Chapter 8

Metaverse–Enabling IoT Technology for a Futuristic Healthcare System

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ABSTRACT

Combining the Metaverse and IoT has huge potential to change healthcare systems. In this chapter, the authors look at how the internet of things (IoT) is changing healthcare by focusing on two key areas: telemedicine and remote patient monitoring. Remote patient monitoring is enabled through internet of things (IoT) devices and wearables. These devices collect data on vital signs, activity levels, and other health metrics in order to remotely monitor patients and discover abnormalities or changes in health conditions. By facilitating remote medical consultations and virtual doctor-patient interactions, the internet of things also improves healthcare's accessibility and convenience.

INTRODUCTION

The term "Metaverse" is used to describe a shared digital environment that combines elements of "regular" (or "physical") reality with "augmented" (or "virtual") reality. Virtual reality (VR) is an immersive and interactive digital environment in which users can interact with digital objects, other users, and computer-generated simulations of either familiar or alien environments (Wang & Kung, 2018). As a new level of human connection and digital experiences, the Metaverse seeks to create a seamless and integrated experience across numerous devices, platforms, and applications.

Virtual reality, augmented reality, mixed reality, artificial intelligence, the Internet of Things, and blockchain are just a few of the technologies that have come together to form what is known as the Metaverse. The virtual environment it creates is dynamic and interconnected because to the incorporation of real-time data, simulated items, social interactions, and full-immersion experiences.

The Internet of Things (IoT) is a global network of computing devices, automobiles, appliances, and other everyday items equipped with sensors, software, and network connectivity. Through the internet, these devices can automatically and invisibly share information with one another and with other systems. The Internet of Things (IoT) paves the way for frictionless connection and communication across the digital and real worlds (Bhattacharya & Sasi, 2021).

Sensors in IoT devices monitor and collect information about things like temperature, humidity, motion, location, and biometrics. This information can be shared, analyzed, and put to use in a variety of ways. Efficiency, convenience, and quality of life are all boosted by the Internet of Things' ability to automate, remotely operate, and monitor equipment and systems.

The Internet of Things (IoT) has the potential to revolutionize sectors and disrupt established procedures, including the healthcare sector. IoT allows for real-time data collection, remote monitoring, predictive analytics, and individualized healthcare solutions by linking medical devices, wearables, and healthcare infrastructure.

The Internet of Things (IoT) and the Metaverse are converging, bringing together the virtual world's immersive and interactive capabilities with the physical world's huge network of interconnected objects. Connecting digital content and physical information is made possible with the incorporation of IoT into the Metaverse.

IoT devices in a Metaverse-enabled IoT ecosystem can exchange data with virtual worlds in real time, resulting in richer, more interactive experiences. Wearable gadgets, for instance, can collect and send biometric data to virtual health assistants, letting virtual doctors keep tabs on their patients' health and make tailored recommendations. In the same way, Internet of Things (IoT) sensors built into smart healthcare infrastructure can share in-the-moment information about the status of individual pieces of equipment, the flow of patients, and the use of resources to enhance healthcare delivery in the Metaverse.

Incorporating Internet of Things (IoT) technologies into the Metaverse paves the way for more life-like and contextually aware simulated environments. It improves user interactions and opens up new opportunities for healthcare, entertainment, education, collaboration, and other industries present in the Metaverse by bridging the gap between the real and virtual worlds.

Significance of IoT in Healthcare Transformation

IoT is very important to the transformation of healthcare because it offers a lot of benefits and chances to improve patient care, operational efficiency, and health results. Here are some key points that show how important IoT is in transforming healthcare:

Remote Patient Monitoring: The Internet of Things (IoT) lets wearable devices, sensors, and medical equipment work together to receive real-time health data from patients. This lets doctors check patients' vital signs, make sure they take their medicine, and check on their general health from a distance. It makes it easier to be engaged in health care, find health problems early, and go to the hospital less often.

Telemedicine and virtual consultations are made possible by IoT technology, which removes geographical obstacles and makes healthcare more accessible. Patients who live in remote places or have trouble getting around can connect with doctors and nurses online to get diagnoses and treatment plans.

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