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| **Title:** | Neuro-Symbolic AI for IoT-Driven Smart Cities: A Next-Generation Framework for Urban Intelligence | | |
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| **Published Journal Name:** | Journal of Computer Science and Technology Studies | | |
| **Type of Publication:** | Journal | | |
| **Volume:** | 7 | Issue | 2 |
| **Publisher:** | Al-Kindi Center for Research and Development, London, UK | | |
| **Publication Date:** | 4 April 2025 | | |
| **ISSN:** | 2709-104X | | |
| **DOI:** | https://doi.org/10.32996/jcsts.2025.7.2.4 | | |
| **URL:** | www.al-kindipublisher.com/index.php/jcsts | | |
| **Other Related Info.:** | pp. 36-55, Google Scholar and Research Gate Indexed | | |
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| **Abstract:** |  |
| Abstract— The integration of the Internet of Things (IoT) and Artificial Intelligence (AI) is revolutionizing urban landscapes by enhancing operational efficiency, resource management, and sustainability in smart cities. IoT enables real-time data acquisition through distributed sensor networks, while AI processes this data to facilitate intelligent decision-making across critical urban domains, including transportation, energy management, environmental monitoring, public safety, and healthcare. Despite its potential, this convergence presents critical challenges such as data heterogeneity, security vulnerabilities, computational constraints, and regulatory compliance. This paper provides a comprehensive review of the opportunities presented by IoT-AI integration, analyzing key enabling technologies such as edge computing, federated learning, and privacy-preserving AI models. The study further examines major challenges, including interoperability constraints, security risks, and ethical considerations, while exploring advanced mitigation strategies such as blockchain-enhanced security, decentralized intelligence, and adaptive AI-driven urban systems. Additionally, this paper outlines future prospects, focusing on the transformative role of 5G, digital twins, and quantum computing in next-generation smart cities. By synthesizing recent advancements and addressing critical research gaps, this study offers valuable insights for researchers, policymakers, and urban planners striving to build resilient, scalable, and sustainable smart city ecosystems. | |