University of BRISTOL

Smart mobility for smart societies

Quicker, safer, more reliable transportation services

Developing 5G technologies for connected and autonomous vehicles

Connected and Autonomous Vehicles

Smart Mobility for Smart Societies

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About

Connected and Autonomous Vehicles (CAVs) will play a significant role in future transportation systems and will unlock enormous societal benefits. Wireless connectivity is one of the underpinning technologies allowing CAVs to transform from autonomous systems to cooperative entities. Not only is the information exchange between all components of the system fundamental to improving road safety and efficiency, but it also paves the way to a wide spectrum of advanced ITS (Intelligent transportation systems) applications. This in turn enhances efficiency, mobility and accessibility. Cooperation amongst autonomous vehicles is enabled by exchanging sensory data and manoeuvring intentions in a Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) fashion. Cooperative CAVs are also the key enabler of Mobility as a Service (MaaS) paradigm which optimises the journey focusing on the user and the outcome.

Let's Get Technical

The Communication Systems & Networks (CSN) Group at the University of Bristol has a 30-year track record of conducting academically renowned and industrially impactful research in wireless communications. The group has been researching dependable V2X connectivity for over 10 years, most recently leading the development of V2X for Innovate UK VENTURER and FLOURISH projects. The group is conducting research in: 5G systems and Cellular V2X (C-V2X, LTE-R14); Millimetre Wave 5G for V2X, ITS-G5 (DSRC, 802.11p); Security Privacy and Trust for V2X; Mobile Edge Computing (MEC) and also developing the underpinning theoretical and network simulation tools.

CAVs (and all other vehicles) form highly intermittent, ad-hoc and obviously mobile networks. This is arguably the most hostile mixture of conditions when trying to sustain ubiquitous, and reliable wireless connectivity - even before we demand the need for low latency. Security by design is an absolute prerequisite for any cooperative system, with CAVs requiring the highest possible standards. The University of Bristol is pioneering dependable wireless connectivity, mobile edge computing (MEC) and networked cyber physical systems for future ITS systems.

Smart Internet Lab

The Smart Internet Lab at the University of Bristol is a hub for internet research, which aims to address grand societal and industrial challenges. We perform cutting edge research on optical and wireless communications, offering a unique holistic approach to hardware and software co-design, solving critical problems in the global internet evolution.

5G Research

We are world leaders in fibre, wireless, and 5G convergence research. We have created a unique 5G Trial Test-Bed for a Smart City, Campus, Region and the Telecom Industry.

EPSRC
Engineering and Physical Sciences Research Council

We work with Innovate UK

VENTURER

flourish

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