IJAREEIE

e-ISSN: 2278-8875
p-ISSN: 2320-3765

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

Volume 13, Issue 5, May 2024

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.317

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|| A Monthly Peer Reviewed & Referred Journal |

||Volume 13, Issue 5, May 2024||

|DOI:10.15662/IJAREEIE.2024.1305031|

Health Care monitoring system using IoT

Angeline Jemina. J.Y[1], Rajesh. K [2], Mohideen Ibrahim. A[3], Susvin.S[4],Abdulatheef. A[5]

Assistant Professor, Department of Electronics and Electrical Engineering,SCAD College of Engineering and Technology, Tirunelveli, Tamil Nadu, India [1]

UG Students, Department of Electronics and Electrical Engineering,SCAD College of Engineering and Technology, Tirunelveli, Tamil Nadu, India [2,3,4, 5]

ABSTRACT: This paper presents the design and implementation of a health care monitoring system leveraging Internet of Things (IoT) technology. The proposed system integrates wearable sensors, wireless communication, and cloud computing to continuously monitor vital signs and health parameters of individuals in real-time. The system architecture consists of sensor nodes worn by individuals, a gateway for data aggregation and transmission, and a cloud-based platform for data storage, analysis, and visualization. The wearable sensors collect data such as heart rate, blood pressure, temperature, and activity levels, which are transmitted to the cloud platform via a gateway using wireless protocols such as Bluetooth Low Energy (BLE) or Wi-Fi. The cloud platform processes the data, performs analytics to detect anomalies or patterns indicative of health issues, and provides insights to healthcare providers and users through a web or mobile interface. The proposed system offers several advantages including remote monitoring, early detection of health problems, personalized healthcare interventions, and improved patient outcomes. Experimental results demonstrate the feasibility and effectiveness of the proposed system in real-world healthcare scenarios.

KEYWORDS: Internet of Things (IoT), health care monitoring, wearable sensors, cloud computing, remote patient monitoring, real-time data analysis.

I. INTRODUCTION

The rapid advancement of IoT technology has revolutionized various domains including healthcare by enabling continuous monitoring of individuals' health parameters in real-time. In recent years, there has been a growing interest in developing IoT-based health care monitoring systems to address the challenges associated with traditional healthcare delivery such as limited access to healthcare facilities, high cost, and insufficient monitoring of patients with chronic conditions. In this context, this paper proposes a novel health care monitoring system that leverages IoT technology to provide continuous, remote monitoring of individuals health status.

II. RELATED WORK

A Health care monitoring system using IoT typically involves sensor devices collecting data on vital signs, activity levels, and other health metrics, which are then transmitted to a central system for analysis and monitoring. Related work might include research on sensor technologies, data transmission protocols, machine learning algorithms for health data analysis, and system architectures for real-time monitoring and decision-making in healthcare settings. Additionally, studies on user interface design, privacy concerns, and regulatory compliance would also be relevant.

III. PROPOSED SYSTEM

A health care monitoring system using IoT could involve wearable devices equipped with sensors to track vital signs like heart rate, blood pressure, and temperature. These devices would communicate with a central hub or cloud platform, where data is analyzed in real-time. Alerts can be generated for abnormal readings, allowing for timely intervention. Additionally, the system could incorporate machine learning algorithms to detect patterns and predict health issues before they escalate. Privacy and security measures would also be paramount to safeguard sensitive health information.

IV. SOFTWARE IMPLEMENTATION

To evaluate the effectiveness of the proposed health care monitoring system, we conducted experiments in real-world

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|| A Monthly Peer Reviewed & Referred Journal |

