



e-ISSN: 2319-8753 | p-ISSN: 2320-6710

# IJIRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 6, June 2021

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

**Impact Factor: 7.512**



9940 572 462



6381 907 438



ijirset@gmail.com



www.ijirset.com

# Covid-19 Patient Health Monitoring Using IoT

<sup>1</sup>Mrs. Soumya, <sup>2\*</sup>P.Ankit Goud, <sup>3</sup>G.Lava Kumar Reddy, <sup>4</sup>V.Jaganath, <sup>5</sup>N.Umesh

<sup>1</sup>Assistant Professor, Department of Electronics and Communication Engineering, St. Peter's Engineering College,  
Hyderabad, Telangana, India

<sup>2,3,4,5</sup>UG Student, Department of Electronics and Communication Engineering, St. Peter's Engineering College,  
Hyderabad, Telangana, India

**ABSTRACT:** In today's environment, health screening is the most pressing issue. Patients suffer from serious health issues because of insufficient health monitoring. There are several IoT devices available these days that can track a patient's health over the internet. Health care professionals are now using smart technology to keep an eye on their patients. The Internet of Things (IoT) is quickly revolutionizing the healthcare industry, thanks to a slew of new healthcare technology start-ups. During this project, we will create an IoT-based Health Monitoring System that will record the patient's heart rate and blood heat, rate of respiration, and oxygen levels, and send a warning when those readings go above critical levels. The LM35 sensor monitors temperature, while the Max30100 monitors oxygen levels and heart rate and displays them on the LCD (Liquid Crystal Display). The WIFI module is used to transmit the monitored data to the server.

**KEYWORDS:** IOT, Max 30100 sensor, LM35 temperature sensor, Respiratory sensor, LCD, WIFI module, web server.

## I. INTRODUCTION

Wireless technology has grown in popularity in recent years to meet the needs of a variety of industries. In recent years, the Internet of Things (IoT) has dominated the industrial sector, particularly in the areas of automation and control. One of the most current trends in providing improved health care is biomedical. IoT technology has opened doors not just in hospitals, but also in personal health-care facilities. As a result of having a smart system, numerous metrics that use power, cost, and boost efficiency are detected. This work is evaluated using this intelligent system.[1]

Doctors play an essential role in health check-ups in the conventional technique. This procedure needs a significant amount of time for registration, appointment, and follow-up. Reports are also generated afterwards. Working individuals prefer to disregard or postpone checks as a result of the lengthy process. This cutting-edge method cuts down on the amount of time it takes to complete the task.[2]

In recent years, the usage of wireless technology has grown in response to the need to maintain many industries. In recent years, the Internet of Things (IoT) has engulfed the majority of the industrial sector, particularly automation and control. IoT technology has opened doors not just in hospitals but also in personal health care facilities. As a result of having a smart system, numerous metrics that use power, cost, and boost efficiency are detected. This work is evaluated in line with this intelligent system.[3]

Since several decades, healthcare experts are now working in the fields of development and technology to improve health care and pleasure in people's lives. Their work inside the medical field is critical to us and cannot be overlooked. The roots of today's automobile architectures may be found in yesterday's fundamentals. With this technique, early diagnosis of chronic disorders is possible. These technologies can also aid in the early diagnosis of chronic disorders. Body temp, pulse rate, blood oxygen concentrations, and breathing rates are the most crucial factors in determining the severity of the condition. Employing IoT, this solution offers thermometer, oxygen saturation, Respiratory parameters, and pulse rate readings.[4]

Throughout recent times, the air quality has deteriorated the environment. People are exposed to harmful concerns as a result of these concerns. As a result, it is necessary to preserve the environment and safe to breathe. In recent decades, several new sensors have been developed. The gas sensor has been the most crucial sensor.

The next sections are as follows. Literature Survey in section II. Proposed methodology for calculating the sensing values are explained in section III. Explaining results and Concluding remarks are given in section IV.

## II. LITERATURE SURVEY

**Afef Mdhaffar** and **Bernd Freisleben** have shown how to use a low-power WAN network to analyze data in a health-care system. They've set up a WAN network with a range of 33m2 at roughly 12 m altitude for communication. They also proved that the LoRaWAN network consumes 10 times less power than GPRS/3G/4G networks. The IOT architecture has been provided as a step-by-step guide to understanding IOT. LoRaWAN's primary goal is to reduce energy usage. In idle state, LoRaWAN consumes 2.8mA of power, while GPRS (Global Packet Radio Service) consumes 20mA. Hardware costs ten dollars in LoRaWAN and fifty dollars in GPRS. In LoRaWAN, the maximum data rate is 50 kbps (uplink) and 50 kbps (downlink), but in GPRS, the maximum data rate is 86.5 kbps (uplink) and 14 kbps (downlink) (downlink). The total efficiency of LoRaWAN in the demonstration of IoT for health monitoring system is demonstrated by these results. [5]

