From Vehicular Networks to IoT for Smart Roads: How a Communication Engineer Can Help Solve Transportation Problems

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──── **Abstract** ────

Intelligent transportation system (ITS) is an important development that applies advanced sensing, communication, big data analysis and control technologies to ground transportation in order to improve safety, mobility and efficiency. This talk will begin with a brief introduction to our work in vehicular networks, which started more than ten years ago. As we delve deeper into vehicular networks and interact more frequently with transportation stakeholders, we realize that ITS is a truly cross-disciplinary area, in order for vehicular networks to achieve its desired impact, we need to think beyond the traditional communication domain, and start to ponder the deeper-level questions of what fundamental changes can be brought by advanced sensing and communication techniques to transportation and how the applications of advanced sensing and communication techniques can help solve crucial transportation problems. To this end, we will introduce our more recent work of developing advanced IoT technology to transform our roads into smart roads, which in the shorter term, make our roads safer and more efficient while providing the fine-grained real-time traffic information for traffic management; in the longer term, provide the much-needed road infrastructure support for the future booming CAV revolution.

Short bio

Guoqiang Mao received a PhD in telecommunications engineering in 2002 from Edith Cowan University, Australia. He was a faculty member at the School of Electrical and Information Engineering, the University of Sydney, between 2002 and 2014. He joined the University of Technology Sydney in February 2014 as Professor of Wireless Networking and Director of Center for Real-time Information Networks. He has published three books and over 200 papers in international conferences and journals, including over 100 papers in IEEE journals, which have been cited over 8,500 times. He is an editor of the IEEE Transactions on Intelligent Transportation Systems, IEEE Transactions on Wireless Communications, IEEE Transactions on Vehicular Technology and received the "Top Editor" award for outstanding contributions to the IEEE Transactions on Vehicular Technology in 2011, 2014 and 2015. He is a co-chair of the IEEE Intelligent Transport Systems Society Technical Committee on Communication Networks. He has served as a chair, co-chair and TPC member in a number of international conferences, and has received best paper awards from several leading international conferences. His research interests include intelligent transportation systems, vehicular networks, Internet of Things, next generation mobile communication systems, and wireless localization techniques. He is a Fellow of the IEEE and IET.