Invited Talk: Software Engineering, AI and autonomous vehicles: Security assurance

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Abstract—In this talk, I will first walk through some real industrial requirements and research challenges in autonomous vehicles. I will then talk about research works which can potentially solve these issues, mainly covering training, testing and anomaly detection for autonomous systems and driver behaviour detection. The talk will be broad but covering some state of the art interesting research questions and directions in autonomous vehicles safety and security assurance, and human vehicle interaction which shall be suitable both for researchers and industry practitioners for in-depth enquiry and collaboration.

Index Terms—Software Engineering, AI, Autonomous vehicles

I. Speaker Bio

Dr. James Xi Zheng, PhD in Software Engineering from UT Austin, Master in Computer and Information Science from UNSW, Bachelor in Computer Information System from FuDan; Chief Solution Architect for Menulog Australia, now director of Intelligent systems research center (itseg.org), deputy director of software engineering, global engagement, and assistant professor in Software Engineering at Macquarie University. Specialised in Service Computing, IoT Security and Reliability Analysis. Published more than 60 high quality publications in top journals and conferences (PerCOM, ICSE, IEEE Communications Surveys and Tutorials, IEEE Transactions on Cybernetics, IEEE Transactions on Industrial Informatics, IEEE Transactions on Vehicular Technology, IEEE IoT journal, ACM Transactions on Embedded Computing Systems). Awarded the best paper in Australian distributed computing and doctoral conference in 2017. He was awarded the deakin Research outstanding award in 2016. His paper is recognized as a top 20 most read paper (2017-2018) in Concurrency and Computation: Practice and Experience. His another paper on IoT network security (2018) is recognized as highly cited paper. Guest Editor and PC members for top journals and conferences (IEEE Transactions on Industry Informatics, Future Generation Computer Systems, PerCOM). WiP Chair for PerCOM 2020 and Track Chair for CloudCOM 2019. Publication Chair for ACSW 2019 and reviewers for many Trans journals and CCF A/CORE A* conferences. His track record and world-impact have also won an Australian Data61 CRP project Trustworthy AI-human interaction in cyber-physical systems ($130,440 Sole CI) and a highly competitive ARC LP project A Safety-Preserving ecosystem for autonomous driving ($341,853, Lead CI).