

Chapter 2


Role of Artificial Intelligence in Smart Cities

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ABSTRACT

City planners are starting to have serious concerns about urbanization. Rapid, efficient, and affordable services are among the many needs of the world's residents as the urban population grows and puts more strain on available resources. To manage their city efficiently, city planners must crucially offer the necessary infrastructure support. These comprise, among other things, clean drinking water, power, infrastructure such as roads, bridges etc., housing, transit, and Information and Communications Technology (ICT). In response to growing demand in their cities, planners have turned to technology to improve service delivery, enhance residents' lives, and stimulate local and national economic growth. An overview of the many technology options accessible to planners to help them facilitate the efficient and quick delivery of services to their inhabitants is given in this chapter. Few examples of these technical solutions include big data, cloud computing, the

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Internet of Things (IoT), artificial intelligence (AI), and machine learning (ML), among others.

INTRODUCTION

The 'obvious' starting point for discussion around smart cities and big data The first and the primary most thing which can comes to our mind is that: What actually is a smart city? The idea of the “smart city” is in fact an elusive one and varies greatly from one city and country to another.

What Are Smart Cities?

A “Smart City” as an urban area uses information and communications technology (ICT) and other technology to help manage resource and city in a more efficient, sustainable and environmentally friendly way.

Artificial intelligence is making it possible for cities to continually reinvent themselves. AI technology and smart cities The Cities can predict energy usage, pollution levels and environmental impact as well as control traffic, garbage and maintenance by using AI technology. Here are seven ways computers could help make smart cities a reality, from reduced climate change effects to better quality of life, and better decision-making, (Ward, Kim, & Dey, 2015) (Kumar & Ailawalia, 2024) (Saini, Dutta, & Marques, 2020).

AI applications such as UAVs, EVs, and AVs have led to substantial developments in urban mobility. Yet, security issues persist, and more work is needed to investigate this area.

Smart Cities: How Does AI Make Cities Smarter?

This chapter investigates the disruptive potential of Artificial Intelligence (AI) in the planning and governance of smart cities. Urban systems can be more efficient, responsive, and sustainable when AI technologies take advantage of real time data, advanced analytics, and machine learning algorithms. AI is pervasive in smart cities across domains from traffic, energy, waste, security, and healthcare.

For instance, an AI-based traffic system can foresee traffic jams and control traffic flow with the help of real-time data available from sensors and cameras. In energy distribution grids, AI can appreciate demand and support balancing the load, which increases energy efficiency and reduces waste. AI-driven systems monitor our movements and activities in the smart cities, helping to identify, for example, criminal behaviour with facial recognition algorithms and activity patterns; and

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