



IEEE ITSC 2025

Invited Session Proposal

- Title:
 - Energy-Efficient Connected Mobility
- Modality:
 - Half-day (e.g., 3 hours plus breaks)
- Scope:
 - The growing demand for mobility services and the subsequent rapid expansion of transportation networks have significantly increased the complexity of transport systems, amplifying transport-related energy demand and emissions. There is a pressing need for sustainable transportation that features energy-efficient solutions for connected mobility: mobility that integrates vehicles, infrastructure, and digital technologies. Advancements in modeling, control, optimization, fuel tech, and AI offer critical tools for the transition to sustainable connected mobility.
 - The invited session aims to explore the potential, applications, and challenges associated with the latest technologies and methods that drive energy efficiency in connected mobility. Covering a range of transport modes — both private and public — the session delves into topics such as intermodality, multimodality, Intelligent Transportation Systems (ITS), and Mobility as a Service (MaaS). It offers a comprehensive perspective on current advancements and future directions, providing valuable insights into shaping more sustainable transportation ecosystems.
 - The topics of interest include, but are not limited to:
 - Novel energy efficiency solutions, models, AI applications, and optimisation algorithm from multi-modal and inter-modal transport
 - Energy efficiency and sustainability of public transport operation and control (railways, buses, etc...)
 - Maximizing the potential of road electric vehicles (EVs), considering cooperative operation, autonomous driving, shared EVs, and enhancing public charging
 - Renewable energy and its integration in connected mobility
 - Energy efficiency approaches in planning, scheduling, operation processes and benchmarking
 - New approaches to modal shift and transition to energy-efficient transport.
- Organizers (names, affiliations, emails, and short bio):

The Invited session is chaired and organized by the following:

- **Prof. Jing Xun** (jxun@bjtu.edu.cn) received the Ph.D. degree from Beijing Jiaotong University, Beijing, China, in 2012. From 2008 to 2009, he was a visiting scholar with PATH, University of California, Berkeley. He is currently a Professor at the School of Automation and Intelligence, Beijing Jiaotong University. His research interests include advanced train control methods, the optimization problem in rail transport, traffic flow theory, cellular automata, and reinforcement learning. Prof. Xun is a Senior Editor of IEEE Transactions on Intelligent Transportation Systems.
- **Dr. Guoyuan Wu** (gywu@cert.ucr.edu) received his Ph.D. degree in Mechanical Engineering from UC Berkeley in 2010, while he had also been employed as a graduate student researcher at the California Partners for Advanced Transportation Technology (PATH). After graduation, he was appointed as the Postdoctoral Fellow, Assistant Research Faculty, and Associate Research Faculty in the Transportation Systems Research (TSR) group at the Bourns College of Engineering—Center for Environmental Research and Technology (CE-CERT), UC Riverside, in 2010, 2012 and 2018, respectively. Since July 2022, Dr. Wu has been working as a Full Research Faculty. In addition, he has been holding an Adjunct



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Professorship in the Department of Electrical and Computer Engineering, UC Riverside since 2017. Besides, Dr. Wu has been serving as a part-time lecturer on the graduate-level course in the Department of Civil Engineering, Cal Poly Pomona since 2014.

- **Dr. Labib Azzouz** (labib.azzouz@ouce.ox.ac.uk) is currently a Research Associate in Transport and Energy Innovation at the University of Oxford's Transport Studies Unit (TSU) and Environmental Change Institute (ECI). He received a Ph.D. from the University of Birmingham's Centre for Rail Research and Education in 2020 and an MSc in Transport Planning from the University of Leeds in 2015. Labib's research interests include transition to sustainability, transport electrification, micromobility, railway sustainability and reporting, and high-speed rail benchmarking.
- **Dr. Jin Liu** (J.Liu12@leeds.ac.uk) is a Research Fellow at the Spatial Modelling and Dynamics (SMaD) group in the Institute for Transport Studies (ITS) at the University of Leeds. He holds a Ph.D. from the University of Birmingham, where he focused on developing multi-agent applications for the next generation railway traffic management system. Prior to joining ITS, he worked as a PDRA at the Future Mobility Research Group at Newcastle University. Dr. Liu's research primarily involves modeling, analysing, and optimising rail traffic for both passenger and freight rail. His expertise includes railway requirement analysis, system verification and validation, and algorithm development of novel AI applications for rail systems.
- **Dr. Xiaoyu Liu** (x.liu-20@tudelft.nl) obtained the Ph.D. degree from the Delft Center for Systems and Control, Delft University of Technology, the Netherlands, in 2024, the M.Sc. and B.Sc. degrees from Beijing Jiaotong University, China, in 2020 and 2017, respectively. In 2024, He was a Visiting Scholar with KTH Royal Institute of Technology, Stockholm, Sweden. He is currently a Postdoctoral Researcher at Delft University of Technology. His research interests include model predictive control, hybrid systems, and intelligent transportation systems.
- List of potential contributors (including as much detail as possible):
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- Intended audience and expected attendance of the invited session:

Transport Engineer and Consultant, Transport researchers, professors.
- Contact details of the main proposers (email & mobile number):

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