

# IoT Based Health Monitoring System

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**Abstract**— Remote health care monitoring system (RHCMS) has drawn considerable attentions for the last decade. As the aging population is increasing and at the same time the health care cost is skyrocketing there has been a need to monitor a patient from a remote location. Moreover, many people of the World are out of the reach of existing healthcare systems. To solve these problems many research and commercial versions of RHCMS have been proposed and implemented till now. In these systems the performance was the main issue in order to accurately measure, record, and analyze patient's data and keeping records of it. With the ascent of wireless network RHCMS can be widely deployed to monitor the health condition of a patient inside and outside of the hospitals. In this work we present IOT based wireless healthcare monitoring system that can provide real time online information about the health condition of a patient. The proposed system is able to send alarming messages to the healthcare professional about the patient's critical condition. In addition the proposed system can send reports to a patient monitoring system, which can be used by the healthcare professionals to make necessary medical advices from anywhere of the World at any time.

**Key words:** Graphical User Interface, Internet of Things, Remote Healthcare Monitoring System

## I. INTRODUCTION

In this health monitoring system is presented which incorporates both hardware and software. In hardware, data acquisition processing and transmission devices are included. The physical parameters measured are Temperature, Heart Rate, breath Rate and Blood pressure (HB & LB). The system can be deployed in Hospital or Gymnasium for monitoring of health parameters or physical fitness respectively. Internet of Things (IoT) is rapidly increasing technology. IoT is the network of physical objects or things embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data. Wireless sensors and sensor network become great interest to research, scientific and technological community.

Patient needs constant monitoring of their physiological parameters such as measurement of blood pressure, heartbeat rate and breath rate. It incorporates Sensors to Measure such important parameters and establishing connection to microcontroller and cloud server. Patient not getting timely and proper help. So, the fixed and periodic monitoring system can be used only when patient is on bed or else moving. Any abnormality felt by the patient is indicated by an alarm signal.

The system can be deployed in Hospital or Gymnasium for monitoring of health parameters or physical fitness respectively. By calibrating these parameters, we can continuously monitor health parameter of a patient. We can see the fluctuations in parameters fluctuations are shown on GUI.

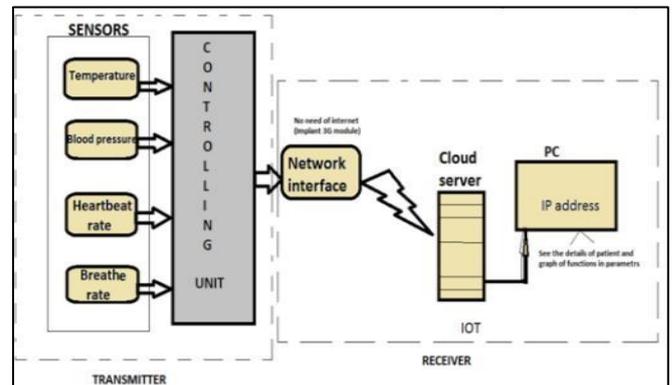
The propose of this system is able to alert the healthcare professional about the user conditions so with the help of that healthcare professional can give the necessary medical advices from anywhere of the World at any time.

## II. LITERATURE SURVEY

In early, we used a system, which includes several things namely glucose sensor, a processor and a pump to control glycerin in patients with diabetes. To manage complex situations, the pump will need several MEMS based sensors to monitor more parameters like glucose, heart rate, temperature and ECG etc. The monitoring of health using mobile computing, sensors and communication technologies can be termed as M-health. In past days, wireless monitoring involves measuring of physiological parameters namely heartbeat, blood pressure, and physiological signals etc. Other signals include measuring of parameters like movement monitoring, fall detection, place tracking and other activities. The features of wireless networking are explained with different examples and applications.

## III. SYSTEM OVERVIEW

In this system healthcare professionals monitoring the users that is patient's different parameters such as body temperature, blood pressure, pulse rate, Heart beat and fats. This data or information is transmitting to healthcare professionals so that they can give the proper medical advice to patients, professionals can observe the reports collected with 3G or 4G modules and IOT.

