a leading expert in vehicle control and safety.

The trend towards automated driving and autonomous functions is developing rapidly across the automotive technology industry, with high-profile demonstrations from Google and others.

Most recently, Volvo has announced its intention of deploying self-driving vehicles in large numbers in Gothenburg, Sweden, in 2017.

But the real aim of creating completely free-moving, "go-anywhere", autonomous vehicles is a greater challenge, according to Professor

Timothy Gordon, chairman of a working group which is organising an international workshop to further research in this area.

Professor Gordon, Head of the School of Engineering at the University of Lincoln, UK, is part of a global scientific group that is bringing together leading figures in the automotive and engineering communities for the 2014 IAVSD Workshop on Automated Driving and Autonomous Functions on Road Vehicles.

The workshop, sponsored by the International Association of Vehicle System Dynamics, takes place at Chalmers University of Technology in Gothenburg from 27th to 29th August 2014.

Professor Gordon, who established close links with Chalmers University and Volvo during his time at the University of Michigan in Ann Arbor, USA, said: "Volvo is leading the charge to have cars that can drive themselves on public highways, at least in predictable traffic situations; but we are a long way away from a car that will drive you to work or to the pub and back, for example. Volvo's self-driving cars will be deployed and evaluated just on a limited range of roads.

"A major impetus for self-driving vehicles is to improve mobility for people who, for whatever reason, cannot drive a car; such as the elderly or disabled. The main aim of the workshop is to put ideas into a real-world context, as it really isn't that easy to create a [vehicle](#) that will truly make all of the necessary decisions to safely navigate and avoid accidents. A number of car companies are bringing out products that require the driver to keep their eyes on the road, in which case the benefits may be quite limited."

Professor Gordon explained that self-driving functions can be created to act as a co-pilot, which is able to avoid dangerous situations when people are distracted, not attentive or find themselves compromised due to a

sudden medical issue.

He added: "Self-driving technology will definitely help to improve road safety. The traditional vehicle dynamics community has a very strong role to play. It is not just about electronics, but also about the basic vehicle technologies, from steering to brakes and sensors. This is an area where the limitations of what you can do are important. We will be thinking about some of the more physical engineering aspects during the workshop."

The workshop will centre on several keynote presentations which will cover important aspects of self-driving vehicles, including driver interaction, vehicle automation and infrastructure.

Delegates will also be taken on a technical visit to AstaZero; a state-of-the-art test track designed for developments in active traffic safety. A number of vehicle demonstrations will be presented, including one based on Professor Gordon's work with Chalmers University; this will reveal an automatic braking function to improve safety when a car enters a curve too quickly.

Provided by University of Lincoln

Citation: Navigating the technical challenges of truly self-driving cars (2014, August 4) retrieved 26 April 2024 from <https://phys.org/news/2014-08-technical-self-driving-cars.html>

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