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IOT Based ICU Patients Health Monitoring System

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ABSTRACT: In the ICU or intensive care unit where the patients are admitted for the treatment which are critically ill.We can easily observe, in our society there are continuous patients within the hospitals and doctors must take extra attention to the ICU patients. to seem after these patients, it'll need many staff members i.e. Doctors and nurses are required to look at their conditions which isn't possible in every hospital. Beside this, taking care of a personal patient specially who is admitted in an ICU room whose temperature and heart beats measurement reading is such a lot necessary in every single moment is additionally a giant problem.

 To think about these problems here we've proposed a system that's IOT based ICU Patient Health Monitoring System with temperature and sweat sensor, heartbeat sensor, IOT system and firebase. this method would automatically check the patient's body temperature, sweat, heart beats rate and send this measured data on a firebase. It mainly uses Wi-Fi module to communicate this information to the internet.Here it can take all the parameters of patients and send information through wifi-module.Here fall detection should be measures and respective doctor and nurses could easily see their respective patient data all the time and treatment will be provided to the patients.

KEYWORDS: Raspberry pi , Wi-Fi module, Internet of Things(IOT).

I. INTRODUCTION

The progression of the advance technology has constantly intrigued us.Our aim is to get instant help to get to know about the health conditions of patients at anytime from anywhere.One of the largest challenge to get continuously report about patient health without any delay and with less effort so that doctors can give the immediate treatment to the patients as per as possible. This system is designed for a need to provide accurate detection smoothly and with effective manner. This method is best way to work with and getting all prior knowledge using just only internet. Here the count of patients information in critical situation is updated time to time which will reduce the work. The "IOT Based ICU Patient's Health Monitoring System" is support to eliminate the hardship faced by doctors in sensitive cases.

II. RELATED WORK

Real time patient monitoring system using internet of things[1].The work in this paper focuses on intensive care unit, iot device , sensors and they developed mobile application for displaying patients details in that app.In these paper they are given treatment only the people are who are not stable because of drug overdose,organ failure disease,heart surgery and for childbirth process.They uses different basic terms like iot,iot device,iot ecosystem, entity, physical layer, network layer, application layer, dashboard,analytics, storage for iot and networks this are some basic layers and terms they are used.The paper focus on arduino for principal controller of the system with the use of Arduino board collect information of patients parameters with the help of sensor.The emergency patients which are in very critical condition they are determined through mathematical equations.They are develop one software application for displaying data and patients health parameter.

IoT Based Patient Monitoring System Using NodeMCU[2] The work in this paper focuses on heart pulse sensor, nodemcu,wifi module for transformation of information and cloud system.They used the pulse monitoring system for

continuously monitoring the patient's pulse rate.The advantage of pulse monitoring system is we can viewed the data any time and any place.They also work on heart beat sensor and measure the heart rate lies between the 60-120bpm.They used IOT system for the finding heart problems of the patients.They work on internet,cloud services and nodemcu.The NodeMCU is just like a microcontroller and it can be connected to the internet.Nodemcu is used for to transfer the information to the cloud server.They work on thingspeak is a clouds platform the data can be stored and anyone can access that data with the help of mobile phones.

Real Time Patient Activity Monitoring and Alert System[3] The work in this paper focuses on patients health monitoring system, temperature sensor,gsm module and LBP top algorithm.They used different monitoring system like activity based health monitoring system, sensors based health monitoring system and alert system.The alert system work to alert the patients condition plays a primary role in the healthcare system .With the use of alerting system medical staff cannot be ignor to the patient because there is something terrible happening in the heath of the patient is relatively high..They uses gsm for mobiles , they give the comments like attention to notify the doctor.The work focuses on different stages like data acquisition,data processing and alert system the different stages are used for their proposed system.

IoT Based Health Care Monitoring Kit[5] The work in the work in this paper focuses on raspberry Pi, ECG sensor,bp sensor, temperature sensor,Arduino Uno and iot.They used the healthcare kit for perform daily test and send the result towards health experts or any caretaker in actual time.They are measure the patient's body parameters like heart rate,the temperature of body and ECG test measured parameters are sent towards physician smartphone.

