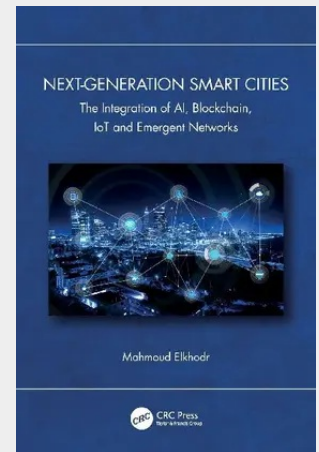


Next-Generation Smart Cities

The Integration of AI, Blockchain, IoT and Emergent Networks

This book offers a forward-looking analysis of emerging technologies converging in next-generation smart cities, examining both their opportunities and challenges. It explores the integration of AI, 6G networks, quantum computing, molecular communications, IoT, and IoNT through scenario-based analysis, highlighting AI-driven orchestration, blockchain, the metaverse, and advanced networking for urban resilience. It provides technical frameworks for Social IoT (SIoT), edge-cloud computing, and AI middleware, whilst addressing security challenges in quantum computing, AI, and molecular domains. The book concludes by discussing issues of security, privacy, ethical AI, and societal implications such as the digital divide, thereby offering a roadmap for the reader. This work offers key insights into the field of 6G-enabled IoT and blockchain systems. Firstly, the author expands the reader's understanding by examining innovative applications. These applications are found in areas such as autonomous vehicles, smart cities, Industry 4.0, healthcare, and immersive technologies (holographic communications, IoNT), thus showcasing the transformative potential of 6G. This knowledge helps drive practical development for the accelerated deployment of 6G-enabled solutions across diverse sectors. Next is the analysis of security vulnerabilities, privacy concerns, and emerging threats at device and network levels, which is crucial for building robust and trustworthy 6G IoT systems. By providing insights into risk management and proactive measures, the book enables developers to address security challenges early in the design process. This enhanced security awareness and mitigation consideration fosters user trust and enables the widespread adoption of these systems in sensitive applications. The reader also learns about the complexities of network management, resource allocation, and how virtualisation in 6G IoT addresses critical challenges in building scalable and efficient interconnected systems. By examining standardisation efforts for interoperability and the development of a cohesive 6G ecosystem, the objective is to achieve improved network efficiency and scalability for widespread implementation. The audience for this book includes doctoral and master's students in computer science, electrical engineering, urban planning, and related fields who are investigating how technologies such as AI, blockchain, IoT, and advanced communications can address complex urban challenges. The book may also be useful for research seminars and advanced courses exploring technological convergence in smart cities.



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