Call for Special Session Proposals
26th IEEE International Conference on Intelligent Transportation Systems

The 26th edition of the IEEE International Conference on Intelligent Transportation Systems (ITSC 2023) is the annual flagship conference sponsored by the IEEE Intelligent Transportation Systems Society (ITSS). This event hosts an attractive agenda of technical contributions, keynote presentations, tutorials, special sessions, and workshops on topics related to the field of Intelligent Transportation Systems (ITS). The conference aims to gather researchers and practitioners working in this field towards sharing, discussing, and opening new paths in the theory, analysis, simulation, data-based modeling, experimentation, deployment, and case studies embracing transportation and mobility at their core. In particular, ITSC 2023 builds upon its motto to invite and encourage prospective authors to present results, findings, perspectives, and developments related to the implementation and deployment of ITS applications that consider human interaction at the core of their design.

ITSC 2023 solicits proposals for half-day and full-day special sessions covering topics that are relevant to the field of intelligent transportation systems and its applications. Interested organizers are invited to submit their special session proposals in the topic areas listed in the Call for Papers of the conference (https://2023.ieee-itsc.org/call-for-paper/call-for-papers/).

The special session proposal should include title, scope, organizers, topics of interest, list of potential contributors, intended audience, expected attendance and material needed for the special session. The proposal must be submitted electronically by following the instructions available in the conference website (https://2023.ieee-itsc.org/). The deadline is February 15th, 2023.

Disclaimer 1: any special session proposal that is incomplete and/or is not submitted by following this form will not be evaluated for its inclusion in the program of the conference.

Disclaimer 2: the minimum number of contributions in a special session is 5 (half-day proposal) and 10 (full-day proposal). Special sessions that receive less than these thresholds will not be allocated as such in the program of the conference.

Further enquiries can be forwarded to: contact@2023.ieee-itsc.org
Special Session Proposal

Actionable and Trustworthy AI for Intelligent Transportation Systems

Sponsored by:
Standing Committee on Artificial Intelligence and Advanced Computing Applications (AED50)
IEEE ITSS Technical Committee on Smart Mobility and Transportation 5.0.

Modality: Session with 6 presentations (~ 15 min each) and appr. 30 minutes for discussion.

Scope: Artificial Intelligence (AI) and Machine Learning (ML) methods and tools have been proven to be powerful technologies when used in Intelligent Transportation Systems (ITS) research and applications. However, models used for complex modeling tasks (as those used in e.g., naturalistic driving or vehicular perception) are often criticized due to their black-box nature, making them hard to explain and audit in safety-critical scenarios. Explainable AI (xAI) is a research area aimed to address this concern. xAI refers to methods that can explain decisions issued by AI and ML methods in a way that humans can understand. Explanations produced by xAI methods must be adjusted to the cognitive skills and knowledge background of the users for which they are delivered (audience). Explainable Artificial Intelligence (XAI) in Transportation and Traffic Engineering applications is an emergent research field that aims to make AI and ML models and their results more understandable to humans, without sacrificing their performance.

Nevertheless, xAI by itself cannot address the vast spectrum of desired aspects of actionable and trustworthy AI systems. Trustworthiness in AI is a multifaceted paradigm, involved other dimensions such as the discovery of causal relationships from data, the robustness of the models against unexpected inputs or nonstationary scenarios, accountability, usability, self-sustainability, equity, and other desiderata that should define fully trustworthy components of ITS systems, ultimately allowing for practical decision making in real-world environments (actionable AI).

This session aims to gather transportation researchers for them to share their latest research experience and findings on actionable and trustworthy AI/ML assisted ITS and vision for future research. A non-exhaustive list of topics covered by the special session includes:

- Algorithmic transparency & actionability
- Deep learning & XAI methods
Hybrid & transparent black box modelling
Post-hoc methods for explainability
Counterfactual explanations
Faithfulness & intelligibility of explanations for ITS audience
Notions and metrics of/for explainability
Qualitative approaches for explainability
Causal inference from data
Uncertainty estimation from data
Robustness in open-world scenarios
XAI and data fusion
Accountability of AI models
Explanation Bias & fairness of XAI systems
Ethical, social, and legal implications of XAI
Addressing user-centric requirements for XAI
Multimodal XAI approaches
Trade-offs between accuracy & interpretability
Explanations for risk assessment
Privacy & agency of explanations XAI for Privacy-Preserving Systems
XAI for human–AI cooperation
XAI & models output confidence estimation

For ML and AI models applied to:

Traffic flow modeling
Travel behavior modeling
Behavioral modeling and interpretation
Network and traffic management
Connected, cooperative and autonomous driving systems
V2X communication in ITS
Connected and cooperative autonomous mobility
Recommendation systems for drivers and travelers
Traffic safety
Transit operations
Air, road, and rail traffic management
Ports, waterways, and vessel traffic management
Green mobility and smart energy management
Smart road infrastructure

Organizers (names, affiliations, emails, and short bio):

Dr. Haizhong Wang, Associate Professor, Oregon State University, USA
(haizhong.wang@oregonstate.edu)

Dr. Javier (Javi) Del Ser, Research Professor, Tecnalia and University of the Basque Country (UPV/EHU), Spain (javier.delser@tecnalia.com)

Dr. Eleni I. Vlahogianni, Associate Professor, National Technical University of Athens, Greece (elenivl@central.ntua.gr)
List of potential contributors: The proposed subjects are very timely and of great interest to the academic community as well as the public and private sectors contemplating the deployment of AI in transport.

Intended audience and expected attendance of the special session: The attendance is expected to be around 50 participants.

Materials and equipment needed for the special session: A projector and screen in the room are the main requirements