IOT Based Covid Band for Health Monitoring

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Abstract—**The biggest critical situation facing the world today is the corona virus or COVID-19. Most of the medical tests for Covid19 are expensive so most of the ordinary people cannot afford in Indian nation not only in our country every country is facing the same situation.so now every country place great importance on health care. So, best solution for such infectious diseases is the IOT based health monitoring system. The Internet is a new to the world of research, especially in the medical field. With the usage of sensors and smartphones, this remote health care monitoring can be developed. It helps to prevent and detect the spread of the covid-19 and makes an exact diagnosis of the patient's health condition even if the doctor is far away from the patient. This paper proposes, the portable physiological checking framework will be displayed, where the patient can be constantly monitored the patient's heart rate, temperature, blood oxygen level and blood pressure, as the main symptoms of covid-19 are high fever, fatigue, and difficulty breathing. Sensed values willbe directly uploaded to the IoT cloud using Wi-Fi. visible and timed sensor data are provided with the help of HTTP and MQTT protocols. This data can be easily accessed by almost all smart devices with a web browser. A camera is used to effectively monitor the patient. It can be a non - stop check and control device to check the patient's condition and store the patient's data in the cloud server. A remote health monitoring system using IoT remotely diagnoses patients using the mobile / laptop application, based on these values obtained by authorized person who have access to data stored on any IoT platform.**

Index Terms—**Health Monitoring, IoT**

I. INTRODUCTION

In this modern era the observation of patient remotely is a serious objective which must be concerned. Due to this the management system refers to some basic necessity and procedures to the facilities by which the patients are allowed to be consulted by the doctors. By giving the medical aids through the telecommunication technology which is a main factor in helping to keep an account hold of the infecting people during the pandemic. As a result the observation has led to a drastic symptomatic response by which some of them are easily declared negative where as others who are positive are further requested to consult the doctor to intervene the sign of distress caused by it due to which there are kept in an observation procedure by which they can have a proper track record over the hospitalized patients.

Some of them are having an option of having surveillance for a day them sending back to home with a real time tracking equipment which has the collection of various important aspects such as breathing rate, oxygen level and the heart beat measurement with the additional help of body temperature. During the pandemic there was a major aim to drastically reduce the risk of exposure in the health care field. The growing demand of PPE (Personal Protection Equipment) and logistics were also expected to grow back. The PPE was completely based on the paper works which describes the creation of sensors and the instrumental measurement which are need to be followed to enable the patient data which were collected in electronic monitoring devices such as computers mobiles and so on. The main concept was to avoid papers and taken quick action against the pandemic to reinforce the readiness of national health system across India.

II. LITERATURE REVIEW

[1]In this paper titled, "Smart cap for prevention of diseases and social distancing using Arduino". This paper gets the information about temperature and distance.It ensures the distance between oneperson to another person and maintains the distance and temperature.
Advantages -cost efficient. Easy to manufacture as it is less complexity in design
Disadvantages -PIR sensors are used which can not only detect humans and also a heat emitting body.

It cannot detect mask which is major factor for prevention of disease.

[2]In this paper titled, "Body Temperature Measurement for Remote Health Monitoring System. It is an Arduino based Health monitoring systemwhich uses the Bluetooth technology for data transmission. TheArduino Uno motherboard which is connected with sensor is used to collect data and send it to a secured website using a Structured Language.

Advantages -it manipulates the data and send to a security website using secured language.

Disadvantages - This method is not compact. Bluetooth technology cannot cover a wide range of area.

[3] In this paper titled, "Wearable devices for detection of covid-19". This paper proposes a different device which can prevent covid-19 using wearable devices that can be mounted onour body.

Advantages- devices can easily be mounted and can be used comfortably. It can be used for early detection and prevention of disease.

Disadvantages -multiple devices are used. Cost is high because of multiple devices used.

[4]In this paper titled, "The Significance of Core Temperature—Pathophysiology and Measurement Methods". The virus detection can be done at early stages, like body temperature measurement especially in areas like office, shops, educational institutions etc. Use of conventional measurement methodologies like mercury thermometers are reliable and used for better results.

*Advantages - It detects the virus in the earlier stage.

