



IEEE Open Journal of Intelligent Transportation Systems

Editor in Chief (Prof Dr Bart van Arem)

Special Section on:

Autonomous and Cooperative Driving in Specific Traffic Environments

Scope:

In recent years, with the ever-accelerated development and progressive maturation of key technologies, connected automated vehicles (CAVs) have moved from the stage of laboratories to open road field tests and even commercial demonstrations in not only urban driving scenarios but also specific traffic environments. Typical examples include unmanned logistics in open-pit mines/large ports/industrial parks, unmanned distribution for the last kilometer, security patrol and environmental sanitation in residential areas, sterilization in epidemic areas, emergency rescue in battleground/fireground. Besides providing suitable application cases for fast commercialization of CAVs, the specific traffic environments also impose many theoretical and technical challenges on the existing CAV techniques.

The objective of this special section is to gather more advanced development in autonomous and cooperative driving technology of CAVs in special traffic environments and to share insights for the commercialization and future development. We want to encourage discussion of current and new challenges in the various topics in this field, and the technical areas include but are not limited to:

- Environmental perception of CAVs in specific traffic environments
- Simultaneous localization and mapping of CAVs in specific traffic environments
- Multi-agent reinforcement learning for CAVs in specific traffic environments
- Vehicle motion planning and control in specific traffic environments
- Digital twin techniques for CAVs in specific traffic environments
- Field test and validation of the above techniques

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Paper Submission Link: <https://mc.manuscriptcentral.com/oj-its>
(Choose manuscript type: Special Section)

Guest Editors:

Yougang Bian	Associate Professor, Hunan University, China
Ziran Wang	Assistant Professor, Purdue University, USA
Yang Li	Postdoc, Delft University of Technology, the Netherland
Manjiang Hu	Professor, Hunan University, China
Rongjun Ding	Professor, Hunan University, China

Yougang Bian is an Associate Professor with the College of Mechanical and Vehicle Engineering at Hunan University. His research interests include distributed control, cooperative control and intelligent control with the application in connected automated vehicles. Prof. Bian is a recipient of Best Paper Award at IEEE IV' 2017. He serves a Member of the Intelligent and Connected Vehicles Technical Committee of SAE International.

Ziran Wang is an Assistant Professor of the College of Engineering at Purdue University. Previously, he worked as a Principal Researcher at Toyota Motor North America R&D in Silicon Valley, leading the "Digital Twin" roadmap at Toyota. Dr. Wang is serving as associate editor of SAE Journal of Connected and Automated Vehicles, founding chair of technical committee on "Internet of Things in Intelligent Transportation Systems" in IEEE ITS Society, and member of four other technical committees across IEEE and SAE. His research interests include cooperative automated driving, driver behavior modeling with machine learning, and digital twins of intelligent vehicles.

Yang Li is a postdoctoral researcher within the Algorithmics group, Delft University of Technology, Delft, The Netherlands. Her current research focuses on deep reinforcement learning, multi-agent reinforcement learning, and safe reinforcement learning in the decision-making of autonomous and cooperative vehicles. Dr. Li obtained her Ph.D. degree in mechanical engineering from Tsinghua University in 2020 and her previous research interests include risk assessment of advanced driving assistance systems, behavior prediction of pedestrian, and motion planning of autonomous vehicles.

Manjiang Hu is with the State Key Laboratory of Advanced Design and Manufacturing for Vehicle Body, College of Mechanical and Vehicle Engineering, Hunan University, China. His research interests include intelligent sensing, decision-making, and control of connected and automated vehicles. Dr. Hu is a recipient of Best Paper Award at SAE ICVS 2019 and Best Paper Award in 2020 CRRC ZIC National College Essay Competition. He serves as a member of intelligent and connected vehicle technical committee of SAE International.

Rongjun Ding is with the State Key Laboratory of Advanced Design and Manufacturing for Vehicle Body, College of Mechanical and Vehicle Engineering, Hunan University, China. He was an Elected Member of the Chinese Academy of Engineering in 2011. His active research interest includes intelligent control of vehicles with applications to intelligent mining in open-pit mines and deepsea mines. Prof. Ding is a recipient of three National Awards for Technological Invention & S&T Progress.