||Volume 13, Issue 5, May 2024||

|DOI:10.15662/IJAREEIE.2024.1305031|

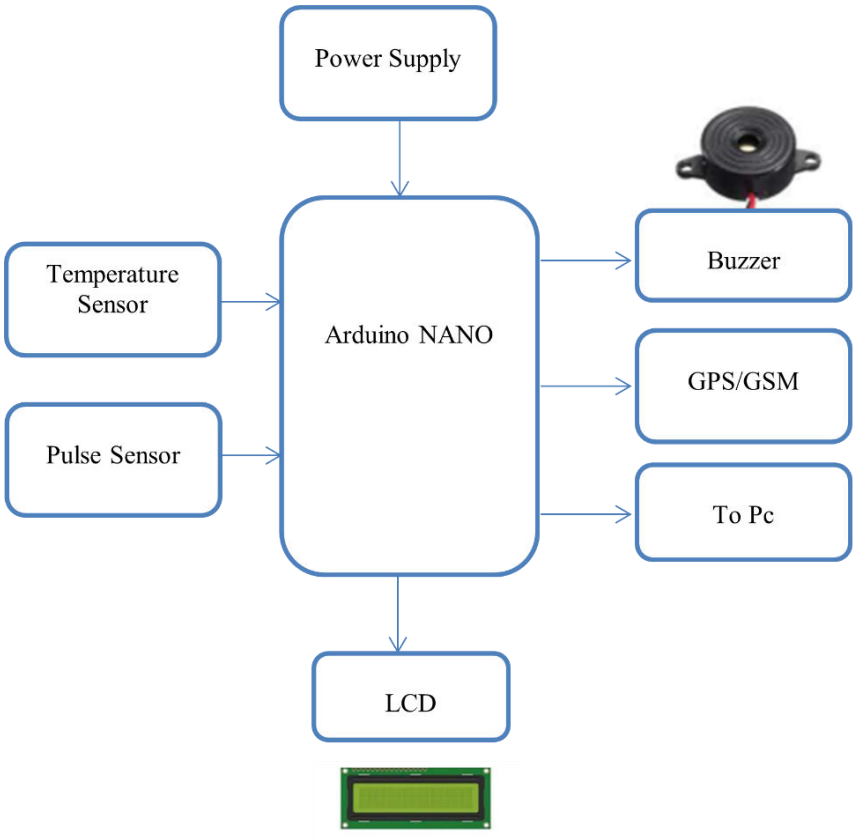
healthcare scenarios. We recruited a group of individuals with varying health conditions and equipped them with wearable sensors connected to the proposed system. The participants were monitored continuously over a specified period, and their health data was collected, transmitted, and analyzed in real-time using the cloud-based platform. The experimental results demonstrate the feasibility and effectiveness of the proposed system in detecting and alerting healthcare providers to potential health issues, thereby enabling timely interventions and improving patient outcomes.

The deep learning technique used to known/ unknown family members. The web camera is used to capture the human face. The captured face is processed by using image processing method. First, the captured face is processed with data augmentation methods such as resizing, rotation, and noise removal. Then it is converted to grayscale which as black and white image. The facial landmarks are detected andfeatures are extracted which is used to detects the person. The face classification process used to deep learning based Convolutional Neural Network (CNN). This method is used to classify the known/ unknown family members. If unknown family face is classified, then send alert notification through mobile number to their family members.

A. HARDWARE IMPLEMENTATION

Hardware implementation of IOT Module is shown in figure 3.2. It contains of Temperature Sensor, Pulse Sensor, Buzzer, LCD, GSM Module- SIM 800.

Temperature Sensor: A humidity sensor, also known as a hygrometer, is a device used to measure and monitor the relative humidity level in the surrounding environment. It detects the amount of water vapor present in the air and converts this information into an electrical signal or digital data that cabe interpreted by a monitoring or control system. Humidity sensors are essential for variousapplications, including climate control systems, weather monitoring, industrial processes, agriculture, and indoor air quality monitoring. They come in different types, such as capacitive, resistive, and thermal conductivity-based sensors, each with its own advantages and suitability for specific environments and conditions



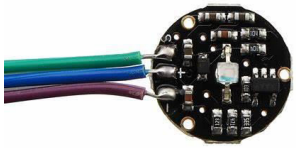
Pulse Sensor: A pulse sensor is a device designed to detect and measure a person's pulse rate, typically by sensing the changes in blood volume in a particular area of the body, such as a fingertip or earlobe. These sensors usually utilize optical methods, such as photoplethysmography (PPG), which involves shining light onto the skin and measuring the

