IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 3, May 2022
Impact Factor: 6.252

IoT Based Remote Healthcare Monitoring System

Harshada More, Gayatri Kondhalkar, Shivani Dhaygude, Vaibhavi Kokare
Department of Information Technology
S.V.PM's College of Engineering, Malegaon, Baramati, Maharashtra, India

Abstract: *With an improvement in technology and reduction in size of the sensors, there have been attempts to utilize the new upcoming technology in various areas to improve the quality of human life. The Main area of the research that has seen a take up of the new technology is the healthcare sector. The people call for demand of healthcare services find it very expensive this is particularly true in developing countries like India. As a result, this project model is an attempt to solve the healthcare problem currently our society is facing. The main aim of the project was to design a remote healthcare monitoring system. It's comprised of three main parts. The first part is, detection of patient's vitals using different sensors, second part for sending data to cloud storage and the last part was providing the detected data for remote viewing to relatives and doctors. Remote viewing of the data enables the doctor and guardian to monitor a patient's health progress far from home and hospital premises. The Internet of Things (IOT) concepts have been extensively used to inter connect the available medical resources and give smart, effective and reliable healthcare service to the patients. Health monitoring for active and maintained living is one of a paradigms that can use the Internet of Things advantages to enhance the patient's lifestyle. In this project, we have presented an IoT architecture customized for healthcare applications. The aim of the project was to design a Remote Health Monitoring System that can be made with easily available sensors for making it affordable if it were to be mass produced. Hence the proposed architecture collects sensor data through Arduino microcontroller and send it to the cloud where it is processed and analyzed for a remote monitoring. Reactions based on the analyzed data can be sent back to doctor and guardian through SMS alerts in case of any emergencies.*

Keywords: IoT, Health Monitoring, Smart Healthcare

I. INTRODUCTION

What is a Remote Health Monitoring System? A IOT Based Remote health monitoring system is an extension of a hospital medical health system where a patient's Different vital body state can be monitored remotely. In the past health monitoring systems were only found in hospitals and it had huge and complex circuitry which required high power consumption. Continuous growth in the semiconductor technology industry have led to sensors and microcontrollers that are smaller in size, faster in operation, low in power consumption and cheap in cost. This has further seen development in the remote health monitoring of vital life signs of patients especially the elderly people. In recent times, many systems have come up to solve the issue of IOT based remote health monitoring. The systems have a wireless technology that sends the sensor data wirelessly to a remote server. Some systems even requires one to pay money. In developing countries, this is a reason as some people cannot use them due to cost issue involved. There is also the issue of internet connectivity where some systems to operate, good quality and uninterrupted internet for a real-time remote connection is required. Strong Internet connection is still a problem in developing countries. The countries who have developed Infrastructure Have this kinds of systems. In several cases, the systems are adapted to work in developing countries like India. To minimize some of these problems there is need to approach the remote detection from a ground-up approach to suit the basic minimal conditions presently available in developing countries.

