

Chapter 3

Internet of Things (IoT) in Healthcare Systems

Pelin Alcan

Istanbul Okan University, Turkey

ABSTRACT

Health is the basic ability that people need to perceive, feel, and act effectively in their lives. Therefore, it constitutes the primary element in the development of the individual and in the environment in which people belong. In order to strengthen health services in the days we live, comprehensive researches are being conducted under the title of Health 4.0 to investigate various technologies. The internet of things (RFID, cloud computing, etc.) is developed to connect existing medical resources and provide patients with the most reliable, smartest, and most effective healthcare services. The aim of this chapter is to summarize the most basic applications of IoT in the health industry.

INTRODUCTION

In the last century, there have been observed different movements in the Industry criterion and implementations. For instance, Industry 1.0 followed by Industry 2.0 were interested in mechanical production facilities and automation, which was electrical energy purposeful. The next industrial revolution following in Industry 3.0 was achieved by the developments in the electronics industry in the last 20th century. However, with the big change of IoT and cloud computing (CC), Industry 4.0 is shaped on smart apparatus spreading and their utilizations.

The Industry 4.0 utilizes various technologies for automation and information replacement such as IoT, cloud system, Big Data (BD), different forms of wireless

DOI: 10.4018/978-1-7998-3175-4.ch003

Internet, 5G systems and devices, cryptography systems, application of semantic database (DB) designing, Augmented Reality (AR), Content-Based Image Retrieval (CBIR) and some security devices. The health care systems extension of industry 4.0 is called as health 4.0 (Monteiro et al., 2019). Based on the evidences of their exhaustive academic review Hermann et al. describe Industry 4.0 as following: “Industry 4.0 is a mutual expression for Technologies and notions of value chain system. Within the modular projected Intelligent Firms of Industry 4.0, Cyber Physical System (CPS monitor) physical operations, achieve a virtual record of the real world and build decentralized judgments. Over the Internet of Things, Cyber Physical System describe and collaborate with each other and people in the time of real. With the help of the IoS, both internal and cross-organizational services are offered and utilized by contributors of the value chain (Kumari et al., 2018).”

Also, design characteristics of Industry 4.0 below are suggested by Hermann et al. (2015):

- Being interoperable
- Virtualization platform
- Distribution of responsibility or Decentralization
- Real-time capacity
- Service conformance
- Modular systems

Developments in industrial systems permit mutual effects with milliard of devices through the universal planetary. In accordance with an industrial examination realized by Grand View investigation as indicated in Figure 1(a), was approved that the income procured from auto sector portion was more than 25% in the year of 2016 (Kumari et al., 2018). Besides, it could be seen that Healthcare area earned a great income which is more than 15% in the year of 2016. For the purpose of satisfying the necessities of industry 4.0, the approval of Internet of Things objects is expanding at a quick speed as indicated in Figure 1(b). Besides, the number of elderly individuals is expected to double by the year of 2030 and potential carers are expected to decrease by 50%. New Technologies and systems should be increased to meet the need for quality maintenance of the individuals. Technology and smart devices can play a significant part in maintaining physical and mental well-being of the people all around the world.

Health systems are one of the main objectives for the general and good growth of a nation. The health sector has undergone various transformations, from 1.0 to 4.0. Health care 1.0 was much more physically centered. Doctors here manually recorded patient health history. As time went on and improvements progressed, hand-held records were replaced by electronic records in Healthcare 2.0. As for

27 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-things-iot-in-healthcare-systems/250723

Related Content

"No Drama!": A Case Study of Social Governance in Second Life®

Nola Johnston (2011). *Security in Virtual Worlds, 3D Webs, and Immersive Environments: Models for Development, Interaction, and Management* (pp. 97-122). www.irma-international.org/chapter/drama-case-study-social-governance/49519

Smarter Phone

Rushit Dave, Brinta Chowdhury and Evelyn R. Sowell-Boone (2019). *The IoT and the Next Revolutions Automating the World* (pp. 33-48). www.irma-international.org/chapter/smarter-phone/234021

Hackers, Hacking, and Eavesdropping

Kevin Curran, Peter Breslin, Kevin McLaughlin and Gary Tracey (2008). *Encyclopedia of Internet Technologies and Applications* (pp. 199-204). www.irma-international.org/chapter/hackers-hacking-eavesdropping/16854

Internet of Everything: A Unifying Framework Beyond Internet of Things

Ergin Dinc, Murat Kuscu, Bilgesu Arif Bilgin and Ozgur Baris Akan (2019). *Harnessing the Internet of Everything (IoE) for Accelerated Innovation Opportunities* (pp. 1-30). www.irma-international.org/chapter/internet-of-everything/221280

Helping Users, Mentally: A Lesson Learned from Hypertext and Web Navigation

Paulus Insap Santosa (2006). *Internet Strategy: The Road to Web Services Solutions* (pp. 101-134). www.irma-international.org/chapter/helping-users-mentally/24665