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
Title:
Advances in Urban Traffic Control: Theory and Practice
[TO BE COMPLETED BY THE PROPOSERS]

Modality:
- Half-day (e.g., 3 hours plus breaks)

[TO BE COMPLETED BY THE PROPOSERS]

Scope (no longer than 4 pages), including the following sections:

- Motivation and general scope
  Traffic control for managing the transportation system in urban areas is an old hat, but it remains an active research topic since we still need less traffic congestion, less costs, less emission, more comfort, more safety and reliability. Recently new hybrid modeling paradigms emerged, new traffic optimal control approaches have been developed, and autonomous vehicles have become a part of the «community». Growing amount of data is to be fed in AI tools to simulate and optimize traffic flows. Various impacts of traffic control and management are difficult to be quantified. The effect of implementation of new tricks should be properly assessed. Thoroughly developed theory behind high-performance software are the key to success. This special session is aimed to cover some advances in traffic control both in theory and in practice and to preview the next steps on the way.

- Relevance to the ITS community
  Special Session Advances in Urban Traffic Control: Theory and Practice serves as a ground to all ITS community members and the others to deliver innovative research ideas and application results in the area of urban traffic control and to learn the state of the art development and progress on ITS research and applications.

- Topics of interest for the special session
  Topics of interest include but do not limited to:
  - Control (Traffic-Vehicle-Driver/AV)
  - Control Strategies
  - Optimization Tools
  - Hybrid Mathematical Models
  - Algorithms and Architectures
  - Infrastructure Sensors (Outside and Inside)
- Heterogeneous Big Data
- Accuracy Assessment
- Reliability and Safety Issues
- High Performance Computing in Simulation and Optimization
- Reinforcement Learning – Based Traffic Control
- Simulation and Optimization of Large Transportation Networks
- Field Trials and Validation
- Modern Cities: What If not Traffic Lights
- Autonomous Vehicles in the Flow

[TO BE COMPLETED BY THE PROPOSERS]

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

  Sofronova Elena, Ph.D., associate professor
  Federal Research Center “Computer Science and Control” of the Russian Academy of Science, Russia
  Shenzhen MSU-BIT University, China
  e.a.sofronova (at) gmail.com

  BIO: Elena Sofronova (born 1982) is a senior researcher at Federal Research Center “Computer Science and Control” of the Russian Academy of Science, Russia, associate professor at Shenzhen MSU-BIT University, China

  o Education and academic degrees, dates in reverse chronological order:
  2013 Associate Professor, №048999
  2008 Candidate of Technical Science (Ph.D) from Computing Center named after A.A. Dorodnitsyn of Russian Academy of Science (Moscow, Russia), №056952.
  2006–2008 PhD student, System analysis, Control, and Data Processing, Peoples’ Friendship University of Russia
  2004–2006 Master degree with honor, Automation and Control, Peoples’ Friendship University of Russia
  1999–2004 Bachelor degree with honor, Automation and Control, Peoples’ Friendship University of Russia

  o Main scientific and technical area of research:
  Investigated and developed a mathematical model and algorithms for optimal control of traffic flows in the network of urban roads. Traffic flow control was carried out by changing the duration of the working phases of traffic lights at controlled intersections. Symbolic regression methods and evolutionary algorithms were applied to identify and refine the mathematical model of traffic flows. The main application areas are: urban traffic control and simulation.

  o Selected recent R&D projects:
  2019 – 2021 Russian Science Foundation №19-11-00258 «Theoretical and numerical study of optimal control problems with phase constraints» (researcher)
2019 – 2021 Russian Foundation for Basic Research №19-08-01047 «Development and research of evolutionary numerical methods for solving the problem of optimal control of traffic flows in the network of urban roads under conditions of incomplete information» (team leader)

2018 – 2021 Russian Foundation for Basic Research №18-29-03061 «The study of methods for the synthesis of learning systems for intelligent control of robotic devices under phase and structural constraints in the technology of the digital economy» (researcher)

2016 – 2018 Russian Foundation for Basic Research № 16-29-04224 «Research and development of numerical methods for the synthesis of control of group interaction of robots» (researcher)

2016 – 2018 Russian Foundation for Basic Research № 16-08-00639 «Research and development of identificational control synthesis methods for traffic flow control» (team leader)

- **Awards:**

  - 2022 Best paper award for Sofronova E., Diveev A. Controlled Networks to Solve Traffic Flows Problem (2022) 4th International Science and Technology Conference "Modern Network Technologies 2022", MoNeTec 2022, DOI: 10.1109/MoNeTec55448.2022.9960764

- 2013 Certificate of Honor for Impact into Development of Peoples' Friendship University of Russia, Peoples' Friendship University of Russia

- 2006 Best Master thesis work, Peoples' Friendship University of Russia

- 2004 Best Bachelor thesis work, Peoples' Friendship University of Russia

- **Experience in Organizing and Participation of International Conferences:**

  - 2022 15th International Conference Intelligent Systems (INTELS’22) https://intels-conf.ru/ December 14-16, 2022, Moscow, Russia  Vice Chair

  - 2022 8th International Conference on Control, Decision and Information Technologies (CoDIT’2022) May 17-20, 2022, Special Session 16 Advances in Machine Learning Control https://codit2022.com/index.php/special-sessions


Participated in: MoNeTec’22, INTELS’22, CoDIT’22, Intellisys’21, ICIEA’21, ITSC’20, ECC’20, Intellisys’20, INTELS’20, CEC’19, Intellisys’19, ICIEA’19, ECC’13, ITSC’12, IFAC Cong. 2011, etc.

Published more than 150 publications in peer-reviewed journals and conferences.
Scopus AutorID 35776898200 h-index 9
Google Scholar h-index 13 [https://scholar.google.ru/citations?user=w79P3MQAAAAJ&hl=ru](https://scholar.google.ru/citations?user=w79P3MQAAAAJ&hl=ru)
Intended audience and expected attendance of the special session:
Scientists in traffic simulation and control theory, developers of ITS, industry practitioners. Expected approx. 25–30 attendees.

Materials and equipment needed for the special session:
- Projector
- Screen
- Laptop
- HDMI / DVI / VGA adapter
- Presentation remote
- Wireless microphone
- Portable speakers

Contact details of the proposers (email, postal address, etc):
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