ICAIN-2025
International Conference on Artificial Intelligence and Networking

06th-07th October 2025
Organized by
BITS Pilani, Dubai Campus
In association with
Indian Institute of Information Technology, Allahabad

************** CALL FOR PAPERS ***************

SPECIAL SESSION ON

Sustainable, Secure and Low-power AI architectures for IoT, Next-Gen Communication, & Healthcare Systems

SESSION ORGANIZERS:

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EDITORIAL BOARD: (Optional)

SESSION DESCRIPTION:

This special session invites high-quality contributions focused on the design, development, and deployment of sustainable, secure, and energy-efficient Artificial Intelligence (AI) architectures for emerging applications in IoT, next-generation wireless communication (5G/6G/NextG), and smart

healthcare systems. The increasing demand for real-time intelligence at the edge requires innovative approaches that balance performance with privacy, security, and minimal resource consumption. Topics of interest include, but are not limited to, TinyML, neuromorphic computing, federated and distributed learning for secure IoT networks, green AI algorithms for edge devices, trusted AI frameworks for telemedicine, and resilient AI-driven network protocols. The session aims to bring together researchers, academicians, practitioners, and industry experts to share breakthroughs, identify practical challenges, and shape a roadmap for deploying trustworthy and sustainable AI systems that align with the global goals of digital inclusion and low-resource technology adoption."

RECOMMENDED TOPICS:

Topics to be discussed in this special session include (but are not limited to) the following:

- TinyML models and ultra-efficient neural networks for edge devices and energy savings
- Neuromorphic computing hardware for low-power sensory processing
- AI hardware accelerators for IoT: FPGA/ASIC innovation
- Quantum-resistant /Privacy-preserving AI: federated learning, differential privacy in IoT & secure communication
- Lightweight encryption and secure inference on edge devices
- Blockchain integration for secure AI-driven IoT ecosystems, communication and healthcare data
- Threat modeling and intrusion detection using AI in resource-constrained settings
- Edge AI for real-time processing in ultra-reliable low-latency communication (URLLC)
- AI-driven resource allocation and spectrum management
- Low-power AI for wearable health monitoring and ambient sensors
- Secure remote patient monitoring and telemedicine platforms
- Resource-aware AI for real-time ECG/EEG analysis
- Integration of AI-enabled IoT with hospital infrastructure
- Sustainable AI lifecycle management: model compression, pruning, quantization
- Multi-objective optimization for balancing accuracy, security, and energy
- Digital twin frameworks with embedded AI for smart healthcare, NextG (6G/6G+) and Industry 5.0
- Explainable/Fair/Trustworthy AI standards and certification for IoT, NextG and medical devices

SUBMISSION PROCEDURE:

Researchers and practitioners are invited to submit papers for this particular theme session on *Sustainable, Secure and Low-power AI architectures for IoT, Next-Gen Communication, & Healthcare Systems* **on or before** 30th August 2025]. All submissions must be original and may not be under review by another publication. INTERESTED AUTHORS SHOULD CONSULT THE CONFERENCE'S GUIDELINES FOR MANUSCRIPT SUBMISSIONS at https://www.icain-conf.com/downloads. All submitted papers will be reviewed on a double-blind, peer-review basis.

NOTE: While submitting a paper in this special session, please specify **Sustainable, Secure and Low-power AI architectures for IoT, Next-Gen Communication, & Healthcare Systems** at the top (above paper title) of the first page of your paper.

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