IET Smart Cities

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GUEST EDITORIAL

Drones for smart cities

Smart cities and unmanned aerial vehicles (UAVs) are two relatively recent concepts and also hot topics in research. The combination of these two technologies is expected to propel their capabilities even further for enabling revolutionary applications that will improve our quality of life. This Special Issue focuses on novel work done on the application of UAVs where state-of-the-art technologies in sensing, information dissemination, communications, and artificial intelligence (AI) are applied within the context of smart cities.

Over the years, we have witnessed the joint efforts of academia and industry that have led to not only the introduction of novel applications but also the improvement of communications and the use of AI-based approaches intended to make use of UAVs in future smart cities. However, many issues remain unsolved. Further research efforts are required in the fields of drone networking, sensing, and autonomous driving; including information sharing and delivery, providing common understanding platforms, smart sensing, and also new communication paradigms for the advancement of drone systems within smart cities.

This Special Issue aimed to investigate the above-mentioned open issues related to 'Drones for Smart Cities' and collected three (03) high-quality papers that were accepted after a rigorous review process.

A review of some of the technical difficulties with aerial coordination and interaction that multirotor UAVs still encounter was presented by Fabra et al. [1]. In order to achieve collision-free flights and swarm-based missions, they highlighted recent advancements that have been published in the literature and presented some recent contributions. The study in this work allows the authors to offer insight into the issues that still need to be resolved in order to make it possible for UAV-based solutions to support sustainable aerial services.

The study of Popescu et al. [2] examined the potential hovering locations based on each hovering location's unique constraints, such as flight time and coverage, in order to increase connection and ensure data rates in the 5G network. They presented analytical bounds on the connection expansion needs for fixed enhanced mobile broadband infrastructure serving vehicle networks, where both infrastructures and vehicular networks are analysed using stochastic and fractal geometry as a model for urban environments. Overall, the results presented a realistic stochastic communication model for investigating the growth of 5G in smart cities. The computation of precise bounds and the identification of specific behaviours served to highlight the appeal of such a creative framework (such as the characterisation of a threshold). It is also a start in the direction of creating a framework for 'smart city modeling' that may be used in different urban contexts.

Finally, Rathee et al. [3] developed a trustworthy drone-based communication system for smart cities, in which intelligent devices conduct surveillance using drones. By classifying each device into legitimate and malicious ones, behaviour-based and local trust models are utilised to examine how each one communicates. Higher trust levels allow nodes to continue communicating and to be part of the network. The blockchain network, where each device's trust value is maintained as a block in the network, once again monitors and analyses the system. The suggested method has been tested and compared to the current scheme; it has outperformed it in terms of throughput, latency, accuracy, and block updating limit. Because there is reduced communication storage overhead and delay, the proposed approach performs better than the current methods.

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DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analysed in this study.

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