2026 IEEE 5th International Conference on Signal Processing, Informatics, Communication and Energy Systems (IEEE SPICES 2026)

9-11 October 2026

Government College of Engineering Kannur, Kannur, Kerala, India

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Call for Special Session Papers IEEE SPICES 2026

2026 5th IEEE International Conference on Signal Processing, Informatics, Communication and Energy Systems (IEEE SPICES 2026) is a flagship biennial conference of the IEEE Kerala Section, jointly organized by Government College of Engineering Kannur, to be held during 9–11 October 2026. The theme of the conference is "***AI, Smart Energy, and Communication Technologies for Sustainable Development***."

Special Sessions (SS) provide a focused forum for presenting innovative research, emerging trends, and recent breakthroughs in specialized and advanced topics that may not be adequately covered in the regular conference tracks.

Authors are invited to submit original, unpublished research papers formatted according to the conference guidelines and submitted electronically through the submission portal https://www.gcek.ac.in/SPICES2026/ for the special session tracks.

Special Sessions will be conducted in parallel with the regular technical sessions during 9–11 October 2026. All papers submitted under Special Sessions will undergo the same rigorous peer-review process as regular papers. Accepted and presented papers meeting IEEE requirements will be submitted for inclusion in the IEEE Xplore Digital Library (subject to IEEE quality standards). Submission guidelines are available at: https://gcek.ac.in/SPICES2026/paper-submission.php

Special Session Track 2

SS2: Advances in Industrial Networking

Organized by

- Dr. Axel Sikora, Offenburg University, Germany axel.sikora@hs-offenburg.de
- Dr. Bindima T. , Government Engineering College Kozhikode, Kerala, India. bindima@geckkd.ac.in
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Communication technologies are the backbone for the rapid progress in industrial automation. Over the past two decades, the dominant trend has been a steady transition from custom legacy solutions (such as analog links and proprietary fieldbuses) to architectures built on widely adopted standards including Industrial Ethernet, Wi□Fi or 5G and on IP-based communication. This shift has significantly improved communication performance and reliability while reducing deployment, maintenance, and integration costs. At the same time, the tight requirements of industrial environments have driven the development of specialized technologies such as Time□Sensitive Networking (TSN), Ultra□Reliable Low□Latency Communications (URLLC), and OPC UA, to name a few. Together with these trends, also the attack surface has increased, which leads to an additional demand in security solutions, such as link-level and end-to-send encryption.However, there are still lots of open challenges around deterministic and real-time behavior, efficiency, safety, security, and interoperability of the different layers. This special session will address these open issues and will try to propose concepts and solutions to overcome these challenges.

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The Special Session focuses on (but is not limited to):

- Wired networks for industry: (industrial) Ethernet, Time-Sensitive Networking (TSN), legacy fieldbuses
- Wireless local networks for industry: Wi-Fi 7/8, Multi□Link Operation (MLO), Ultra□High Reliability (UHR), LiFi
- Wireless mobile networks for industry: 5G/B5G/6G Ultra-Reliable and Low Latency Communications (URLLC), Massive Machine-Type Communications (mMTC)
- Automotive and embedded networks: CAN FD/XL, Single Pair Ethernet (SPE), Physical Layer Collision Avoidance (PLCA)
- Low-power networks: WSN/WSAN, 6LoWPAN, TSCH, DSME, LoRaWAN, Bluetooth Low Energy
- High-availability communication protocols: PRP, HSR, Frame Replication and Elimination for Reliability (FRER), redundancy, reliability
- Energy-efficient communication protocols for industry: Deterministic and Energy-Aware Industrial Networking, Energy-efficient TSN scheduling for real-time control, Power-aware Industrial Ethernet (PROFINET, EtherCAT), Latency–energy trade-offs in factory automation networks
- Precise clock synchronization protocols: PTP, IEEE 802.1AS, Fine Timing Measurement (FTM), RBS
- Higher-layer industrial protocols: Open Platform Communications Unified Architecture (OPC UA), MQTT, Constrained Application Protocol (CoAP)
- Distributed architectures for industry: IT/OT Integration, Edge/Cloud computing, Interoperability, Middleware, IIoT
- Optimization of industrial networks: Cognitive Radio, Coexistence, performance/efficiency optimization, Network Digital Twin (NDT)
- AI/ML applied to industrial networks: ML for network traffic prediction and optimization, AI-based fault detection, diagnostics, and self-healing networks, Reinforcement learning for adaptive routing in industrial networks
- Secure industrial communication protocols: end-to-end vs. link-level encryption, TLS, IPsec, MACsec, CANsec
- Cybersecurity in industrial networks and Cyber-Physical Systems: secure networking for industrial CPSs, AI-driven intrusion detection in industrial networks, Blockchain-enabled secure industrial communications
- Functional safety in industrial networks: black channel, fail□safe behavior, Safety Integrity Level (SIL), Performance Level (PL)
- Localization and sensing in wireless industrial networks
- Real-time communication: feasibility analysis, admission control, network calculus, determinism
- Communication networks for smart grids and microgrids, Industrial networking for renewable energy integration, AI-assisted energy-aware networking and load balancing, Communication protocols for EV charging infrastructure

Important Dates

Special Session Paper Submission Opens: 10 March 2026
Special Session Paper Submission Deadline: **15 April 2026**
Special Session Paper Acceptance Notification: 15 June 2026
Early-Bird Registration : 15 June 2026 to 15 July 2026
Final Camera-ready Paper : 15 June 2026 to 30 July 2026
Registration Ends : 30 July 2026

Submit your innovative research to the Special Sessions of IEEE SPICES 2026 and be part of a dynamic platform fostering impactful and future-ready technologies.

DIRECTORATE OF TECHNICAL EDUCATION (GOVERNMENT OF KERALA)
IEEE Kerala Section
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