III. METHODOLOGY

In this proposed system,important parameters like temperature, sweat and heartbeat readings which are monitored using raspberry pi. Through our system we can be able to get the data from N number of patients .It will be easy to monitor all patients.First it will take all patients information then these sensor signals are sent to raspberry pi from there it'll update the patient's information on the firebase server.Desktop app will get updated parameters if patients health conditions goes serious leads to take immediate actions on them.Here we use 5V USB adapter,we are using mobile charger for the connection.
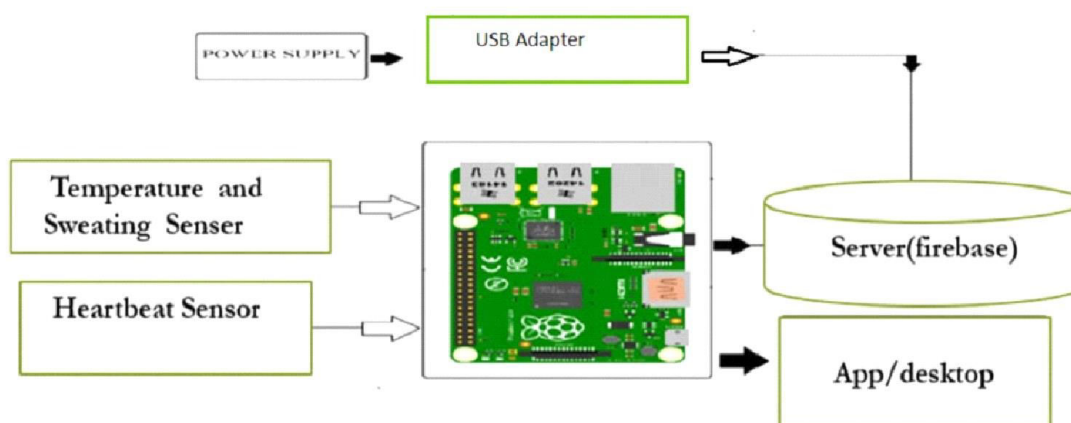

Fig 1 Proposed System

We are connecting two sensors. We are using Raspberry Pi 3 Model B . Here the first was the temperature sensor which is connecting with 5V,GND and GPIO pin. Second sensor i.e heart beat sensor is connecting through a USB cable. Another USB port has a HDMI cable. Now we are connected with 5V power supply. We are using here wifi-module through which parameters can be updated and also shows in the GUI.

Working of System:

➢ Iot Based ICU Patient Health Monitoring System in that we can observe the patients parameters like heart beat, temperature and sweat with the help of these different sensors.After measuring these parameters it will send to the firebase server in that we store the real time data and that data will display in desktop application and it continuously updated the real-time data to the firebase server.

➢ We are using a Wifi-Module which is used for communication through the internet. All the patient's data will be automatically updated.

➢ We can get multiple patient's data simultaneously.

➢ Here Colour changes can be easily observed in our system which leads to immediate treatment .

IV. RESULTS

Our system provides the accuracy for patients parameter calculation. Colour changes can be easily observable by the physicians and after that patients can gets the treatment. Doctors don;t have to check the results . By observing colour they can find out whether patient was in normal condition or not.

In figure 2 If patients all the parameters was in normal conditions of body parameters then in GUI it will show green in colour

In figure 3 If patients any of the parameters was in abnormal conditions then in GUI it will show red in colour
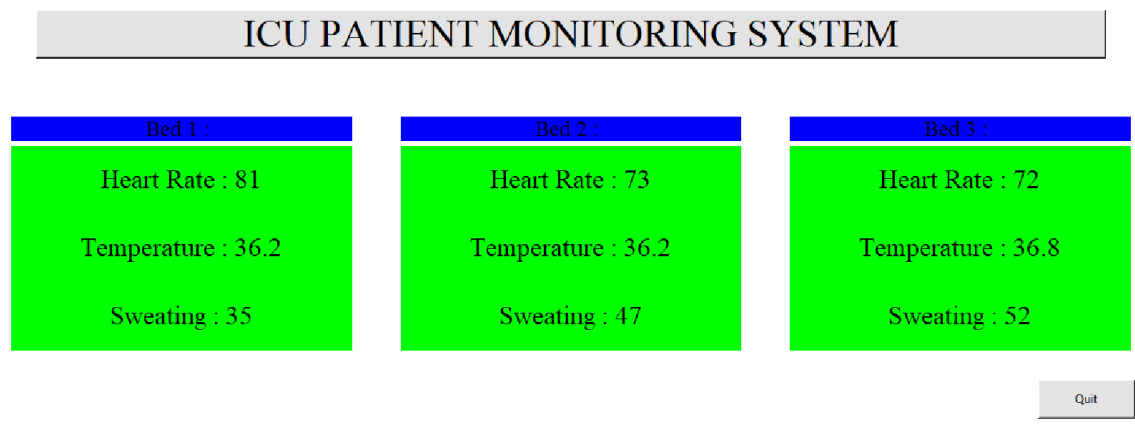

