

IEEE Transactions on Industrial Cyber-Physical Systems CALL FOR PAPERS

for Special Collection on



Securing the Future: Innovations in Privacy-Preserving Integrated Sensing for Industrial Cyber-Physical Systems

Theme: In the rapidly evolving landscape of intelligent mobile devices and the impending 6G networks, the Integrated Sensing Digital Framework (ISDF) emerges as a transformative force within the Internet of Things (IoT), offering unprecedented opportunities for real-time data collection. Comprising the Data Requester (DR), Sensing-Computing Provider (SCP), and Framework Executor (FE), ISDF revolutionizes data gathering by harnessing device intelligence and eliminating the need for specialized sensors, providing a rich source of real-time, diverse data at the convergence of physical and digital realms. However, the integration of ISDF presents challenges, particularly in privacy and reliability. Privacy threats such as data content, task content, and location and identity risks must be addressed for the framework's success. Additionally, the strain on network capacity due to ISDF's reliance on intelligent mobile devices requires careful management for effective support of Ultra-Reliable and Low Latency Communications (URLLC). This proposal focuses on innovative solutions that integrate principles from Integrated Sensing, Computing, and Communications (ISCC) and Zero Touch Network and Service Management (ZSM) to establish a secure and dependable ISDF framework, meeting the evolving needs of 6G systems.

This special collection will focus on (but not limited to) the following topics:

- Federated learning for privacy in ISDF
- Optimization methods for URLLC in ISDF
- Encryption for privacy in ISDF
- Standardization for URLLC and ISDF integration
- Quantum-safe cryptography in ISDF
- AI and machine learning for privacy in ISDF
- Edge/Cloud/Fog computing for privacy in ISDF
- Blockchain-based privacy in ISDF
- Metaverse/Web 3.0 for privacy in ISDF
- New electronic devices for reliable and privacy-focused ISDF

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