Improving safety with a vehicular internet of things

Dr William Liu

At least one New Zealander is killed and seven people are injured in road crashes every day. This presentation looks at how emerging 'Vehicular Internet of Things' technology could be used as a part of government strategies to reduce road deaths and serious injuries by 40% by 2030, compared with 2018.

The vehicular Internet of things (V-IoT) is the vehicular network where IoT devices and infrastructures are deployed to monitor vehicular environments with life-critical applications e.g., road context-sensing, monitoring of inter- and intra-vehicular behaviours.

V-IoT is proposed to improve road safety, but the communication, computation and control architectures used in V-IoT cause bottlenecks. Monitoring and control capabilities are dependent on the trustworthiness (i.e., accuracy, completeness and timeliness) of data collected from diverse sensors e.g., LiDAR and ViDAR which cannot always be guaranteed. Moreover, data sharing among vehicles and infrastructures raises privacy concerns with users. This project aims to develop a trustworthy and privacy-preserving V-IoT control system to overcome these problems. By embedding the system in vehicle (as a software toolkit) it will provide drivers with advanced warning of hazards and improve driver safety.

William Liu is the Principal Investigator of a [Royal Society](#) catalyst seeding joint research grant entitled ' Trustworthy and Privacy-preserving Collaborative Control Technologies for Vehicular IoT (TrustPC4VIOT)'. This project involves a 2-year (2023-2025) collaboration between researchers in New Zealand and Japan, and is exploring opportunities for collaboration with related agencies.

About the speaker

William Liu is a member of ESR who has lectured at AUT, Unitec and the Manukau Institute of Technology in recent years. He holds a Masters degree and a PhD degree in Electrical and Computer Engineering, both obtained at the University of Canterbury (UC), New Zealand in 2005 and 2010 respectively. He had been working as a network planner and designer in Beijing Telecom in China for 5 years before he immigrated to New Zealand in 2002.

Venue: Zoom only (no actual meeting place).
Zoom Link: https://aut.zoom.us/j/91548189906