Chapter 14
The Role of AI-Based Integrated Physical Security Governance for Optimizing IoT Devices Connectivity in Smart Cities

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ABSTRACT

A smart city aims at developing an ecosystem wherein the citizens will have instant access to amenities required for a healthy and safe living. Since the mission of smart city is to develop and integrate many facilities, it is envisaged that there is a need for making the information available instantly for right use of such infrastructure. So, there exists a need to design and implement a world-class physical security measures which acts as a bellwether to protect people life from physical security threats. It is a myth that if placing adequate number of cameras alone would enhance physical security controls in smart cities. There is a need for designing and building comprehensive physical security controls, based on the principles of "layered defense-in-depth," which integrates all aspects of physical security controls. This chapter will review presence of existing physical security technology controls for smart cities in line with the known security threats and propose the need for an AI-enabled physical security premise.

DOI: 10.4018/978-1-7998-5024-3.ch014

INTRODUCTION

Traffic management, health care, energy crises, and many other issues, which are some key challenges posed by a large amount of population can be addressed with the combination of artificial intelligence (AI) and Internet of Things (IoT). Developing brownfield and Greenfield cities has different problems, but what is common to both is that technologies like AI and IoT will be the foundation for understanding the objectives of building 'intelligent' cities of tomorrow. The lives of citizens and businesses would improve if they inhabit a smart city. From maintaining a healthier atmosphere to enhancing public transport and safety, AI-powered IoT-enabled technology in smart cities has great usage (Navarathna & Malagi, 2018)

A few decades back, AI was a term used in science fiction and fantasy, but now, it is used in reality. Sentient machines ruling the world is the most evolved AI of our fantasy tales. We have still not reached that level, as imagination and reality are different and reality is much more complicated. Urban infrastructure is a problem requiring immediate attention, and this can be demonstrated by AI and it is the first key step we have taken toward our smart cities mission. India is no longer a nation of villages because of the rapid growth of urbanization. Every minute, about 30 villagers shift to cities to become their residents (Min, Yoon & Furuya, 2019).

Studies say that about 40% of the Indian population would live in cities by 2030. Technologies are being used by cities all over the world in a move to become smarter, and key functions like city services, transport, communication, water, smart grids, public safety, education, and health are managed through a digitally managed central command room. The basic premise of AI is the development of intelligent machines that are capable of high-level cognitive processes like thinking, perceiving, learning, problem-solving, and decision-making. AI has the potential to make sense of the humongous data and use the intelligence to increase the performance of cities, optimize operational costs and resources, and enable sound citizen engagement (Fahmideh & Zowghi, 2018).

Many of our real-life problems can be solved by using AI. Collection of data by using sensors, closed-circuit television (CCTV) cameras, smart energy meters, and even social media engines for real-time human activity is one of the basic Information and communications technology (ICT) functions for smart city operation. Fiber optics, 3G/LTE, internet, Bluetooth, and so on are some communication systems that the IA may relay upon. AI and other tools should be used to analyze the data and decisions, and actions taken based on the intelligence generated. Sophisticated surveillance technologies, accident pattern monitoring, linking crime databases, combating gang violence, and so on, can be used to enhance using public safety and security. Managing the crowd, approximation of size, foreseeing the behavior, tracking objects, and enabling rapid response to incidents can be done with the help of AI. It can be priceless for handling functions and minimum use of resources such as distributed energy and water. AI can lead to smart homes with applications which can save the resources and ease the local jobs. Citizen services delivery, processing of files, and applications through chatbots for responding to enquiries with smart conversations can be made easy with the help of AI (Halder, et al, 2016).

Operational staff members at the help centers can be made free so that they can be used to address more complicated and time-sensitive queries. Cyberattacks and cybercrimes are unavoidable products of digitization targeting sensitive and personal data, in which again AI can help manage to some extent by detecting the vulnerabilities and taking remedial measures automatically. AI can enable many functions to the city management office to enhance public accessibility, together with preservation of lights, parking management, outdoor spaces, skill development, education, and so on (Inclezan & Pradanos, 2017).