ECG signals were observed at three durations and in varied conditions by **Mohammad M. Masud** and **Mohamed Adel**. They took into account issues such as energy conservation, limited computer resources, and network outages. A computational model is constructed to conduct every function sequentially in order to meet these obstacles. There seem to be three techniques to working out all the procedures: machine learning, data mining, and mobile-based monitoring. [6]

The creation of a system capable of identifying catastrophic cardiac events is the focus of **Ayush Bansal**, **Sunil Kumar**, **Anurag Bajpai**, **Vijay N. Tiwari**, **Mithun Nayak**, **Shankar Venkatesan**, and **Rangavittal Narayanan**. Detecting indicators that lead to fatal cardiac events using a sophisticated remote monitoring system. [7]

**Hamid Al-Hamadi** and **Ing-Ray Chen** provide a confident health Internet of things protocols that includes risk categorization, durability trust, and the chance of losing one's care as design aspects for choice. To test applicability, a comparison of trust-based and benchmark methods was performed. [8]

**Punitha Ponmalar** and **Muthuraman Thangaraj Pichaiiah** proposed the phrase "digital hospital" is used to describe hospital administration. It allows for standardized electronic health records to be created automatically. Also covered is a real-world implementation of collectivistic and individualistic hospital administration using IOT. [9]

In view of **Maradugu Anil Kumar** the android based health care monitoring system is needed in recent times to monitor the patient remotely varies location through internet. This helps in connecting the doctor with patients without any contact. Also included the dedicated work space android in medical field. [10]

## III. PROPOSED SYSTEM

To address this problem, we developed a remote IoT-based health monitoring system that enables for remote monitoring of covid patients through the internet.

A heartbeat sensor, temperature sensor, pulse oximeter sensor, and respiration rate sensor are used to monitor the patient's heartbeat, temperature, oxygen saturation, and respiration rate, respectively.

The system subsequently connects to a Wi-Fi internet connection and communicates the observed data over the internet using Wi-Fi transmission. IOT Gecko platform transmits and receives data through IOT to show patient data remotely.

A microcontroller-based circuitry controls the entire system. A remote alert is delivered whenever any aberration in the patient's health is identified.

- Doctors may monitor patients remotely without danger of infection with this system.
- A single doctor may treat up to 500 patients at once.
- In the event of a health emergency, the doctor receives an immediate alarm.

