ID 90

IoT Security in Smart Cities: Explore the Unique Security Challenges in the Context of Smart City Deployments

DADU de Silva[1#] and RPS Kathriarachchi[1]

[1]Faculty of Computing, General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka

[#]38-bit-0004@kdu.ac.lk

Abstract

Smart cities are experiencing a transformation because of using Internet of Things (IoT) technologies. These changes aim to improve the overall productivity, sustainability, and quality of life of city residents. However, as urban systems become more connected, they present security challenges that need to be explored. In this review paper, we examine security in detail in the context of smart cities with a particular focus on applications such as transportation systems, smart grids, and public safety. Through empirical research, this paper investigates the potential risks and vulnerabilities of smart cities. These include cyber-attacks, data breaches, physical intrusion, and network sabotage. Additionally, we provide an in-depth review of existing research that addresses these challenges by discussing state-of-the-art security solutions, frameworks, and best practices. We explore encryption techniques, authentication methods, access control methods and security measures proposed and implemented in smart city projects. An important aspect of this paper is the analysis of real-world case studies from the community. This analysis provides insights in terms of lessons learned and best practices that can guide implementation and policy development. Importantly, this paper highlights the importance of private, academic and community partnerships to effectively address safety issues in smart cities. The paper provides insights into trends and future strategies for security. It explores how new technologies such as blockchain and artificial intelligence can help address these challenges. Outcome from this research serves as a model for creating complex strategies that balance the transformative potential of smart cities with the need to protect against security vulnerabilities of emerging varieties.

Keywords: *IoT security, Smart cites, Smart city deployments, Transportation systems, Smart grids, Public safety applications*