Chapter 14
An Industry Internet of Things Framework for Epilepsy Detection, Monitoring, and Control

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ABSTRACT

Epilepsy is long-term neurological seizures of various types, some of which are defined by involuntary repetitive convulsions and have a substantial impact on patients' everyday lives. Several approaches for diagnosing these types of seizures and observing the patient have been proposed in the literature; however, these approaches fall short in terms of ergonomics and proper integration with the health system. The precision measuring that this study looks into shows what an epileptic detection and monitoring tool should be able to do. This chapter describes specific epilepsy detection and monitoring platforms that specify the conditions. The information is gathered from the wearable part of the system.

INTRODUCTION

Inadvertent convulsions are a symptom of epilepsy, a chronic neurological condition.

Around 65 million people worldwide are affected, having not only does it have a significant and dramatic influence on the patient's standard of living, but it also has a significant and dramatic impact on the patient's, but also on their career and social development; The budget of the health-care system is also severely damaged. The availability of diagnostics platforms and weblogs aids in the improvement of sickness anamnesis. These frameworks' main component was designed for two types of epilepsy crises:

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generalized tonic-clonic seizures (S. Benicezky, 2013) and typical absence seizures, which are the most common. It's challenging to keep track of and manage epileptic episodes.

Despite the increase in anti-epileptic medications, most recent investigations of epileptic seizure detection reveal that drug-resistant epilepsy still lacks an ultimate cure.

Researchers have devised a number of epilepsy and healthcare monitoring systems to identify seizures and keep track of the patient. The majority of these management techniques are simply focused on how to enhance seizure detection and prediction

Wearable Devices (WD) and/or Body Sensor Networks (G Fortino, 2012) are two types of eHealth platforms that have been developed and according to the survey for the identification and/or diagnostics of illnesses in real time (BSN). WD are typically offered for data collection, biological variable measurement, or user input, with Mobile Cloud Computing (MCC) (Thome-Souza, 2014) processing performed locally or Cloud Computing (CC) services requested. CC services are typically in charge of collecting and analyzing model learning and computationally intensive operations, as well as sampling data from sensors. In addition, the CC services provide a presentation layer, which includes user alarms for patients or medical professionals, the patient's relations are informed and even visuals and data analytics for future research (Khelil, 2014).

CoCaMaal, ROCHAS, (M.Chen, 2013) and AACMPE are examples of such platforms. A firm called CoCaMaal (A. Forkan, 2014), or cloud-oriented perspective middleware in environmental aided living, specializes in patient monitoring and event control, such as alerts and accidents.

This technique is limited to thoroughly regulated environments as long as it recommends BSN implementation based on the patient's needs. ROCHAS (Robotics and Cloud-assisted Healthcare System for Empty Nesters) is a second intriguing platform that offers the observation of individuals with disabilities in their own homes, permits to lead life as autonomously as possible with the help of an aid robot. In a series of research examining how open software platforms can function together, an assistance platform for older people was presented.

ACM (Triaxial Accelerometer) (C. Pradhan, 2011) was presented as a solution for epileptic seizure detection, and a wristband with an ACM that is tethered to a smartphone was recommended for MCC-based solutions detect the presence convulsions; however, no additional connections with CC services are planned. The BSN was proposed in, utilizing the localized Smart devices for information analysis and communicating to the health industry personnel with the patient situation. Work that was similar to this was shown in "Health Monitoring and Management Using Internet-of-Things (IoT) Sensing with Cloud-based Processing"

The Internet of Things (IoT) has enabled a plethora of applications, one of which is smart and linked health care. Networked sensors, whether worn on the body or integrated in our living spaces, allow for the collection of detailed information about our physical and mental health. Such data, if collected on a regular basis, consolidated, and efficiently mined, has the potential to reshape the health-care landscape for the better (R F Fischer, 2011).

In particular, data analysis at previously unimagined scales and temporal longitudes, combined with today's intelligent processing algorithms, can: (a) aid in the evolution of medical practice from the current post facto diagnose-and-treat activated concept to a proactive framework for disease prognosis, prevention, cure, and proper effectiveness.