

Chapter 7

AI-Based Digital Health Communication and Securing IoT-Based Assistive Systems

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ABSTRACT

Assistive systems play an increasingly important role in healthcare, as they can help individuals with disabilities, chronic conditions, or age-related health issues to live independently and manage their health more effectively. However, these systems also present security risks, as they may contain sensitive health data and rely on technology that can malfunction or be hacked. To address these risks, AI-based digital health communication can be used to monitor and secure assistive systems. This approach provides real-time monitoring, personalized feedback, predictive analytics, remote support, and secure data sharing to ensure the security and performance of assistive systems. By leveraging AI-based digital health communication, we can improve the safety and efficacy of assistive systems and enhance the quality of life of individuals who rely on these technologies to manage their health. This chapter explores the use of AI-based digital health communication for securing assistive systems, including related work and examples of how this technology can be applied in practice.

1. INTRODUCTION

Assistive systems are becoming increasingly important in healthcare, as they can help individuals with disabilities, chronic conditions, or age-related health issues to live independently and manage their health more effectively (Behzadi & Sadrizadeh,

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2023; Nguyen et al., 2021). However, these systems also present security risks, as they may contain sensitive health data and rely on technology that can malfunction or be hacked (Abdulkader et al., 2020). To address these risks, AI-based digital health communication can be used to monitor and secure assistive systems (Jin et al., 2019).

AI-based digital health communication refers to the use of artificial intelligence and digital communication technologies to provide real-time monitoring and feedback to users and care teams, and to analyze data to identify potential issues before they become a problem (Varghese & Sapkota, 2019). This approach can help to ensure the security and performance of assistive systems, and enable individuals to better manage their health and maintain their independence. This can include chatbots, voice assistants, and predictive analytics tools that can help patients schedule appointments, receive medication reminders, and access personalized health information (Alqahtani et al., 2019).

The use of AI in healthcare communication is becoming increasingly important due to the growing demand for personalized and timely care. AI-based communication tools such as chatbots and voice assistants can help patients access health information and communicate with healthcare providers more easily, even outside of traditional office hours. These tools can also help healthcare providers better understand patients' needs and preferences, enabling them to deliver more personalized care.

Additionally, AI can be used to analyze large volumes of health data to identify patterns and trends that can inform treatment decisions and improve patient outcomes. This can include predictive analytics tools that help identify patients at risk for certain conditions or complications, or machine learning algorithms that can help healthcare providers make more accurate diagnoses.

At the same time, there is a growing need for assistive technologies to enhance accessibility and independence for individuals with disabilities. As the population ages, the prevalence of disabilities is expected to increase, making it more important than ever to develop technologies that can help individuals with disabilities participate fully in society. Assistive technologies can help individuals with mobility, sensory, or communication impairments navigate their environment and perform daily activities, improving their quality of life and reducing healthcare costs associated with disability.

Using AI, caregivers' data can be collected through a variety of devices, shared with healthcare providers, and stored in the cloud through the use of assistive systems. Figure 1 shows the workflow of securing an assistive system using AI-based digital health communication. Table 1 shows the layer of AI-based digital health communication and securing assistive systems.

The purpose of this article is to explore the use of AI-based digital health communication for securing assistive systems. The article will first provide an overview of the current state of assistive systems and their importance in healthcare.

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