

CFP: IEEE Wireless Communications Special Issue on Cognitive and Intelligent Internet-of-Things for 5G-Enabled Smart City

5G networks are widely believed to be the enabler of a broad range of smart city technologies. AI and cognitive computing are two cornerstone technologies that enable 5G-based smart cities to enhance the quality and performance of urban services. To large-scale cyber system operators such as smart cities and safe community systems, the massive Machine Type of Communication (mMTC) of 5G supports up to 1 million device connections per square kilometer, which is at least 50 times of the connection density of 4G, hence enabling high density deployment of a massive number of Internet-of-Things (IoT) devices within a relatively small geographic area. In this case, cognitive computing along with smart spectrum sensing and dynamic spectrum access can play a key role to solve the wireless spectrum challenge.

To realize these benefits of 5G in smart city applications, wireless techniques such as MIMO and beamforming are extensively used in an intelligent manner. Meanwhile, the trend of cognitive IoT, edge computing and fog computing will play a critical role in implementing the spectrum management capabilities of 5G and in ensuring the success of 5G-enabled smart cities systems. It is envisioned that applying AI and cognitive technique into mMTC and URLLC is a critical approach to solve the scientific and engineering challenges in wireless communications emerged from 5G-enabled smart cities.

In this situation, AI-based techniques are critical to support various innovative but bandwidth hungry applications for smart cities, e.g., enhancing road safety, enabling smart and green transportation, location-dependent services, and In-vehicle Internet access, as well as being a promising technological direction for alleviating traffic congestion and improving road safety for autonomous driving.

This special issue is to encourage researchers to present their latest work on how IoT, AI and cognitive computing work together to address the bandwidth challenges of 5G-enabled smart cities. Topics of interests include, but are not limited to

- AI Based Smart City architecture and modeling
- AI and cognitive computing technology for mMTC and URLLC scenarios in Smart City
- AI and machine learning approaches for spectrum management in 5G-oriented Smart City
- Cognitive computing models and prediction analytics for 5G-oriented Smart City
- Cognitive computing algorithms for Intelligence IoT in 5G-oriented Smart City
- Cognitive radio technology for IoT in 5G-oriented Smart City

- Cognitive models for big data IoT, theory, and applications
- Machine learning techniques for big data in 5G-oriented Smart City
- Intelligent spectrum sensing in 5G-oriented Smart City
- Cognitive security techniques for IoT applications in 5G-oriented Smart City
- Cognitive design principles and best practices for IoT application development

Prospective authors should prepare their submissions in accordance with the rules specified in the Information for Authors of the IEEE Wireless Communications guidelines (<https://www.comsoc.org/publications/magazines/ieeewireless-communications/paper-submission>). Authors should submit a PDF version of their complete manuscript to <https://mc.manuscriptcentral.com/ieee-wcm>. The timetable is as follows:

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