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GUEST EDITORIAL

# Special issue: Multimedia data analysis for smart city environment safety

## Editorial article: Embarking on a safer tomorrow through advanced multimedia analysis

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In an era where urbanisation is not just an occurrence but a deliberate pursuit, Smart Cities stand at the forefront of the technological revolution—testaments to human innovation and resolve. The cornerstone of Smart Cities is the guarantee of security and safety, both in the tangible streets we walk and the intangible digital alleys we navigate. Sophisticated Information and Communication Technology (ICT) systems that work tirelessly behind the scenes account for a safety nexus.

Multimedia data, vast in its expanse and variety, forms the crux of our interconnected society. However, the seamless flow of information also calls for robust systems that can sift through this data. Advanced, integrated solutions capable of parsing through varied multimedia sources are necessary to provide essential insights and enable appropriate counteractive measures.

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The scientific community has made significant progress in harnessing innovative sensing technologies, data science, and artificial intelligence to foster intelligent urban spaces defined by their real-time monitoring capabilities, enhancing cyber and physical situational awareness.

Then, it is no longer a far-fetched dream but a tangible reality to envision cities that can sense and react accordingly.

The excellent precision offered by Artificial Intelligence (AI), Pattern Recognition, Computer Vision, immersive 3D simulations and the burgeoning field of Digital Twins propels these disciplines into the spotlight of innovation. They allow the development of sophisticated, intuitive tools to reinforce the safety net of our urban environments.

This Special Issue, titled "Multimedia Data Analysis for Smart City Environment Safety," is a collection of high-calibre scientific contributions that fulfil the spirit of this mission. We present a curated assemblage of research that delves deep into multimedia analysis, each paper synergistically contributing to the overarching theme of enhancing urban safety.

The range of topics is vast, from deploying unmanned aerial vehicles (UAVs) for forest fire detection to the intricacies of real-time instance segmentation for urban planning. We explore the frontiers of face recognition in the wild, delve into the nuances of crowd analysis, and present novel AI-driven approaches for anomaly detection. Implementing machine learning for public health safety through cancer vaccine research and the development of IoT frameworks for smart environment intrusion detection mark the multifaceted nature of this issue.

Moreover, the employment of GANs for image fusion and the intricate methods of data hiding for secure communication are a reference point to the depth and applicability of these research efforts. We unravel the complexities of leveraging user preferences for combating fake news and examine the prospects of AI in creating safer, smarter, and more efficient non-motorized transportation systems.

The goal is singular yet profound—to harness the power of multimedia data analysis to curate smarter, safer cities. It is not just about the safety of the digital and physical realms in isolation but their confluence, which defines the quality of urban life.

As you go through the pages of this Special Issue, let each paper serve as a beacon, shedding light on the intersection of technology and urban well-being. The research presented herein is not merely academic but a narrative of potential, a series of solutions for a rapidly evolving world. We are privileged to present this compendium to the scientific community, policy-makers, and stakeholders in smart city initiatives.

We invite you to engage with these scientific narratives, to ponder, critique, and build upon them. For in the grand design of tomorrow's cities, the amalgamation of knowledge, the exchange of ideas, and the unity of our collective efforts will pave the way for a safer, smarter world.