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|| A Monthly Peer Reviewed & Referred Journal |

||Volume 13, Issue 5, May 2024||

|DOI:10.15662/IJAREEIE.2024.1305031|

amount of light absorbed or reflected by the blood vessels. The fluctuations in blood volume caused by each heartbeat can then be translated into a pulse rate measurement. Pulse sensors are commonly used in wearable health monitoring devices, fitness trackers, and medical equipment.



ultrasonic sensor ： An ultrasonic sensor is a device that uses ultrasonic sound waves to detect the presence, proximity, or distance of objects. It emits high-frequency sound waves (above the range of human hearing, typically above 20 kHz) and measures the time it takes for the sound waves to reflect off an object and return to the sensor

GSM Module- SIM 800: SIM800L GSM/GPRS module is a miniature cellular GSM modem from Simcom, which can easily interface with any microcontroller to give the microcontroller GSM functionality, and allows for GPRS transmission.

OLED: If you're referring to OLED (Organic Light-Emitting Diode) technology, it's commonly used in various electronic displays, including those found in wearable devices, smartphones, TVs, and monitors.

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|| A Monthly Peer Reviewed & Referred Journal |

||Volume 13, Issue 5, May 2024||

|DOI:10.15662/IJAREEIE.2024.1305031|

In the context of a health care monitoring system using IoT, OLED displays can be integrated into wearable devices to provide users with real-time feedback on their health metrics, such as heart rate, blood pressure, and activity levels. These displays offer several advantages, including high contrast ratios, wide viewing angles, and low power consumption, making them suitable for portable and battery-powered devices.

Relay : Relays are electrical switches that are activated by an electrical signal. They're commonly used to control high-power devices with low-power signals, such as in automotive applications, industrial machinery, and home automation systems.

Buzzer: A buzzer is often used to provide audible alerts and notifications. In a healthcare monitoring system, it can be employed to sound alarms in case of critical health events, such as a sudden change in heart rate or body temperature.

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|| A Monthly Peer Reviewed & Referred Journal |

||Volume 13, Issue 5, May 2024||

|DOI:10.15662/IJAREEIE.2024.1305031|

IV. RESULT AND DISCUSSION

Health Care monitoring system using IoT

V. CONCLUSION

In conclusion, this paper presents a novel health care monitoring system using IoT technology, offers continuous, which remote monitoring of individuals' health status in real-time. The proposed system integrates wearable sensors, wireless communication, and cloud computing to provide personalized healthcare interventions, improve patient outcomes, and reduce healthcare costs. Experimental results demonstrate the feasibility and effectiveness of the proposed system in real-world healthcare scenarios. Future work will focus on further enhancing the system's capabilities, scalability, and interoperability to address the evolving needs of the healthcare industry.

REFERENCES

[1]J. Qi, P. Yang, G. Min, O. Amft , F. Dong, and L. Xu, "Advanced internet, of things for personalized healthcare systems: A survey," Pervasive Mob. Computer . vol. 41, pp. 132-149, 2017.

