FACULTY OF ENGINEERING AND TECHNOLOGY

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Global Campus, Jakkasandra Post, Kanakapura Taluk, Ramanagara District, Pin Code: 562 112

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A Fundamentals of Innovation and Venture Development in Entrepreneurship Report on

"*Patient Health Monitoring (heartbeat and temperature) with Doctor alert over Internet of Things(IOT)*"

Submitted in partial fulfilment for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING

Submitted by

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CERTIFICATE

This is to certify that the project work titled **"*Patient Health Monitoring (heartbeat and temperature) with Doctor alert over Internet of Things(IOT)*"** is carried out by **Sayujaya Sharma(20BTRCS172)** a bonafide student of Bachelor of Technology at the Faculty of Engineering & Technology, Jain (Deemed-to-be) University, Bangalore in partial fulfillment for the award of degree in Bachelor of Technology in Computer Science & Engineering, during the year **2021-2022**

Dr/Prof. Guide Name

Assistant/Associate/Professor
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Date:

DECLARATION

I, **Sayujaya Sharma(20BTRCS172)** is student's of 3rd semester B.Tech in **Computer Science & Engineering**, at Faculty of Engineering & Technology, **Jain** (**Deemed-to-be) University**, hereby declare that the project titled **"Title"** has been carried out by us and submitted in partial fulfilment for the award of degree in **Bachelor of Technology in Computer Science & Engineering** during the academic year **2021-2022**. Further, the matter presented in the project has not been submitted previously by anybody for the award of any degree or any diploma to any other University, to the best of our knowledge and faith.

Signature

Digital signature

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Date :2022-01-29

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Abstract

In this paper the main objective is to design and improve a patient monitoring system. One main area of research that has seen adoption of the technology is the healthcare filed. The monitoring system can be used only when the patient is lying on bed and these systems are huge and only available in the hospitals. The proposed system is used in any where by patients and focuses on monitoring heartbeat and temperature and detect heart attack if occurs. In the event of a health problem, a text message will be sent and any family member. This paper was implemented by using Arduino, temperature sensor and heartbeat sensor.
KEYWORDS: Arduino, Temperature sensor, Heartbeat sensor.

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1. Introduction

Health is always a major concern in every growth the human race is advancing in terms of technology. Like the recent corona virus attack that has ruined the economy of China to an extent is an example how health care has become of major importance. In such areas where the epidemic is spread, it is always a better idea to monitor these patients using remote health monitoring technology. So Internet of Things (IoT) based health monitoring system is the current solution for it.

Remote Patient Monitoring arrangement empowers observation of patients outside of customary clinical settings (e.g. at home), which expands access to human services offices at bring down expenses. The core objective of this project is the design and implementation of a smart patient health tracking system that uses Sensors to track patient health and uses internet to inform their loved ones in case of any issues. The objective of developing monitoring systems is to reduce health care costs by reducing physician office visits, hospitalizations, and diagnostic testing procedure.

2. Market Survey and Literature review

This project of monitoring patient health at home will be very beneficial for patient as well as the medical staff. The project will transform into product as it saves time and money of the patient and reduces the crowd in the health clinic especially in the period of Covid-19.

3. Aim and Objectives

The main aim of this project is to propose a project is given below

[1] Internet of Things (IoT) is the emerging technology, which contains huge amount of smart object and smart devices connected to the internet for communicating with each other.

[2]In this project to analyze and compute the patient health we are using Raspberry Pi, which is the heart of this project.

[3] These smart devices are used to collect temperature, blood pressure, sugar level, heartbeat, lung and respiration information etc., which are used to evaluate the health condition of the patient.

[4] The final results are displayed on the android device, on web server and also the results are sent to the user through SMS.

[5] These data results can be stored in data base centre which can be invoked from remote location at any time in an emergency case of patient without delaying the time.

[6] This project may play vital role in saving the patient life at emergency time since “Time is Money”

4. Methodology

In this project we have temperature, blood pressure, ECG and heart beat readings which are monitored using Raspberry Pi. These sensors signals are send to Raspberry Pi via amplifier circuit and signal conditioning unit (scu), because the signals level are low (gain), so amplifier circuit is used to gain up the signal and transmit the signals to the Raspberry Pi. Raspberry Pi is a Linux based operating system works as a small pc processor system. Here patients body temperature , blood pressure , ECG and heart rate is measured using respective sensors and it can be monitored in the screen of computer using Raspberry Pi as well as monitoring through anywhere in the world using internet source.

The proposed method of patient monitoring system monitors patient's health parameters using Arduino. After connecting internet to the Raspberry Pi it acts as a server. Then the server automatically sends data to the website. Using IP address anybody can monitor the patient's health status anywhere in the world using laptops, tablets and smart phones. If these parameters goes abnormal it will automatically sends alert SMS to the doctors and relatives.

5. Requirements / resources

- Arduino Uno
- Heartbeat Sensor
- Temperature Sensor
- Humidity Sensor
- LCD Display
- WiFi module
- Buzzer
- Power supply

Temperature sensor

The most widely measured physical parameter is body temperature; it can be calculated by putting the sensor in contact with human body. The sensor used in this project is an LM35 temperature sensor. LM35 is a precision IC temperature sensor with its output proportional to the temperature (in ℃). The LM35 sensor has more features that attracted us to choose it, such as Calibrated directly in Celsius (Centigrade), Linear + 10-mV/°C scale factor; it measures temperatures from -55°C to +150°C range, the accuracy ±0.5°C. The LM35 sensor and its interfacing with microcontroller.

Heartbeat Sensor:

Heart beat sensor is designed to give digital output of heat beat when a finger is placed inside it. This digital output can be connected to Arduino directly to measure the Beats per Minute

(BPM) rate. It works on the principle of light modulation by blood flow through finger each pulse. IC LM358 is used for this sensor. Its dual low power operational amplifier consists of a super bright red LED and light detector. One will act as amplifiers and another will be used as comparator. LED needs to be super bright as the light must pass through finger and detected at other end.

When heart pumps a pulse of blood through blood vessels, finger becomes slightly more opaque so less light reach at the detector. With each heart pulse, the detector signal varies which is converted to electrical pulse

6. Conclusion and Future Work

According to the availability of sensors or development in biomedical trend more parameter can be sensed and monitored which will drastically improve the efficiency of the wireless monitoring system in biomedical field. A graphical LCD can be used to display a graph of rate of change of health parameters over time. The whole health monitoring system which we have framed can be integrated into a small compact unit as small as a cell phone or a wrist watch. This will help the patients to easily carry this device with them wherever they go. In addition with medical application we can use our system in industrial and agricultural application by using sensors like humidity sensors, fertility check sensors, etc.

In this proposed system a mobile physiological monitoring system is presented, which is able to continuously monitor the patients heart beat, blood pressure and other critical parameters in the hospital. We proposed a continuous monitoring and control mechanism to monitor the patient condition and store the patient data's in server using Wi-Fi Module based wireless communication, we also proposed remote health care data acquisition and smart storage system.The Future work of the project is very essential inorder to make the design system more advanced. In the designed system the enhancement would be connecting more sensors to internet which measures various other health parameters and would be beneficial for patient monitoring i.e. connecting all the objects to internet for quick and easy access. Establishing a Wi-Fi mesh type network to increase in the communication range.

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