

Chapter 11

Internet of Medical Things in Secure Assistive Technologies

B. Santhosh

Dayananda Sagar College of Engineering, India

ABSTRACT

The Internet of Medical Things (IoMT) is a network of interconnected medical devices, wearable sensors, and various healthcare technologies responsible for gathering and transmitting patient data via the internet. In the context of Secure Assistive Technologies, IoMT can be harnessed to provide uninterrupted monitoring, assistance, and communication with healthcare providers, all while upholding the utmost security and patient privacy. IoMT-based Secure Assistive Technologies encompass a range of devices, including wearable sensors for continuous tracking of vital signs, medication adherence, and other health-related metrics. Additionally, home monitoring systems enable remote patient surveillance and facilitate communication with healthcare providers. These technologies contribute to enhancing patient outcomes by enabling early detection of medical issues, reducing the risk of medical errors, and enhancing patient comfort and mobility. To guarantee the security of these systems, IoMT-based Secure Assistive Technologies employ various measures. These measures encompass secure authentication, data encryption, and other security protocols, all of which are aimed at safeguarding patient data against unauthorized access or interception. Furthermore, they make use of secure communication channels and employ firewalls to counteract cyber threats, ensuring the safe transmission of patient data.

DOI: 10.4018/978-1-6684-8938-3.ch011

1. INTRODUCTION TO IOMT AND SECURE ASSISTIVE TECHNOLOGIES

1.1 Definition and Overview of IoMT and Assistive Technologies

The Internet of Medical Things (IoMT) is enclosed of a network of interconnected medical devices, sensors, wearables, and various healthcare technologies. It is used to gather, transmit, and analyze data in order to offer healthcare services and support. IoMT facilitates the seamless fusion of physical devices with digital systems, enabling real-time monitoring, remote patient care, and data-driven decision-making in the healthcare sector.

On the other hand, assistive technologies comprise devices, software, or systems crafted to aid individuals with disabilities or medical conditions in performing daily tasks, enhancing their quality of life, and fostering independence. These technologies encompass mobility aids, communication devices, prosthetics, sensory aids, home monitoring systems, and more.

When IoMT and assistive technologies converge, they give rise to IoMT-based assistive technologies. This entails integrating connected devices and sensors into assistive devices, permitting real-time monitoring, data collection, and remote communication as in Smith et al (2021). For instance, a wearable sensor embedded in a prosthetic limb could offer insights into its functionality, or a home monitoring system could track vital signs and notify healthcare providers of any unusual readings.

By utilizing the potential of IoMT, Assistive technologies can become more effective and efficient, by delivering personalized and prompt care to individuals with disabilities or medical conditions X. Chen et al (2014).The combination of IoMT and assistive technologies holds great promise in improving patient outcomes, enhancing healthcare delivery, and fostering independence for individuals with wide range of healthcare requirements.

1.2 Importance of Security in IoMT-based Assistive Technologies

Security assumes paramount significance in IoMT-based assistive technologies due to the sensitive nature of the data involved and the potential risks linked to unauthorized access or breaches. Below are key reasons illustrating the significance of security in IoMT-based assistive technologies:

Protecting Patient Privacy: IoMT-based assistive technologies collect and transmit personal health information, including sensitive details about an individual's

25 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/internet-of-medical-things-in-secure-assistive-technologies/332964

Related Content

Strategies and Technology Aids for Teaching Science to Blind and Visually Impaired Students

Cristina Gehibie Reynaga-Peña and Carolina del Carmen López-Suero (2020). *User-Centered Software Development for the Blind and Visually Impaired: Emerging Research and Opportunities* (pp. 26-37).

www.irma-international.org/chapter/strategies-and-technology-aids-for-teaching-science-to-blind-and-visually-impaired-students/231079

Depth Cameras in AAL Environments: Technology and Real-World Applications

Samuele Gasparri, Enea Cippitelli, Susanna Spinsante and Ennio Gambi (2015). *Assistive Technologies for Physical and Cognitive Disabilities* (pp. 22-41).

www.irma-international.org/chapter/depth-cameras-in-aal-environments/122902

Music and Developmental Disabilities

Michelle Renee Blumstein (2015). *Recent Advances in Assistive Technologies to Support Children with Developmental Disorders* (pp. 292-309).

www.irma-international.org/chapter/music-and-developmental-disabilities/131340

iPods and iPads as AAC Devices for Children with Developmental Disorders

Larah van der Meer (2015). *Recent Advances in Assistive Technologies to Support Children with Developmental Disorders* (pp. 1-26).

www.irma-international.org/chapter/ipods-and-ipads-as-aac-devices-for-children-with-developmental-disorders/131327

A Review for Unobtrusive COTS EEG-Based Assistive Technology

Sian Lun Lau, Afzal Ahmed and Zhunussov Ruslan (2015). *Assistive Technologies for Physical and Cognitive Disabilities* (pp. 262-277).

www.irma-international.org/chapter/a-review-for-unobtrusive-cots-eeg-based-assistive-technology/122913