IEEE ISIE 2023 // June 19-21, 2023 // Aalto University, Helsinki-Espoo, Finland

Call for papers

The IEEE ISIE 2023 is the 32nd International Symposium on Industrial Electronics (ISIE), focusing on frontier technologies for industries, applications of electronics, controls, communications, instrumentation and computational intelligence. The objectives of the conference are to provide high quality research and professional interactions for the advancement of science, technology, and fellowship. Papers on completed work with new results, or work-in-progress in novel research are encouraged for submission.

Topics of interest include, but are not limited to:

- New Technologies for Electric Transportation
- Electric Energy Storage Systems
- Power Systems and the Smart Grid, Renewable Energy Systems and Smart Grid
- Electrical Machines and Drives
- Power Electronics & Energy Conversion
- Control Systems
- Motion Control, Robotics and Mechatronics
- Instrumentation, Sensors, Actuators, Systems Integration and Nano-Technologies
- Signal and Image Processing and Computational Intelligence
- Industrial Informatics: Cloud Computing, Big Data, AI, Informatics and Software Engineering
- Intelligent factory automation
- ICT and AI enabling smart cities, buildings, transport, agriculture, energy efficiency and sustainability
- Human centric ICT enabling smart medicine, assistive robotics, security, education and ethics

Tutorial and Workshop Proposals

The ISIE 2023 Organizing Committee solicits tutorial and workshop proposals from field experts in all areas of interest for IES. The tutorials could cover research in emerging areas, as well as more established cutting-edge techniques with strong practical and industrial relevance.

Work-in-Progress (WIP) Papers

Work in progress (WIP) paper provides the opportunity to share early-stage research work that have not yet produced the full results to the community. Submissions that showcase only ideas without supporting results will not be accepted.

WIP paper should be submitted to separate WIP technical tracks and Special Session tracks. In the submission page, the WIP tracks are:

- WIP TT01 - WIP TT13 for technical tracks
- WIP SS01 - WIP SS14 for special sessions tracks.

WIP paper submissions need to follow the regular paper submission guidelines, with a **page limit of four (4) pages**. Accepted and registered WIP papers will be published in the conference proceedings and in the IEEE Xplore Digital Library.

Regular Paper Submission Deadline:	**Mar 15, 2023 (Extended)**
Submission Deadline for Work-in-Progress:	**Mar 31, 2023 (Extended)**
Paper Acceptance Notification:	April 15, 2023
All Final Paper Submission Deadline:	Apr 30, 2023
Tutorial Proposal Deadline:	Mar 15, 2023
Tutorial Acceptance Notification	Mar 30, 2023

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Contact:
- general.chairs.isie2023@ieee-ies.org
- tpc.chairs.isie2023@ieee-ies.org
- ss.chairs.isie2023@ieee-ies.org
- tutorial.chairs.isie2023@ieee-ies.org
- contact.isie2023@ieee-ies.org

IEEE IES

Technical Tracks and Track Chairs

Track 1. New Technologies for Electric Transportation
Chairs: Yigeng Huangfu, Giambattista Gruosso, Zedong Zheng, Ritesh Kumar Keshri

Electric propulsion, marine drive trains, railway drive trains, more electric aircraft, Vehicle to Home (V2H), power electronics for drive train, Vehicle to Grid (V2G), Vehicle to Vehicle (V2V), emerging charging technologies, charging infrastructure, wireless charging, energy storage for automotive, modeling, simulation of vehicle systems, intelligent vehicle control and autonomous vehicles.

Track 2. Electric Energy Storage Systems
Chairs: Bharat Balagopal, Federico Baronti, Fei Gao, Annukka Santasalo-Aarnio

Energy storage technologies, hybrid energy storage systems, battery charging, battery management systems, battery modelling, battery state estimation, battery thermal management, cell balancing, power electronics for energy storage and energy storage applications.

Track 3. Power Systems and the Smart Grid, Renewable Energy Systems and Smart Grid
Chairs: Andrea Benigni, Thomas Strasser, Joao Martins, Javier Contreras, Hossein Farahmand

Large and small hydro generators, energy transmission and distribution, static VAR and harmonic compensations, FACTs, active and hybrid filtering, power quality devices, power management, modeling, simulation and control of power systems, grid connect, distributed power generation, diagnostics, smart grid technologies, intelligent control systems, multi-agent systems, global and constrained optimization, electricity market liberalization.

Track 4. Electrical Machines and Drives
Chairs: Shafigh Nategh, Thomas Wolbank, Marko Hinkkanen, Jose Antonino-Daviu, Bruno de Oliveria e Sousa

Special machines and actuators; multiphase machines; AC motor drives control and applications; observers and sensor-less methods; electrical machine design and modeling; thermal, noise and vibration issues in electrical machines; reliability, testing and diagnostics; fault detection in machines and drives; motion control; special application of machines and drives; HVAC; traction drive systems; electrical drives for ship and for aerospace; real-time and off-line simulation of electrical drives

Track 5. Power Electronics & Energy Conversion
Chairs: Antonio Cardoso, Chi-Seng Lam, Oscar Lucia

