IOT Based Health Monitoring System for Covid Patients Monitoring

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ABSTRACT

Currently, the COVID-19 pandemic is one of the major global issues faced by health organizations. As a person enters old age, it becomes increasingly vital for them to undergo standard medical health checkups. Since it may be time-consuming and difficult for most people to get regular health checkup appointments, IoT-based arrangements can be beneficial to individuals for routine health checkups. We are utilizing the internet of things to monitor several characteristics of the patient in this project. The real-time parameters of a patient's health are transferred to the cloud via Internet connectivity in the patient Monitoring system based on the Internet of things project. These parameters are transmitted to IoT server where people can access them from any point on the planet. We demonstrate a multi-parameter Wearable sensor system that works in tandem with the Internet of Things to provide real-time, unobtrusive Monitoring of core body temperature and heart rate. Clinical study demonstrating the importance of sustaining precise measurements of core heartbeat and body temperature in the ambulatory environment and during Activity to examine human thermoregulation. We use a wireless multisensory system to monitor the temperature of the body as well as the pulse of the heart.

Keywords: IoT, Heart Rate, Temperature, Health Monitoring, Heart Pulse, Covid.

I. INTRODUCTION

The increased use of mobile technologies and smart devices in the area of health has caused great impact on the world health. experts are increasingly taking advantage of the thus generating a significant improvement in health care in clinical setting likewise countless ordinary users are being served from the advantages of the M- health (mobile health) applications and E-health (health care supported by ICT) to improve help and assist their health according to the constitutions of world health organization the highest attainable standard of health is a fundamental right for an individual as we are truly inspired by this we attempt to propose an innovative system that puts forward a smart patient health tracking system patient

vital parameters and uses internet update the doctor so that they can help in case of any issues at the curliest preventing death rates patient health monitoring using IoT is a technology to enable monitoring of patients outside of conventional clinical setting which may increase access to care and decrease health care delivery costs this can significantly improve an individual quality of life it allows patients to maintain independence prevent complications and minimize personal costs.

IoT technology has developed into an imperative innovation with applications in numerous areas. Specifically, it refers to any system of physical devices that obtain and exchange information over wireless systems without human mediation.

II. METHODOLOGY

IOT based health care monitoring system for measuring oxygen and heart rate for corona patient the proposed system. The health monitoring sensors are used to collect health related data. For data acquisition communication can be done by controller for sending data on internet wirelessly. Data processing has been done at server all data collected and aggregated at server point. To get health related information is understandable format it can be shown on the IOT App.
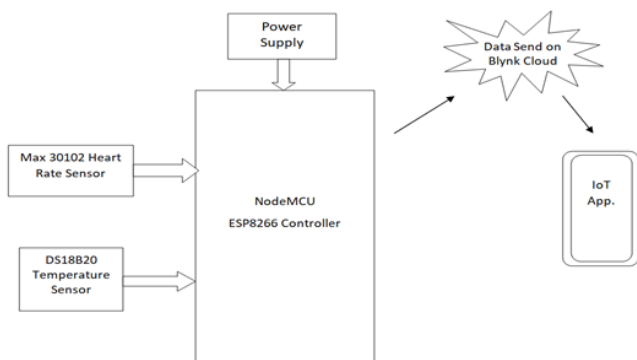
For measuring Patient Heart rate and Oxygen level used Max 30102 Heart Rate sensor and for Measuring body temperature of patient used DS18B20

Temperature Sensor. All this Sensor Data real time send on Blynk Server. So, Doctor can check all this sensor reading on Blynk cloud real time by login on Blynk cloud server and suggest appropriate treatment.
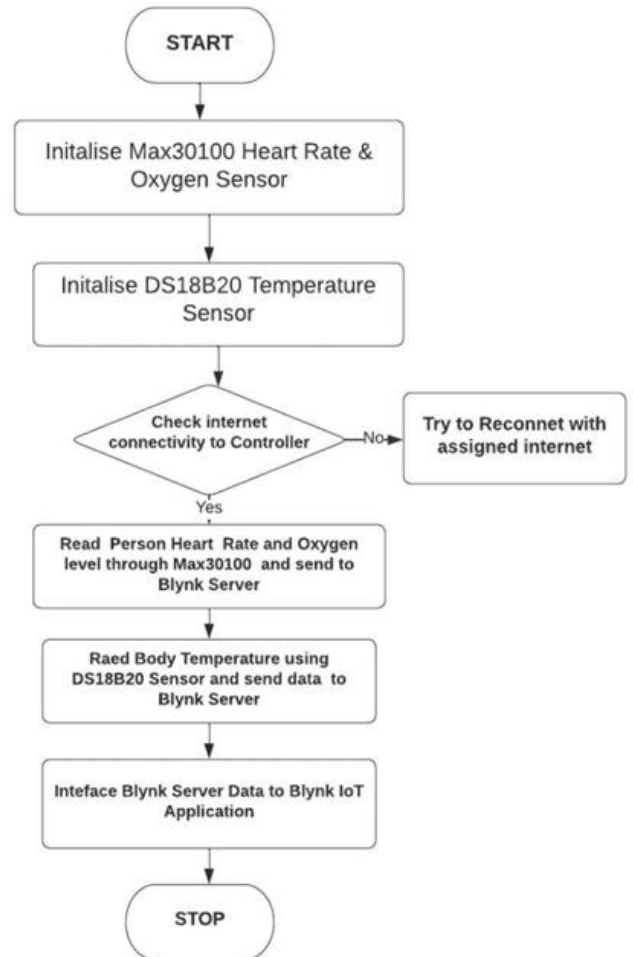