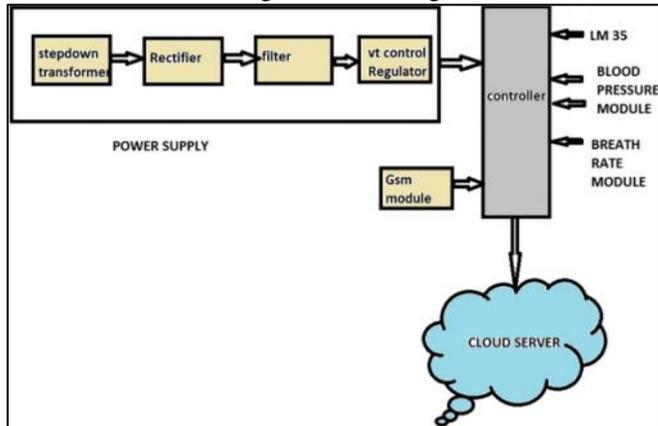


## IV. HARDWARE

### A. Block Diagram

In this proposed system we have components like power supply, sensors, GSM module and the main component is arduino platform on which we will program all the things And the best benefit is of, we can reprogram this according to our convince and the most important part is our cloud server on which we are going to perform complete system circuit diagram. In this we are designed power supply , at the input we are giving 230v ac but at the output we got 12v

dc with 1amp.in this power supply step down transformer, rectifier, filter and voltage controlled regulator.



## V. SOFTWARE

### A. Proteus Software

Proteus platform which combines circuit simulation software, Circuit of hardware is carried out by Proteus. PCB design software & virtual models simulation software. Proteus has more than 6000 kinds of Component models & peripheral devices commonly using in embedded system design. Those peripheral devices, includes bus drivers, LED, LCD modules, programmable timer, multiple A/D & D/A converter etc., can be called directly.

### B. Aduino programmer software

The software design is done by Arduino integration framework platform. It is window-based software development platform, & integrates powerful editor, a project manager, make tools. This software for write a program debug and burn into the Arduino board all in one. It uses C language which is simple as compared to other languages.

## VI. SYSTEM WORKING

In this we are designed power supply, at the input we are giving 230v ac but at the output we got 12v dc with 1amp. Power supply contain step down transformer, rectifier, filter and voltage controlled regulator with Zener diode.

5v power supply given to the Arduino platform in this platform one controller is there in that we are connecting sensors and GSM module (SIM 800). We are connecting LCD to controller which can display the information and this information is given to the cloud storage by using multiple protocol, there will be mask in website link i.e. [api.thingspeak.com/channel/](http://api.thingspeak.com/channel/) (channel number):8080 will be our raw IP address.

By using raw IP address, of class B ranges between 128.1.0.1 to 191.255.255.254, we can access the information of any patient; GUI of parameter is also seen.

## VII. COMPONENTS

- Temperature sensor
- blood pressure module
- Breathalyzer
- LCD(16\*2)
- GSM module

- Arduino platform
- Power supply
- Buzzer

## VIII. FEATURES

- Easy and reliable for Doctors
- Increased Efficiency
- More Accurate
- Continuous monitoring
- Record keeping

## IX. CONCLUSION

An IOT Base healthcare monitoring system has been designed & successfully implemented in this work.

The system is able to monitoring the body temperature, heart beat rate, blood pressure and breathe rate with enough accuracy. Since the proposed system is based on IOT, we can conclude that it is a web wide and convenient system. Moreover, major part of the proposed system has been implemented in using Lab View software. Hence, the proposed system is easily reconfigurable and it can be connected to the Internet easily.

The system is also able to store physiological data of patients as it is connected to server and gives graphical representation of fluctuations in human body after every three minutes. In future the proposed system can be extended to include more sensors that can measure more parameters. The proposed system is flexible enough to include such kind of modifications.

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