Power electronic devices; Inverter/rectifiers; DC-DC converters; Control techniques; Integrated power electronics; Multilevel inverters; Matrix converters; Impedance source converters; Multiphase converters; Resonant and soft-switching converters; Power supplies; Power electronics for Smart Grids; EMI and EMC issues; Diagnostics and fault tolerance; Integrated renewable energy systems; Automotive applications; Fuel cells; HDVC&FACTS; Motor drives; Power quality, Wireless Power Transfer

Track 6. Control Systems
Chairs: Hao Luo, Lei Ding, Bin Zhang, Gianluca Rizzello

Advanced control techniques; nonlinear and adaptive control; optimal and robust control; fuzzy control; distributed control; cooperative control; intelligent control; switched and hybrid control; complex systems control; networked control systems; process control; filtering, estimation and identification techniques; multi-agent systems; industrial control applications; data-driven control; model-free control; model predictive control, learning control, statistical signal processing techniques; health condition monitoring; information fusion for diagnostics and prognostics; re-configuration techniques; fault management and control; model predictive control; fault diagnosis, fault prognosis, fault-tolerant control systems and applications.

Track 7. Motion Control, Robotics and Mechatronics
Chairs: Kenta Seki, Gabor Sziebig, Valentin Ivanov, Mihoko Niitsuma, Tomasz Kucner

mechatronic systems; motion control; robotics; autonomous mobile systems; telerobotic and teleoperation; multi-robot systems; navigation and environment perception in mobile systems; distributed collaborative systems; human-robot interface; perception for robotics; robotics application; precision motion control systems; test methods for mechatronic systems; robotic manipulation; collaborative robotics.

Track 8. Instrumentation, Sensors, Actuators, Systems Integration and Nano-Technology
Chairs: Emre Sariyildiz, Hiroaki Nishi, Carmen Aracil, Yunjia Li

Micro-sensors & micro-actuators; micro-nano technology; micro-electro-mechanical systems (MEMS); system integration; integrated optics and related technologies; polymer electronics; nanotechnology; microfluidics; MOEMS; RF-MEMS; embedded instruments; fault-tolerant sensors.

Track 9. Signal and Image Processing and Computational Intelligence
Chairs: Alin Tisan, Alessia Saggese, Khan Muhammad

Computer vision; virtual reality systems; industrial vision; system-on-chip design; platforms for industrial AI applications; virtual instrumentation; image & sound processing; digital signal processing; remote sensing; HDL and HLS accelerated hardware; multimedia applications; artificial neural networks; fuzzy logic; genetic algorithms; industrial applications.

Track 10. Industrial Informatics: Cloud Computing, Big Data, AI, Informatics and Software Engineering
Chairs: Yan Zhang, Daswin De Silva, Yudong Zhang, Marco Porta

Machine Learning, Learning and Generalisation in Industrial Informatics, Automated Machine Learning, Deep Learning in Industrial Technology, Online Learning from Data Streams, Machine Learning on Edge Devices, Embedded Vision in Industrial Informatics, Interpretability and Explainable Machine Learning, Computer Vision in Industrial Informatics, Text, Image, Audio, Video and Social Media Applications in Industrial Informatics, Reasoning on Internet of Things (IoT), Reinforcement Learning in Industrial Informatics, Cloud Computing, Big Data, Data Analysis and Extraction, Industrial Database Applications, Service Oriented Architecture, Software Engineering Methodologies and Techniques.

Track 11. Intelligent Factory Automation
Chairs: Moris Behnam, Bilal Ahmad, Paulo Leitao, Antoni Grau

Industrial Communications, Real-time Systems in industry, Software architectures and frameworks for Industrial Cloud and Edge Computing, Industry 4.0, Industrial Internet and beyond, Artificial intelligence for fault prediction and energy efficiency, Flexible and Reconfigurable production, IT/OT convergence, Connectivity and Interoperability in Edge-Cloud infrastructures, Multi-agent systems, Industrial Cyber-physical Systems, Reliability, Security and Resilience of Production Systems, Synthesis and Verification using Formal Methods and AI, Industrial Data Models (AutML, PackML, B2MML, OPC-UA ML), Intelligent Applications in Industrial Internet, Self-Adaption and Self-Organization for Smart Factories, Smart Interfaces, Intelligent Embedded Systems and Integrated Intelligence.

Track 12. ICT and AI Enabling Smart Cities, Buildings, Transport, Agriculture, Energy Efficiency and Sustainability
Chairs: Kim Fung Tsang, Lei Shu, Jan Haase, Chen-wei Yang

AI powered smart cities services, Smart buildings, Smart mobility and transportation, Smart healthcare, Open data and big data analytics, IoT in Agriculture, AI in Agriculture, Security and Physical Safety for Outdoor Devices, Safety Requirements for Autonomous Agricultural Machinery, Unmanned Aerial Vehicles (UAVs), Intelligent infrastructure, Connected Vehicle (CV) technologies, Safety and Security Systems, Environmental Monitoring Technologies, Smart Traffic System Operations

Track 13. Human Centric ICT Enabling Smart Medicine, Assistive Robotics, Security, Education and Ethics
Chairs: Geng Yang, Hao Wang, Larisa Dunai, Jinhua She

Health Care, Wearable and Assistive Devices, Human-centered automation, Human factors and human-in-the-loop, Human performance and modelling, Human-system interaction, Sensing and recognition, User-centered design, Assistive robotics, Safety and Secruity, Ethical aspects of IA and ICT applications.