

Covid-19 Patient Health Monitoring System

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ABSTRACT

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The system proposed can be used to regular checkup of the COVID patients while maintaining the social distancing. Also, the data sensed by the sensors is directly sent to doctor, reducing the cost of paying regular visits to doctor. The IoT platform used in the system helps to transfer the real time patient's data remotely to host device. Daily health record can be maintained and can be viewed in oxygen level or rise in temperature. To track the patient health micro-controller is in turn interfaced to an LCD display and wi-fi connection to send the data to the web-server (wireless sensing node). In case of any abrupt changes in patient heart-rate or body temperature alert is sent about the patient using IoT. This system also shows patients temperature and heartbeat tracked live data with timestamps over the Internet network.

Keywords : Heart beat rate (BPM), Blood Oxygen (SpO₂), Pulse Oximeter, Temperature sensor, Internet of Things (IoT), Blynk

I. INTRODUCTION

The world is facing pandemic situation due to Corona virus. This virus spreads easily even through normal human interactions. The increase in COVID patients has also led to decrease in the relative number of doctors per patient as a solution for this the patients with minor symptoms are home quarantined. In such situation maintaining personal health and immunity is very important for a home quarantined patient without being regularly monitored by the doctors. Recently, the patient monitoring systems is one of the

major advancements because of its improved technology. Currently, there is need for a modernized approach. They need to visit the patient's ward for necessary diagnosis and advising. Firstly, the healthcare professionals must be present on site of the patient all the time and secondly, the patient remains admitted in a hospital, bedside biomedical instruments, for a period of time. The problem with this traditional approach is that there are chances of getting doctors and health personnel affected with the COVID due to coming in contact with contagious patient. In order to solve these two problems, the patients are given

knowledge. In order to improve the above condition, we can make use of technology in a smarter way. In recent years, health care sensors and advanced microcontrollers play a vital role to detect and monitor human body physiological parameters. In our system we to solve these two problems, the patients are given knowledge and information about disease diagnosis and prevention. Secondly, a reliable and readily available patient monitoring system is required. In order to improve the above condition, we can make use of technology in a smarter way. In recent years, health care sensors advanced microcontrollers play a vital role. Contact with the human body and monitor his or her physiological parameters. In our system we are measuring patient's parameters (temperature, heart rate, pulse, etc.) with different available sensors. These sensors collected data i.e., biometric information is given to raspberry pi and then it is transferred to server. In section II and III, Objective and Methodology of the project is discussed. Section IV consists of COVID Patient Health Monitoring Device design; simulation and its implementation are discussed. The results and discussions are mentioned in section V. Table 1 shows the literature survey done.

Objective

The personal health monitoring of each individual is considered very important for a home quarantined patient. Moreover, the increase in COVID patients has also leads to decrease in the relative number of doctors per patient which results in vicious cycle where ignored or delayed diagnostics of an ailment makes the patient more dependent on doctor checkup. Though it is advisable to visit the doctor but as discussed above if the patient is home quarantined or if due to unavailability of specialist due to some reason, the health monitoring devices offer an effective alternative. Thus, there is need for software that utilizes the data available from the device, uploads it to the website, and gets feedback from doctors via internet and show health reports. Doctor should be able to get data anytime he wants for analysis. The health monitoring

device can record various data like patient's heart beat rate, oxygen level; body temperature while in being in contact with the patient and this data from patient can be used by physicians to recommend any changes to patient's routine and medicines.

The main objective is to design a Remote Patient Health Monitoring system to diagnose health condition of the patients without coming in close contact with the patient. Giving care and health assistant to a COVID patient in this pandemic situation has become one of major problems as the doctors, nurses, medical staff are also getting this virus due to coming in contact with contagious patient their lives are also in risks. Proper implementation of such health monitoring system can provide a safer way to diagnose a home quarantined patient where physical conditions of the patient can be monitored frequently, the need for cost effective and fast responding alert mechanism is inevitable. The Internet of Things (IoT) platform offers a promising technology to achieve the healthcare services, and can further improve the medical service systems. IoT wearable platforms can be used to collect the needed information of the patient and communicate such information wirelessly, where it is processed or stored for tracking the history of the patient.

II. Literature Survey

Methodology : This device uses oximeter sensor and temperature sensor which gives the proper values to the controller. Generally, in normal condition SpO₂ ranges form 95- 97 and temperature from 36-37. The values recorded are uploaded to Blynk so they can be viewed from anywhere using internet. The person must practice hand hygiene - wash hands for at least 20seconds. Place a fingertip on MAX30100 Oximeter sensor and also place a finger on LM35 Temperature sensor. The sensors start recording the data and send it to Node MCU. The Node MCU transmits the data to the mobile phone using the Wi-Fi module. In the

is a novel contribution in the field of medical science and it will reduce health issues and unwanted deaths.

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