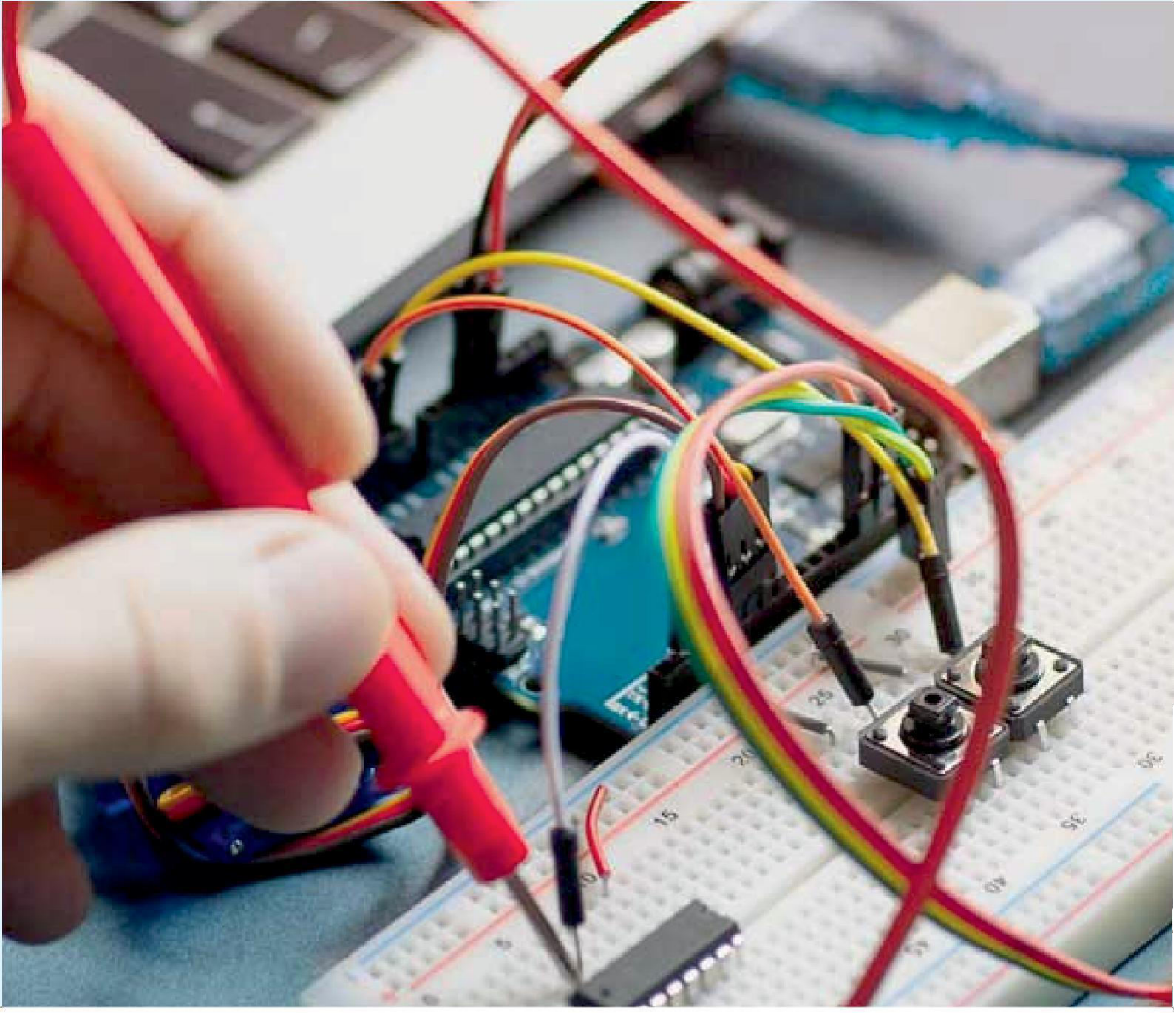
[2] S.B. Baker, W. Xiang, and I. Atkinson, "Internet of Things for Smart Healthcare:Technologies, Challenges, and Opportunities,"IEEE Access, vol. 5, no. c, pp. 26521-26544, 2017.

[3] Yuehong, Y.I.N., Zeng, Y., Chen, X.,& Fan, Y., "The internet of things in healthcare:An overview", Journal of Industrial Information Integration,1, 3-13, (2016).

[4] Ejaz, W., Anpalagan, A., Imran, M.A., Jo, M., Naeem, M., Qaisar, S.B. and Wang, W., "Internet of Things (IoT) in 5G wireless communications", IEEE Access, vol.4, pp.10310-10314, 2016.

[5] A.B. Pawar and S. Ghumbre, "A survey on IoT applications, security challenges and countermeasures," in Proceedings ofthe 2016 International Conference on Computing, Analytics and Security Trends (CAST), pp. 294–299, Pune, India, December 2016.

[6] Ejaz, W., Anpalagan, A., Imran, M.A., Jo, M., Naeem, M., Qaisar, S.B. and Wang, W., "Internet of Things (IoT) in 5G wireless communications", IEEE Access, vol.4, pp.10310-10314, 2016.



INNO SPACE
SJIF Scientific Journal Impact Factor

doi cross ref

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर NISCAIR

International Journal of Advanced Research

in Electrical, Electronics and Instrumentation Engineering

9940 572 462 6381 907 438 ijareeie@gmail.com

Scan to save the contact details