Special Issue

LoRa-Based IoT Applications in Smart Cities

Message from the Guest Editors

Low-power-wide-area networks (LPWANs) have become a cornerstone of smart city digital infrastructures, offering scalable, energy-efficient, and cost-effective connectivity. Among these, LoRa and the LoRaWAN protocol stand out for their long-range communication, robustness in urban environments, and ability to support massive deployments of heterogeneous devices. They already enable a range of urban services such as water metering, waste management, air quality monitoring, traffic optimization, and infrastructure health assessment.

Yet, significant research challenges remain in moving from isolated pilot projects to resilient, city-wide LoRa deployments. At the same time, state-of-the-art approaches like machine learning, federated learning, and edge intelligence offer new opportunities for performance optimization, anomaly detection, and distributed decision-making. Looking forward, LoRa must evolve to integrate with 5G/6G infrastructures, support sustainable smart city goals, and enable future IoT paradigms such as digital twins and AI-native networks.

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