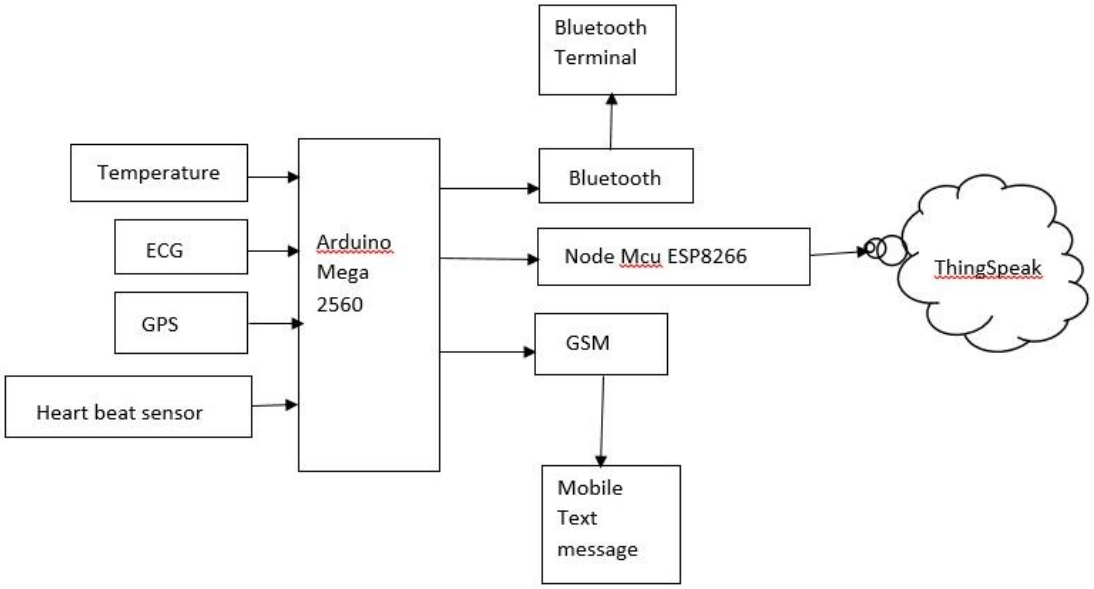
II. METHODOLOGY

In the Remote Healthcare Monitoring System, Arduino Mega2560 microcontroller board with power supply attached to it. Micro controller is connected with all the sensors which includes ECG sensor, Temperature sensor, Heartbeat sensor. Micro controller also connected with HC05 bluetooth module which will be used by patient for viewing sensor data. And GSM module is connected which are used to send sms alerts to the doctor and patient's relatives.Node mcu Esp8266 module is connected to the microcontroller to sensor data into thingspeak server. and GPS module is also connected to the arduino

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 3, May 2022
Impact Factor: 6.252

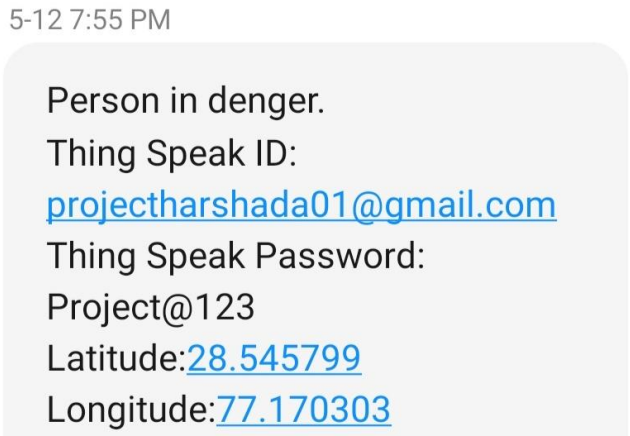
to fetch location coordinates of the patient respectively. HC05 is connected to micro controller which displays series of information as soon as device is turned on which includes location coordinates. We could see the command at which device currently halted or connected and can be used to diagnose the issue. And finally, once device is properly connected to network, it displays all the patient data on it along with any irregularities of patient vitals.

