Special Issue

Industrial Networks of the Future Across the Edge-to-Cloud Continuum

Message from the Guest Editors

Modern industrial networks are undergoing a profound transformation driven by the convergence of digitalization, automation, and connectivity. The rise of Industry 4.0, the Industrial Internet of Things (IIoT), Cyber-Physical Systems (CPS), and intelligent edgecloud integration is pushing traditional industrial communication paradigms to evolve into highly adaptable, software-defined infrastructures. These infrastructures must meet diverse and stringent requirements such as ultra-low latency, real-time responsiveness, high reliability, energy efficiency, and security. The adoption of 5G/6G technologies, Time-Sensitive Networking (TSN), network slicing, and Aldriven automation is further accelerating this evolution. Industrial networks now span heterogeneous environments, ranging from resource-constrained edge and fog computing nodes to powerful cloud backends. This complexity demands new strategies for network design, orchestration, performance optimization, and security, all while supporting mission-critical applications in industrial applications such as manufacturing, logistics, etc.

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