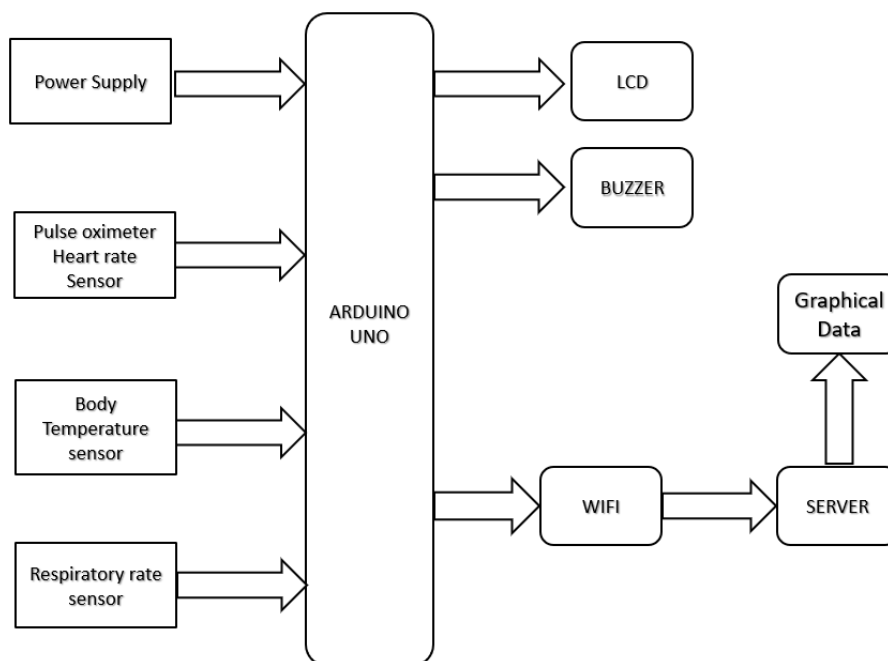


Figure : 1. Block Diagram

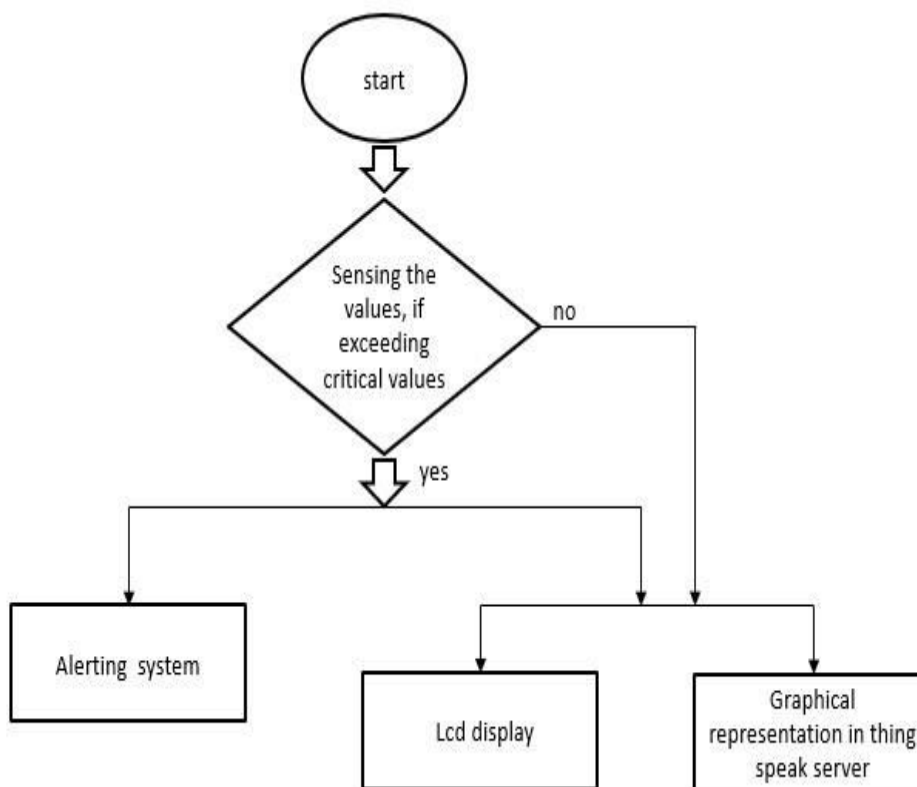
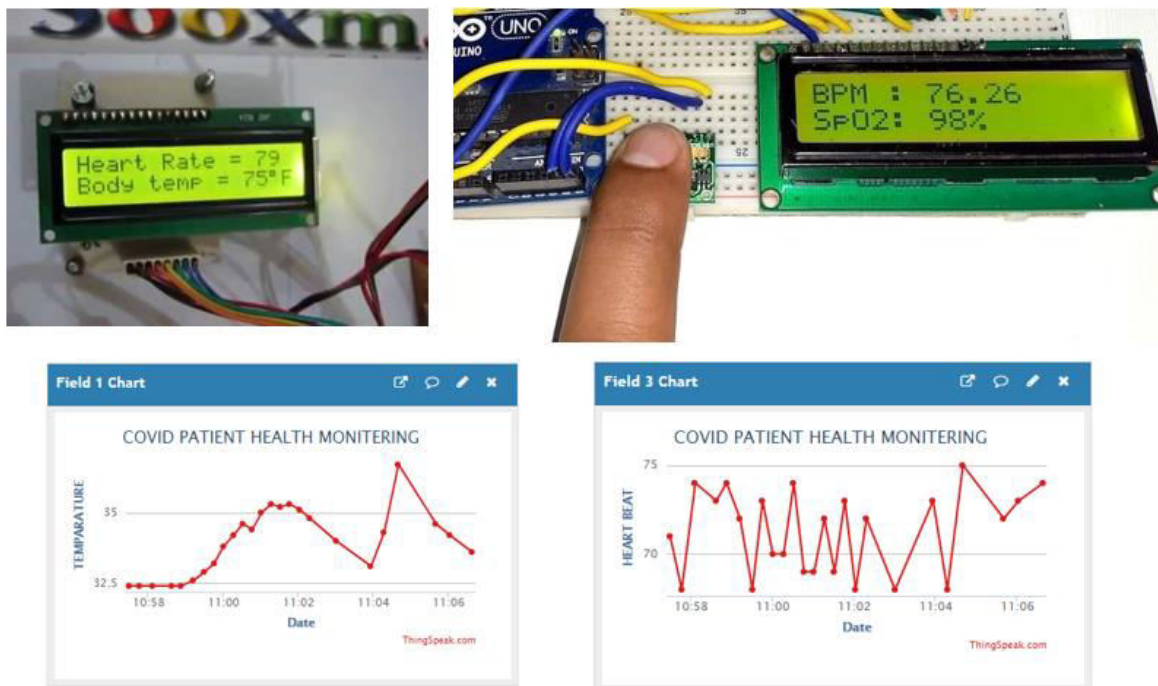


Figure : 2 Flow Chart

#### IV. RESULT AND CONCLUSION



The device is meant to create a contact via the internet from everywhere; it has advantages over zigbee and Bluetooth in that doctors can observe patients in instantaneously from whatever location. The Covid 19 patient monitoring system, which is based mostly on Internet of Things, is a slashing technique that enables society. It integrates a healthcare app with the user's device. This technique can be used in places with a large population. The data science technique is also used to handle the big data produced by IoT devices. This system delivers real-time efficiencies. All health care services and applications, such as illness supervision and senior care, can benefit from these strategies.