III. BLOCK DIAGRAM



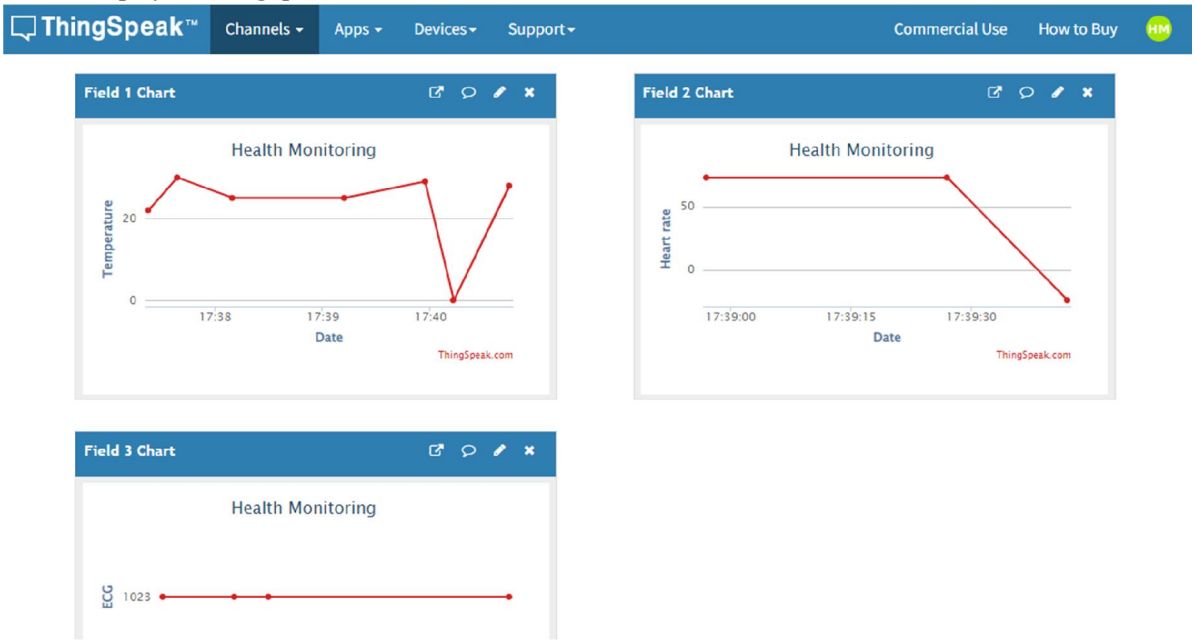
IV. RESULTS

4.1 SMS Alert



IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 3, May 2022
Impact Factor: 6.252

4.2 Data Display on ThingSpeak



V. Conclusion

The main objective of the project system was successfully achieved. All the individual modules like Heartbeat detection module, temperature sensor ECG sensor etc. and remote viewing module gave out the expected results .The designed system modules is optimized and produced a final single circuit. More important fact that discover during project design and development is that all the circuit components used in the IOT based remote healthcare monitoring system are available easily. With the development in the integrated circuit industry, microcontrollers and Micro Electro Mechanical Systems (MEMs) have become affordable, have increased processing speeds, miniaturized and power efficient. This has led to enhancement in development of embedded systems that the healthcare specialists are using. The Smartphone technology have also been adopted these embedded systems in it. And with increased internet connectivity in most developing countries through mobile phones, and with use of Internet of things (IoT) will become adopted at a speedy rate. The Remote Health Care system uses these concepts to come up with a system for high quality of life for people in society. From an engineering perspective, the project module has seen concepts acquired through the embedded and computer science study period being practically applied. During design and fabrication of the individual modules the Electric circuit analysis knowledge was used. Software programming used during programming of the microcontrollers and Electromagnetic fields analysis used in the wireless transmission between microcontrollers to come up with a final finished circuit system.

Acknowledgment

We take this opportunity to thank our project guide Prof. Thorat S.D., Head of the Department Prof. Dr. Gawade J.S…And Principal Prof. Dr. Mukane S.M., for their valuable guidance and for providing all the necessary facilities, which were indispensable in the completion of this project report. We are also thankful to all the staff members of the Department of Information Technology of SVPM's College of Engineering, Malegaon (Bk) for their valuable time, support, comments, suggestions and persuasion. We would also like to thank the institute for providing the required facilities, Internet access and important books.

References

[1]. ”Smart-phone Based Health Monitoring System”, Md. Milon Islam, Md. Rashedul Islam. 2019.

[2]. ”Contimious Heart rate Monitoring System using IoT”, Johan Bhurny Bathilde, Rajith Chameera, Dyg Norkhairunnisa Abang Zaidel. 2018..

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 3, May 2022
Impact Factor: 6.252

[3]. ”Sensor Based Health Monitoring System”, Ashikur Rahaman, Shikh Nooud-din.2019.
[4]. ”A survey on e-health care Heart Monitoring for Heart care using loT”, Swarna Pawar, Dr. HR Deshmukh, 2018
[5]. ”Temperature and Heartbeat Monitoring System using loT”, G. Vijay Kumar, A Bharadwaj and N. Nikhil Sai, . 2017
[6]. ” Microcontroller based Health Monitoring System”, Muhammad Sheikh Sadi,
[7]. Md. Milon Islam, Md. Rashedul Islam. 2019. “PDCA12-70 data sheet,” Opto Speed SA, Mezzovico, Switzerland.
[8]. ”Development of a Device for Remote Monitoring of Heart Rate and Body Temper ature”, Mohammad Arhekur Rahman. Atanularai, etal. 2016.