



RESEARCH2REALITY

Shining a light on research & innovation.

Driving a Safer and Greener Future

An interview with Professor John McPhee
Mechanical Engineer, University of Waterloo

What is the future car?

So the fields of green automobiles and intelligent automobiles may seem distinct, but they're really the same. They're all part of electrification of the vehicle and the deployment of many many computers and lines of software in your car. So we're interested in both of these aspects of new developments in automotive technology.

What does your research focus on?

I do research in the general areas of dynamics and control, and specifically I focus on automotive systems and future automotive systems. The modern vehicle and the future vehicle is going to be more of a software platform. So for a fully automated vehicle, you're going to have 200 to 300 million lines of software code – so that's more than a Boeing 777. So for that to function reliably, safely, for every day of the year, a great deal of attention has to be paid to software reliability and software fault tolerance.

Every year, new models have more and more software and more and more safety features on board and it's reduced single vehicle accidents by 25% already. Fully autonomous cars are going to have huge impact on the health of Canadians.

What is the next advancement in green technology?

The next advancement in green technologies that we're most excited about is the coming together of on-board computers with information that's coming from the car to the ground and the car to other vehicles. With information we're getting through wireless communications, we have much better decision making capabilities. When do we turn the engine on, when do we turn the engine off, when do we get regenerative energy from braking – all of these things help us to reduce fuel consumption and reduce emissions from the car.

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