III. HARDWARE COMPONENT

A. NodeMCU Controller

NodeMCU is an open-source Lua based firmware and **development board** specially targeted for IoT based Applications. It includes firmware that runs on the ESP8266 Wi-Fi SoC from Espress if Systems, and hardware which is based on the ESP-12 module.
The NodeMCU ESP8266 development board comes with the ESP-12E module containing the ESP8266 chip having Tensilica Xtensa 32-bit LX106 RISC microprocessor. This microprocessor supports RTOS

and operates at 80MHz to 160 MHz adjustable clock frequency.
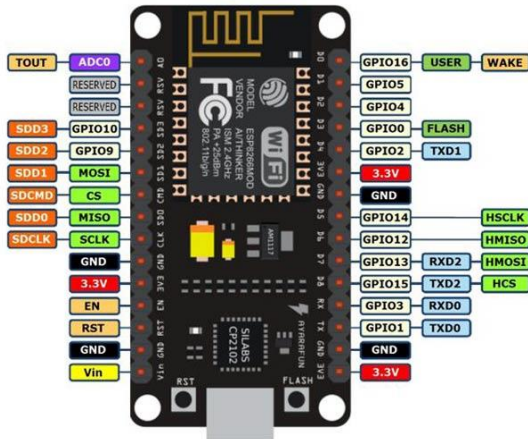
B. DS18B20 Temperature Sensor

The **DS18B20** is a 1-wire programmable Temperature sensor from maxim integrated. It is widely used to measure temperature in hard environments like in chemical solutions, mines or soil etc. The constriction of the sensor is rugged and also can be purchased with a waterproof option making the mounting process easy. It can measure a wide range of temperature from **-55℃ to +125°** with a decent accuracy of **±5℃**.
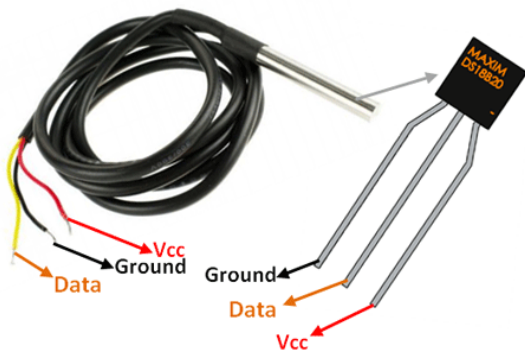
C. Max30102 Heart Rate Sensor

MAX30100 is a multipurpose sensor used for multiple applications. It is a heart rate monitoring sensor along with a pulse oximeter. The sensor comprises two Light Emitting Diodes, a photodetector, and a series of low noise signal processing devices to detect heart rate and to perform pulse oximetry.

The sensor consists of a pair of Light-emitting diode which emits monochromatic red light at a wavelength of 660nm and infrared light at a wavelength of 940 nm. These wavelengths are particularly chosen as at this wavelength oxygenated and deoxygenated hemoglobin have very different absorption properties. As shown in the graph below, it can be seen that there is a difference between HbO2(oxygenated Hb) and Hb (deoxygenated Hb) when subjected to these specific wavelengths.

IV. RESULTS

This section presents the experimental results of the developed Secure Health Monitoring System using IoT and Cloud Computing. The proposed system provides a way to keep an eye on key biological indicators of a patient in a secure and Realtime basis. First, IoT biosensors are used to capture key biological parameters from a patient. Then, an IoT-based microcontroller processes, encrypts, and delivers it to the cloud. Moreover, only patient relatives or specialists at trusted healthcare centres can view the biological parameters of the patient as they are the only persons having the decryption credentials. Securing patient data ensures data privacy and secure distribution of patient data in public networks.

Monitoring dashboard, , reveals patient vital data displayed in real-time for each physiological parameter. an alert message sent to a patient relative from the proposed system indicating that monitored patient is in an emergency case.

V. CONCLUSION

Health monitoring systems play a crucial role in the field of health care and early predicting issues regarding one's health. In addition, these systems are a means of cutting medical costs regarding periodical hospital checks and doctor visits. Thus, developing a system that delivers health data from patient place to a relative or a medical specialist became a necessity with increasing demand. This paper presented a secure, low cost, and trustable health monitoring system which provides a real-time monitoring dashboard for biological indicators within a secure environment using IoT technology.

VI. REFERENCES

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