Chapter 8
Clinical Data Analysis Using IoT Devices

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ABSTRACT

The most recent couple of decades have seen a sharp rise in the number of elderly individuals. Furthermore, enquiry into this tells us that around 89% of the matured individuals are probably going to live autonomously. As the need be, giving a respectable personal satisfaction for matured individuals has turned into a genuine social test. Doctors need to have clear idea as to the health of these individuals, so they can use proper methodologies to cure them. Hence, IoT develops the idea of the internet and makes it more unavoidable. IoT permits consistent collaborations among various sorts of gadgets, for example, therapeutic sensors, observing cameras, home machines, and so on. This chapter proposes clinical data analysis using the internet of things.

INTRODUCTION

In the new era of communication and technology, the explosive growth of electronic devices, smart phones and tablets which can be communicated physically or wirelessly has become the fundamental tool of daily life. The next generation of connected world is Internet of Things (IoT) which connects devices, sensors, appliances, vehicles and other "things". The things or objects may include the radio-frequency identification (RFID) tag, mobile phones, sensors, actuators and much more. With the help of IoT, we connect

DOI: 10.4018/978-1-5225-5036-5.ch008

anything, access from anywhere and anytime, efficiently access any service and information about any object. The aim of IoT is to extend the benefits of Internet with remote control ability, data sharing, constant connectivity and so on. Using an embedded sensor which is always on and collecting data, all the devices would be tied to local and global networks.

Combining sensors and the microcontroller to get accurate measurement, and monitoring and analyzing the health status increase the power of IoT in healthcare. These can include blood pressure, heart rate, oxygen saturation in blood, levels of glucose and motion of body. For working effectively, smart sensors and microcontroller components have several capabilities: low power operation, integrated precision-analog capabilities and GUI's. To keep device footprint small and extend the life of battery to make the device usable, make the sensors possible to achieve high accuracy at low cost, improve the usability and read the information in a good manner. The end-to-end connectivity using sensors and other devices in healthcare. The server receives data of a person (who wearing several bio sensors) from the unit, then it feeds the sql data into its database and analyzes those data. Subsequently, based on the degree of abnormalities', it may interact with the family members of the person, local physician, or even emergency unit of a nearby healthcare center. Precisely, considering a person (not necessarily a patient) wearing several bio sensors on his body and the database receives a periodical updates from these sensors through IOT unit.

It allows the integration of intelligent, miniaturized low-power sensor nodes in, on or around human body to monitor body functions and the surrounding environment. It has great potential to revolutionize the future of healthcare technology. The proposed model provides platform for physical sensors, which are connected directly with patient's smartphone to obtain data at run time. This data is processed and stored in the MySql storage. The stored data can be accessed by practitioners and medical staff later on to observe and monitor patients' health and take decisions accordingly.

A barcode is an optical machine-readable representation of data relating to the object to which it is attached. Originally barcodes systematically represented data by varying the widths and spacing of parallel lines, and may be referred to as linear or one-dimensional (1D). Later they evolved into rectangles, dots, hexagons and other geometric patterns in two dimensions (2D). Although 2D systems use a variety of symbols, they are generally referred to as barcodes as well. Barcodes originally were scanned by special