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Feature Topic on Coordinated System of Vehicle-Road-Cloud Integration

The advances in science and engineering technologies have considerably promoted vehicle and transportation system designs. Due to the global energy crisis and the stringent requirements on environment protection and vehicle safety, intelligent and connected vehicles (ICVs) have been increasingly considered the most promising venue for future transportation. ICVs, by integrating AI, information and communication technology, and transportation technology, can realize safer, greener, and more comfortable driving. The integration of vehicles, roads, and the cloud is enabled by a new Cyber-Physical System, i.e., the Coordinated System of Vehicle-Road-Cloud Integration.

Using the systematic closed-loop control technology, the Coordinated System of Vehicle-Road-Cloud Integration efficiently optimizes the roadside perception configuration and integrates driving planning and traffic control in a road network. Moreover, the system performs integrated perception, decision-making, and control in complex traffic scenarios while ensuring high stability. However, few existing studies are digging into the architecture and control methods of the system.

This Feature Topic hopes to bring together research focusing on ICVs, V2X (the communication technology of vehicle-to-everything), Cyber-Physical System, and cloud control systems, to discuss the progress of the latest works on System of Coordinated Perception, Decision, and Control by Vehicle-Road-Cloud Integration, and to give readers a clear picture of the advances that are to come. Welcome topics include, but are not strictly limited to, the following:

Topics

- Concept and architecture of the Coordinated System of Vehicle-Road-Cloud Integration
- Configuration design method of cooperative perception in the coordinated system
- Fusion planning method for ICVs in mixed traffic conditions
- Coordinated control method of connected vehicles under V2X situation
- Key technologies of the cloud control system and Cyber-Physical System

Important Dates

Submission Deadline: March 30, 2023
First Round Decision Due: May 15, 2023
Final Decision Due: July 30, 2023

Guest Editors

Prof. Keqiang Li, Professor at School of Vehicle and Mobility, Tsinghua University, Academician of Chinese Academy of Sciences

Prof. Keqiang Li is an expert in the field of automotive intelligence, Academician of the Chinese Academy of Engineering. He is currently a professor at the School of Vehicle and Mobility, Tsinghua University, and also the director of the State Key Laboratory of Automotive Safety and Energy, the CTO of the National Innovation Center of Intelligent and Connected Vehicles. His main research areas include theoretical research and engineering application of the dynamic design and control of intelligent vehicle driving systems.

Prof. Timothy Gordon, Professor of School of Engineering in College of Science, University of Lincoln

Timothy Gordon is a professor at the School of Engineering in the College of Science, University of Lincoln. He joined

Lincoln in 2014 having spent ten years at the University of Michigan (UM) as a Professor of Mechanical Engineering in the College of Engineering, and heading the Engineering Research Division at UM's Transportation Research Institute. He was formally Ford Professor at Loughborough University and has worked extensively with the automotive industry. His research is based on vehicle dynamics and control, using automation for safe guidance and collision avoidance in road vehicles. His recent research is on driver modelling, safety system evaluation, and the control of vehicle dynamics right up to the limits of road surface friction.

Prof. Yuanqing Xia, Professor and Director of School of Automation, Beijing Institute of Technology

Yuanqing Xia received his Ph.D. degree in control theory and control engineering from Beihang University, Beijing, China, in 2001. He was granted by the National Outstanding Youth Foundation of China in 2012, and was honored as the Yangtze River Scholar Distinguished Professor in 2016 and the Leading Talent of the Chinese Ten Thousand Talents Program. He obtained the Second National Award for Science and Technology (No. 2) in 2011, the Second Award of the Beijing Municipal Science and Technology (No. 1) in 2010 and 2015, the Second Natural Science Award of the Ministry of Education (No. 1) in 2012 and 2017, and the Second Wu Wenjun Artificial Intelligence Award in 2018 (No. 1).

Prof. Henry Liu, Professor at University of Michigan, Director of Centre for Connected and Automated Transportation

Dr. Henry Liu is the Director of Mcity and a Professor of Civil and Environmental Engineering at the University of Michigan, Ann Arbor. He is also the Director of the Center for Connected and Automated Transportation (USDOT Region 5 University Transportation Center) and a Research Professor at the University of Michigan Transportation Research Institute. Prof. Liu conducts interdisciplinary research at the interface of transportation engineering, automotive engineering, and artificial intelligence. Specifically, his scholarly interests concern traffic flow monitoring, modeling, and control, as well as testing and evaluation of connected and automated vehicles. Prof. Liu is also the managing editor of Journal of Intelligent Transportation Systems.

Dr. Bolin Gao, Associate Research Professor at the School of Vehicle and Mobility, Tsinghua University, and Deputy Secretary General of the Youth Committee of China-SAE

Dr. Bolin Gao is currently an associate research professor, at the School of Vehicle and Mobility, Tsinghua University. His research interest is the dynamic design and control methodology of the Coordinated System of Vehicle-Road-Cloud Integration. He currently serves as a Secretary General of The Youth Committee of China-SAE, and an Expert of Jiangsu Province Society of Automotive Engineering. He has won one special prize of China Automotive Industry Science and Technology Progress, and has been selected for the China Association for Science and Technology " Young Elite Scientists Sponsorship Program".

Submission Guidelines

The paper submission & review process will be handled through Automotive Innovation

1. Please submit online via www.springer.com/42154, be sure to select Topical Collection: Coordinated System of Vehicle-Road-Cloud Integration.
2. Papers should be submitted in two separate .doc files: 1) Blinded Manuscript (paper title, abstract, keywords, and full text); 2) Title Page (paper title, author affiliation, acknowledgment, and any other information related to the authors' identification).
3. All manuscripts will be peer-reviewed and evaluated based on quality, originality, novelty, and relevance to the topics.
4. If any problems, please feel free to contact the journal editorial office via email: jai-editor@sae-china.org.

About Automotive Innovation

Automotive Innovation is the leading peer-reviewed international journal and China SAE's flagship publication. The journal reflects the innovative findings and changing needs of the automotive industry, supported by an international Editorial Board. It fosters the exchange of ideas among researchers in industry, government, and universities worldwide.

The journal provides a forum for the research of principles, methodologies, designs, theoretical background, and cutting-edge technologies in connection with the development of vehicle and mobility. The main topics cover: energy-saving, electrification, intelligent and connected, safety, and emerging vehicle technologies.

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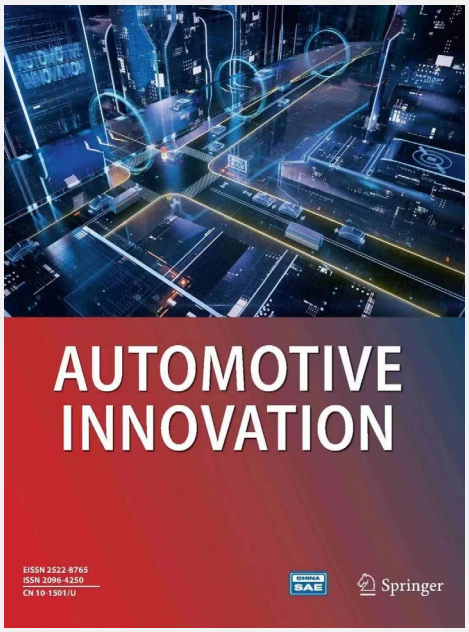

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