Chapter 10
Telemedicine IoT Networks and Secure Image Transmission

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ABSTRACT

The integration of Internet of Things (IoT) networks and secure image transmission in telemedicine is investigated in this chapter, with the purpose of highlighting the significance of these two concepts in the delivery of contemporary medical care. The Internet of Things (IoT) is utilized by telemedicine in order to facilitate remote patient monitoring, improve accessibility to medical services, and enhance the efficiency of healthcare systems. Considering the growing reliance on medical imaging for accurate diagnosis, the need for secure transmission methods is of the utmost importance in order to protect sensitive patient data from being accessed by unauthorized parties and being exposed to cyber threats.

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INTRODUCTION

The practice of providing medical care remotely via telecommunications technology is known as telemedicine. It makes communication between patients and medical professionals possible even when they are not in the same place. A variety of services, including consultations, diagnosis, treatments, and follow-up care, can be provided through telemedicine. These services can be facilitated by phone calls, video conferences, messaging apps, or specialized medical software. The idea of telemedicine was developed to overcome the logistical and geographic obstacles that frequently impede access to healthcare, especially in underserved or rural areas. Patients no longer need to travel great distances or make in-person appointments with doctors and specialists thanks to the use of telecommunications. This can be especially helpful for managing mental health consultations, post-surgical follow-ups, and chronic diseases. Thanks to technological advancements such as wearables, high-speed internet, smartphones, and Internet of Things (IoT) sensors, telemedicine has experienced significant growth. Real-time monitoring of patients' health data by healthcare providers is made possible by these tools, which promote ongoing care and the early identification of possible health problems. Wearable technology, for instance, can monitor vital signs like blood pressure, heart rate, and glucose levels and send the information for analysis to medical specialists. The COVID-19 pandemic hastened the adoption of telemedicine by offering a secure and effective means of delivering healthcare while reducing the need for in-person contact and infection risk. Telemedicine has become an essential tool in pandemic response as many healthcare systems have expanded their services to handle the surge of patients remotely.

Role of IoT in Healthcare

Real-time data collection, transmission, and analysis are all made possible by the Internet of Things (IoT), which plays a transformative role in the healthcare industry by connecting various devices, sensors, and operating systems. With the help of smart devices and advanced communication technologies, the Internet of Things (IoT) in the healthcare industry makes it possible to provide better patient care, improve diagnostics, and streamline medical workflows. Through the use of this interconnected network of devices, medical professionals are able to remotely monitor the health of their patients, assist in the management of chronic conditions, and implement timely interventions. Remote patient monitoring is one of the most important parts of the Internet of Things in the healthcare industry. This data is automatically transmitted to healthcare professionals, which enables them to monitor the conditions of patients without the need for them to visit the hospital. Not only