#### REFERENCES

- [1] Ebrahim Al Alkeem<sup>1</sup>, Dina Shehada<sup>1</sup>, Chan Yeob Yeun<sup>1</sup>, M. Jamal Zemerly, Jiankun Hu "New secure healthcare system using cloud of things", Springer Science+Business Media New York 2017
- [2] Yena Kim, SeungSeob Lee and SuKyoung Lee "Coexistence of ZigBee-based WBAN and WiFi for Health Telemonitoring Systems", DOI 10.1109/JBHI.2014.2387867, IEEE Journal of Biomedical and Health Informatics
- [3] Mirza Mansoor Baig & Hamid Gholamhosseini "Smart Health Monitoring Systems: An Overview of Design and Modeling", Springer Science+Business Media New York 2013.
- [4] S. M. Riazul islam, Daehan kwak, MD. Humaun kabir, Mahmud hossain, and Kyung-sup kwak, "The Internet of Things for Health Care: A Comprehensive Survey", DOI 10.1109/TDSC.2015.2406699, IEEE Transactions
- [5] Afef Mdhaffar, Tarak Chaari, Kaouthar Larbi, Mohamed Jmaiel and Bernd Freisleben "IoT-based Health Monitoring via LoRaWAN", IEEE EUROCON 2017.
- [6] Mohammad M. Masud, Mohamed Adel Serhani, and Alramzana Nujum Navaz "Resource-Aware MobileBased Health Monitoring", 2168-2194 (c) 2015 IEEE
- [7] Ayush Bansal, Sunil Kumar, Anurag Bajpai, Vijay N. Tiwari, Mithun Nayak, Shankar Venkatesan, Rangavittal Narayanan, "Remote health monitoring system for detecting cardiac disorders", IET Syst. Biol., 2015, Vol. 9, Iss. 6, pp. 309–314.
- [8] Hamid Al-Hamadi and Ing-Ray Chen, "Trust-Based Decision Making for Health IoT Systems" DOI 10.1109/IJOT.2017.2736446, IEEE Internet of Things Journal.



- [9] Muthuraman Thangaraj Pichaiah Punitha Ponmalar Subramanian Anuradha, "Internet Of Things (IOT) Enabled Smart Autonomous Hospital Management System – A Real World Health Care Use Case with the Technology Drivers", 2015 IEEE International Conference on Computational Intelligence and Computing Research.
- [10] Maradugu Anil Kumar, Y.Ravi Sekhar, "Android Based Health Care Monitoring System" IEEE Sponsored 2nd International Conference on Innovations in Information Embedded and Communication Systems ICIIECS'1
- [11] C. Kotronis, G. Minou, G. Dimitrakopoulos, M. Nikolaidou, D. Anagnostopoulos, A. Amira, F. Bensaali, H. Baali, and H. Djelouat, "Managing Criticalities of e-Health IoT systems," *Proc. IEEE 17th Int. Conf. Ubiquitous Wireless Broadband (ICUWB)*, Salamanca, Spain, 2017
- [12] P. Castillejo, J.-F. Martinez, J. Rodriguez-Molina, and A. Cuerva, "Integration of wearable devices in a wireless sensor network for an E-health application," *IEEE Wireless Commun.*, vol. 20, no. 4, pp. 38\_49, Aug. 2013
- [13] D. S. W. Ting, L. Carin, V. Dzau, and T. Y. Wong, "Digital technology and COVID-19," *Nature Med.*, vol. 26, no. 4, pp. 459\_461, Apr. 2020
- [14] E. Christaki, "New technologies in predicting, preventing and controlling emerging infectious diseases," *Virulence*, vol. 6, no. 6, pp. 558\_565, Aug. 2015
- [15] R. A. Calvo, S. Deterding, and R. M. Ryan, "Health surveillance during covid-19 pandemic," *BMJ*, vol. 2020, p. m1373, Apr. 2020



**Impact Factor:  
7.512**



# **INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH**

**IN SCIENCE | ENGINEERING | TECHNOLOGY**

**📞 9940 572 462 📞 6381 907 438 ✉ ijirset@gmail.com**



**[www.ijirset.com](http://www.ijirset.com)**

Scan to save the contact details