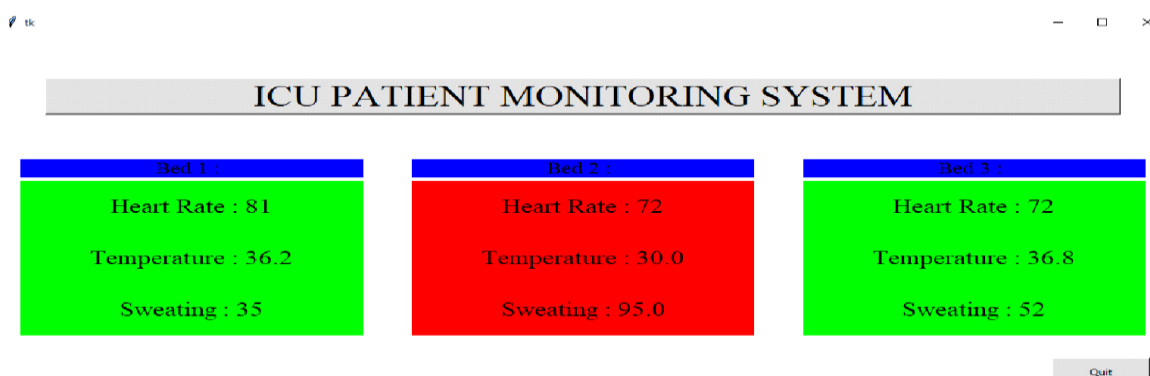Fig. 2. Normal Patients Parametetrs
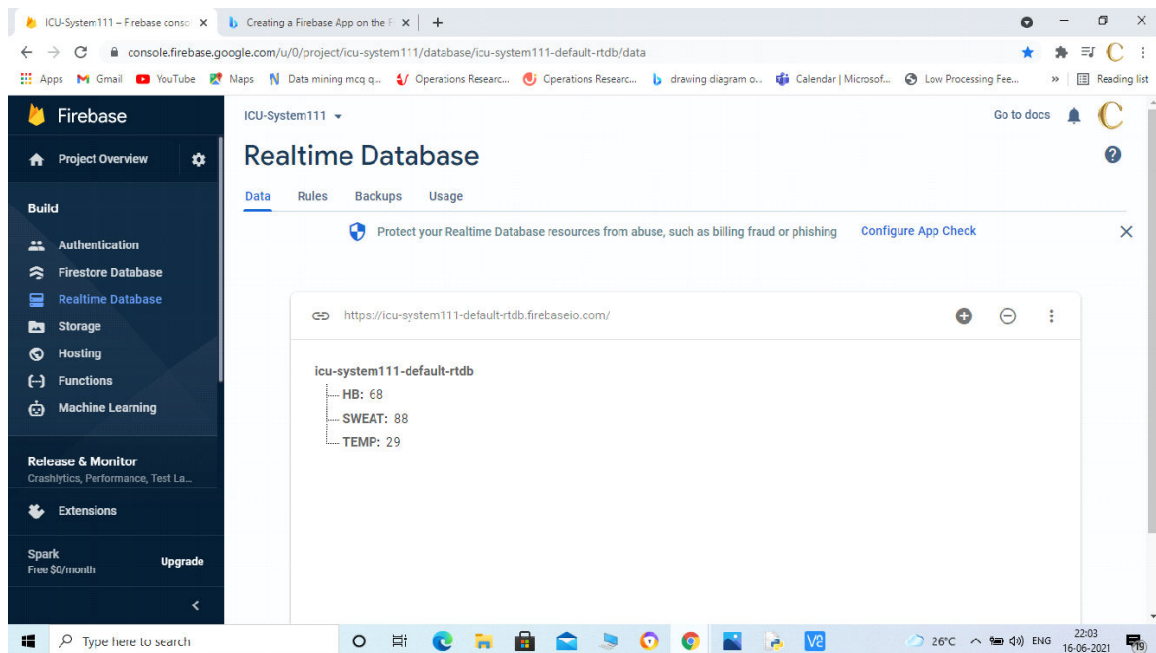

Fig 3. Abnormal Patients Parametetrs

Fig 4. Update patient's parameters

In the figure 4 We are updated the data of patients so that patients information on realtime database.The values of patients can be updated automatically as it changes.

V. CONCLUSION

We are implementing the proposed system based on IOT Based Patients Monitoring System.The health of human plays very important role in our society. Making these IOT system it will give the less burden on human and easily handle it. The transparency of these system helps the patient to trust it.

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