[5]In this paper titled, "A Real Time Monitoring System forPhysiological Signals using Wireless Sensor Network:.This is a ZigBee based health monitoring system with microcontroller which can measure the body temperature and heart rate and transmits to the nearest receiver available using microcontroller which is connected to ZigBee.

Advantages - manpower is not required to monitor the temperature periodically.

Disadvantages - it doesn't have the facility to back up the data in cloud server.

[6]In this paper titled, "Remotely Monitoring COVID-19 Patient Health Condition Using IOT based wearable device.This research monitors Covid-19 patients by using IOT. IOT based GSP helps to alter the patient automatically to reduce the risk factor. Wearable devices are attached to the human body, and interconnected to the edge nodes to make the health condition decisions.

Advantages - It helps the user to take immediate action.

[7]In this paper titled, "A Headset Like Wearable Device to Track COVID-19 Symptoms". They have a headset like wearable device to track the symptoms of COVID-19 like respiration system, temperature and breathing trouble.

[8]In this paper titled, "IoT (Internet of Things) based Infant Body Temperature Monitoring". They are using an Infant body temperature measurement device which uses IoT technology. In this, a Wearable sock is used as a tool to measure the body temperature of the infant.

[9]In this paper titled, "Smart Home Security Monitoring System Using IoT". In this research they used a Wearable face mask which is cost effective to measure the body temperature and heart rate of the patient. The collected data or information will be sent to the user with the help of a Wi-Fi module.

[10]In this paper titled, "Successful role of smart technology to combat covid-19". It is a combination of many devices like facial recognition captured by CCTV cameras, satellite monitoring and autonomous vehicles which can be used in the process to fight against covid-19

Advantages - smart technology is used in mentioned devices which is very efficient

It reduces the impact of spreading covid-19

Disadvantages - high maintenance

III. OVERVIEW OF THE MODEL

As per the previous paperreferred, the following are the obtained issues:

- The common drawback we identified is the size of the system and its beneficiaries.

Analyzing the above technicalities, we put forward our methodology wherein we are developing a temperature monitoring system in the form of a Wearable band. It becomes an effective, attractive and useful choice for the individuals.

IV. PROPOSED METHODOLOGY

This project work is about the implementation of Smart Band using Arduino UNO and Raspberry Pi. The methodology mainly focuses on flexible health

monitoring between the doctor and the patient. And to break the chain link of COVID-19.

Overall Functioning of the MODEL

- There are 3 sections 1. Transmitter or Wearable section, 2. Receiver section and 3. Monitoring section. The transmitter section consists of an Arduino UNO development which continuously sense the parameters like heart rate, blood oxygen level, blood pressure level, body temperature level with the help of blood oxygen sensor, blood pressure sensor, heart rate sensors, body temperature sensor.
- The Arduino UNO will convert these sensed values to a digitalized value.
- The transmitter section also consists of a Wi-Fi module. This module will send the digitalized values to the receiver section.
- The receiver section will be on the patient's room. These digitalized values of sensors, which is sentto the receiver section by Wi-Fi module, will be the input of the raspberry pi using a UAR communication protocol.
- These sensor values will be fed in to the IoT-cloud through MQTT/HTTP protocol using raspberry pi Wi-Fi module and the doctor can monitor the condition of the patient and also can monitor the sensor values of the patient by using any mobile apps like MQTT Dash.
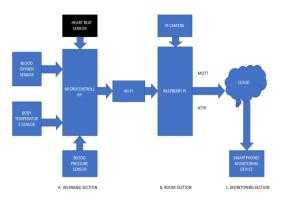

Fig 4.1: overall functioning of the model

- A Raspberry Pi camera is placed on the patient's room to monitor the patient more effectively.

V. CONCLUSION

In this paper an effective and flexible way to monitor the patients by a portable, handy, and

Wearable type of health monitoring system is proposed. During this pandemic our product will be of great helpful in breaking the chain link with flexible and interaction free monitoring between a patient and doctor. Normal methods required human labor and also it will be not in a compact size. These problems have been overcome in this model. And a Raspberry Pi camera is also introduced to effectively monitor the patient.

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