Chapter 5

Improved Usability of IOT Devices in Healthcare Using Big Data Analysis

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ABSTRACT

Sensor data takes the microcontroller and sends it to doctors through the wi-fi network and provides real-time healthcare parameter monitoring. The clinician can analyze the sensor generated information. Patients provide their measures to the arrangement and identify their fitness status without human intervention. In this chapter, MapReduce algorithm is used to identify the patient health status. The controller is connected with the signal to alert the attendee about dissimilarity in sensor output data. If the situation is severe, an alert message is sent to the doctor through the IOT devices that can provide quick provisional medication to the ill person. The system improves usability of medical devices with less power consumption, simple setup, and high performance and response.

INTRODUCTION

There are numerous research studies are done to assessment the new trends in efficiency in healthcare providers. The effectiveness (Wang, Fedele, & Pridgen, 1999) of the hospital accomplish by analyzing data which showed high inadequacy into a number of clinics acknowledged. The major inadequacy of clinics exists in the accessibility of clinical facilities, the quantity of operating devices and clinical staff. Hospital inefficiency estimating method (Rosko, & Chilingerian, 1999) by identification of the communicated case mix indicator condensed inefficiency by 50%. As a result, the optimization of diagnostic practice is improving the efficiency of healthcare services.

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Using of independent systems allow the observation and tracking of physiological factors at some time and everywhere is called as biofeedback which falls under the new patterns of clinical services and might be achieved by therapeutic sensors (Sawyer, Aziz, Backinger, Beers, Lowery, & Sykes, 1996) placed on the body of long suffering. All these can be accomplished by correlating message panels by means of sensors empowering Wi-Fi.

Patients utilized by carrying body sensor are able to collect diverse anatomical or genetic factors consistently, as involved in various pathologies and healing rule. The extensively utilized body sensors are: monitoring the temperature of the body, monitoring heartbeat, beat oximeter, oxygen saturation (SPo2), blood pressure monitoring, the electrocardiogram (ECG), with accelerometers (movement), and electroencephalogram (EEG).

There is a growing approval of the connections among the design of therapeutic devices, reduced usability, individual inaccuracy and long-suffering protection. To scale back the possibility of inaccuracy, therapeutic device devise must take the description of requires of all users, in addition to the assortment of environments wherein the devices may be utilized. Categorizing the connection among design, individual fault and patient protection, the narrow necessities for therapeutic devices are insertion a growing stress on usability and different user-associated issues.

The Internet of Things is predicted to facilitate a diversity of healthcare providers in which each examines provide a set of medical resolutions. In the medical environment, there is no typical explanation of the Internet of Thing examinations. Though, here may be few cases where a service cannot be independently illustrious from a scrupulous explanation or appliance. Now, recommends that an examination is via some indicates common in life and have the impending to be a structure chunk for a position of resolutions or appliances. Additionally, it should be note-down those common services and procedures needed for the Internet of things structures may need insignificant alterations for their fitting utility in medical situations. These contain warning checks, resource distribution checks, online checks, annoyed-connectivity procedures for diverse medical devices, and connection procedures for the most important connectedness.

The uncomplicated, rapid, protected, and low-power detection of apparatus and examinations can be supplementary to this catalog. Conversely, a conversation on analogous simplified checks of IoT is further than the extent of this research. The fascinated persons who read is referred to the writing for an additional complete perceptive of this issue.

The objective of this chapter is to control the conventional heuristic investigation method of evaluating software service with the intention that it will be useful to therapeutic apparatus and utilized to calculate the patient protection affecting to individual devices through recognition and evaluation of service issues. The other objective is to reduce patient uneasiness, to reduce patient delaying the diagnosis to be accomplished with enhancement of medical equipment consumption. The major goal is optimization of medical diagnosis with the intention of achieve it in improving investigative processes, to decrease the number and diagnosis cost for each patient, to reduce point from the beginning of the diagnostic procedure to till ending of the diagnosis and to personalize the process for every patient.

In this chapter, we tend to amend a usability production method known as heuristic assessment with the estimation of usage issues in therapeutic devices. During the recognition of usage problems, ultimately recognize therapeutic devices’ impending difficulty marks that are probable to origin medicinal faults. Describing the usage heuristics customized for the assessment of medicinal devices, the proportions of the severity evaluation of usage issues, and also the process of moving away a heuristic assessment.