Smart Wearable Wristband for Patients' Health Monitoring System through IoT

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Abstract:

In today's modern world, technology takes part an important role in the medical field. It is must necessary to monitor the patient's health continuously after the operation of the patient. In the healthcare field Internet of Things (IoT) plays the main roleinmonitoring health with lots of applications. To monitor the health parameters of the patient, the smart wearable wristband monitoring system is implemented by using the IoT domain. In this article, the NodeMCU microcontroller act as a gateway between the hardware devices and the software. The parameters to be measured from the patient's body are temperature, heart rate, glucose level, oxygen level, and Blood Pressure (BP). These parameters are measured by using the sensors. The sensors are interfaced with the microcontroller. Then the microcontroller sends the data from the sensors to the cloud. The cloud will analyse the data from the normal values given in the microcontroller. If any of the parameter's data from the sensor are measured as abnormal values, the cloud will send the alert message and the location of the patient to the patient's relatives, to the doctor who is attending that patient, and to the patients' mobile via Global System for Mobile communication (GSM), and Global Positioning System (GPS) for location.

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Contents

I. Introduction

An IoT domain plays a crucial role in healthcare development. In IoT, there is a lot of healthcare devices are implemented. For continuous monitoring of the patient'shealth, the smart wristband is implemented in this paper. It monitors the parameters like body temperature, heart rate, BP, glucose level, and oxygen level of the patient. it is very useful to monitor these parameters continuously by the patient or patient's relative. This wristband system is executed by using sensors, a microcontroller, and the cloud. The sensors sense the data from the patients' bodies and send the data to the microcontroller. The microcontroller transfers the data from the sensors to the cloud. The cloud will analyse and sends the alert message to the patient and the relatives including the patient's location. Monitoring the patient's health condition like temperature, pulse, and blood pressure. The wristband contains the sensors and monitors the patient's health. The data from the wristband kit is transformed through the internet to the cloud, to save the data in the cloud to monitor the health condition of the patient continuously. During the specific time of intervals, the data is collected to alert the patient when there is any problem in the patient's health to diagnose early. The temperature, blood pressure, and pulse rate ranges are given by the doctors as per the patient's health. When the sensing data goes above the given range, the kit will send the alert message to the particular doctors. The alert message will also send to the Twitter accounts of the patient and the doctor [1]. Most people get affected by cardiovascular disease, chronic disease, obesity, diabetes, etc.... by using the health monitoring system the patient can monitor their health condition and get treatment according to it. In the healthcare sector, IoT is growing faster to make the importance of healthcare. Body Area Sensor Network (BASN) is applied for predominant healthcare for monitoring the patient's health. To recognize heart disease, continuous monitoring of an Electrocardiogram (ECG) will help to diagnose the disease early. The data collected from the sensors in the device are transmitted to the cloud and the patient can monitor the data in the Liquid-Crystal Display (LCD) in the device [2].

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Figures
References
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