IEEE Open Journal of Intelligent Transportation Systems

Editor in Chief (Prof Dr Bart van Arem)

Special Issue on: “Perspectives on Cooperative Driving Automation: System Planning, Control, Security, and Performance Evaluation”

Scope

With connected vehicle (CV) and automated vehicle (AV) technologies becoming increasingly mature and practical, Cooperative Driving Automation (CDA), which is very recently standardized by SAE J3216¹, aims at combining both technologies to enable real-time cooperation of equipped vehicles, other road users, and infrastructure to improve safety, mobility, environmental sustainability, situational awareness, and operational efficiency of traffic flow. This is accomplished by using CV technologies to share information that can be used to influence (directly or indirectly) dynamic driving decisions by one or more nearby (Connected and Automated Vehicles (CAVs) and road users. Vehicles and infrastructure elements engaged in cooperative automation may share information such as state (e.g., vehicle position, speed, and traffic signal phase) and intent (e.g., planned vehicle trajectory and traffic signal timing) and seek agreement on cooperative plans (e.g., intersection management, coordinated merge).

In recent years, there has been an increasing investment on understanding the effectiveness of CDA in enhancing local traffic safety and efficiency, and the potential of CDA as the next-generation solution to transportation systems management and operations (TSMO). However, scientific knowledge of CDA is still in its infancy, particularly when it comes to mixed-autonomy traffic flows, integration with legacy infrastructure, cybersecurity implications, and beyond. This special issue aims to gather the most recent development in CDA from different perspectives and share insights for future development.

As cornerstone of this Special Issue, an invited review paper entitled “Opportunities and Challenges in Cooperative Road-Vehicle Automation”, will be submitted by Dr. Steven E. Shladover of the University of California, Berkeley PATH Program.

The technical areas of this special issue include but are not limited to:

- New methods for CDA modeling and simulation
- Cybersecurity challenges and solutions under the CDA framework
- Field testing methods and outcomes of CDA prototypes
- Transportation planning for CDA-enabled systems
- Cooperative sensing and perception algorithms for CDA systems
- Cooperative control and decision-making of vehicles and infrastructure
- Safety analysis of CDA systems
- System engineering approaches to CDA systems

Submission deadline: April 30, 2021

Accepted papers will be published upon acceptance as early access.

Paper Submission Link: https://mc.manuscriptcentral.com/oj-its (choose manuscript type PERCDA)

¹ https://www.sae.org/standards/content/j3216_202005/
Guest Editors

Jiaqi Ma  Associate Professor, University of California, Los Angeles
Jia Hu  Professor, Tongji University, China
Xudong Jia  Associate Dean and Professor, California State University, Northridge
Pardis Khayyer  Autonomous Driving Algorithm Development Engineer, Aptiv Corporation
Guoyuan Wu  Associate Researcher, University of California, Riverside

Jiaqi Ma is an Associate Professor at the UCLA Samueli School of Engineering. His research interests include vehicle-highway automation, ITS, connected vehicles, large-scale smart system modeling and simulation, and artificial intelligence and advanced computing applications in transportation. He is an Associate Editor of the IEEE Open Journal of Intelligent Transportation Systems and Journal of Intelligent Transportation Systems. He is Member of the TRB Standing Committee on Vehicle-Highway Automation and Standing Committee on Artificial Intelligence and Advanced Computing Applications, Member of ASCE Connected & Autonomous Vehicles Impacts Committee, Co-Chair of the IEEE ITS Society Technical Committee on Smart Mobility and Transportation 5.0.

Jia Hu works as a ZhongTe Distinguished Chair in Cooperative Automation in the College of Transportation Engineering at Tongji University. He is an Associate Editor of the American Society of Civil Engineers Journal of Transportation Engineering, IEEE Open Journal in Intelligent Transportation Systems and an assistant editor of the Journal of Intelligent Transportation Systems. Furthermore, he is a member of TRB Vehicle Highway Automation Committee and Freeway Operation Committee, and a member of Sustainable Transportation Committee and Artificial Intelligence Committee of ASCE Transportation and Development Institute.

Xudong Jia is the Associate Dean of the College of Engineering and Computer Science, California State University, Northridge (CSUN). His research areas include Artificial Intelligence, data science and its applications in civil engineering, earthquake pre-warning systems, Intelligent Transportation Systems (ITS), design of transportation facilities, urban transportation planning, and regional integration of transportation systems. He is an Associate Editor of the IEEE Transactions on Intelligent Transportation Systems and the Open Journal of Intelligent Transportation Systems.

Pardis Khayyer received her Ph.D. in electrical and computer engineering from The Ohio State University in 2013. In 2014 she joined Cummins Inc. where she did research in the area of automotive controls and diagnostics. Since 2018, Dr. Khayyer has been with Aptiv Corporation where she develops autonomous vehicle control and motion planning algorithms. Dr. Khayyer is an associate editor for IEEE Open Journal of Intelligent Transportation Systems, IEEE Transactions on Intelligent Vehicles and SAE International Journal of Connected and Automated Vehicles.

Guoyuan Wu received his Ph.D. degree in Mechanical Engineering from University of California at Berkeley, and is currently an Associate Research Faculty with the Center for Environmental Research and Technology (CE-CERT) and Associate Adjunct Professor in the Department of Electrical and Computer Engineering at University of California, Riverside. He has been conducting research on sustainable and intelligent transportation systems (SITS), connected and automated vehicle (CAV) application, traffic flow modeling and simulation, and vehicle emissions and powertrain modeling. Dr. Wu serves as an Associate Editor of IEEE Open Journal – Intelligent Transportation Systems and Associate Editor of SAE Journal – Connected and Automated Vehicles. He is a IEEE senior member and a member of the TRB Vehicle-Highway Automation Standing Committee (AHB30).