

# IOT –Driven Name-Based Patient Monitoring System For Real Time Healthcare

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**Abstract-** *Traditional healthcare systems rely heavily on manual monitoring of patient vital signs, which can result in delayed medical response, inaccurate readings, and inefficient healthcare management. To overcome these challenges, this project proposes an IoT Driven Name-Based Patient Monitoring System for Real-Time Healthcare.*

*The system uses IoT sensors to continuously monitor important health parameters such as heart rate, body temperature, and oxygen level (SpO2). The collected data is transmitted to a cloud server through a microcontroller like ESP32/ESP8266 for real-time monitoring and storage. Each patient is uniquely identified using a name-based record system, reducing data mismatch and improving patient management.*

*Doctors and healthcare providers can access patient information remotely through a web or mobile application and receive automatic alerts during abnormal health conditions. The proposed system aims to improve healthcare efficiency,*

**Keywords:** Real-Time Patient Monitoring, Smart Healthcare System, Cloud-Based Monitoring, Heart Rate Monitoring, SpO2 Sensor, Temperature Monitoring, Remote Healthcare, Automated Alert System

## I. INTRODUCTION

Healthcare monitoring plays an important role in ensuring patient safety and timely medical treatment. In traditional healthcare systems, patient monitoring is mainly performed manually by nurses or healthcare staff, which can lead to delayed responses, human errors, and inefficient management of patient records. Continuous monitoring of vital signs such as heart rate, body temperature, and oxygen saturation is essential for detecting abnormal health conditions at an early stage.

The advancement of the **Internet of Things (IoT)** has enabled the development of smart healthcare systems that provide real-time monitoring and remote access to patient

data. IoT technology connects sensors, microcontrollers, cloud platforms, and web applications to collect and transmit patient health information efficiently..

The proposed system also includes an automated alert mechanism that notifies healthcare professionals when abnormal health conditions are detected. This improves healthcare efficiency, reduces manual work, minimizes patient data confusion, and enhances emergency response time. The system aims to provide an affordable, reliable, and smart healthcare monitoring solution for hospitals and home-based patient care.

## II. EXISTING SYSTEM

The existing healthcare monitoring systems mainly depend on manual observation and traditional medical equipment to monitor patient health conditions. In hospitals, nurses and healthcare staff periodically check vital parameters such as heart rate, body temperature, blood pressure, and oxygen level. Patient identification is commonly performed using patient ID numbers, bed numbers, or paper records.

## III. PROPOSED SYSTEM

The proposed system is an **IoT Driven Name-Based Patient Monitoring System for Real-Time Healthcare** designed to continuously monitor patient health conditions using IoT technology. The system collects vital parameters such as heart rate, body temperature, and oxygen saturation (SpO2) through sensors connected to a microcontroller like ESP32 or ESP8266.

The system performs the following operations:

- Real-time patient health monitoring
- Name-based patient identification
- Cloud-based data storage
- Remote access through web/mobile application
- Automated emergency alert system
- Low-cost and efficient healthcare solution

#### IV. SYSTEM ARCHITECTURE

The system architecture of the **IoT Driven Name-Based Patient Monitoring System for Real-Time Healthcare** consists of sensors, microcontroller, cloud server, database, and user interface modules. The architecture is designed to collect patient health data, process it, store it in the cloud, and display it to doctors in real time.

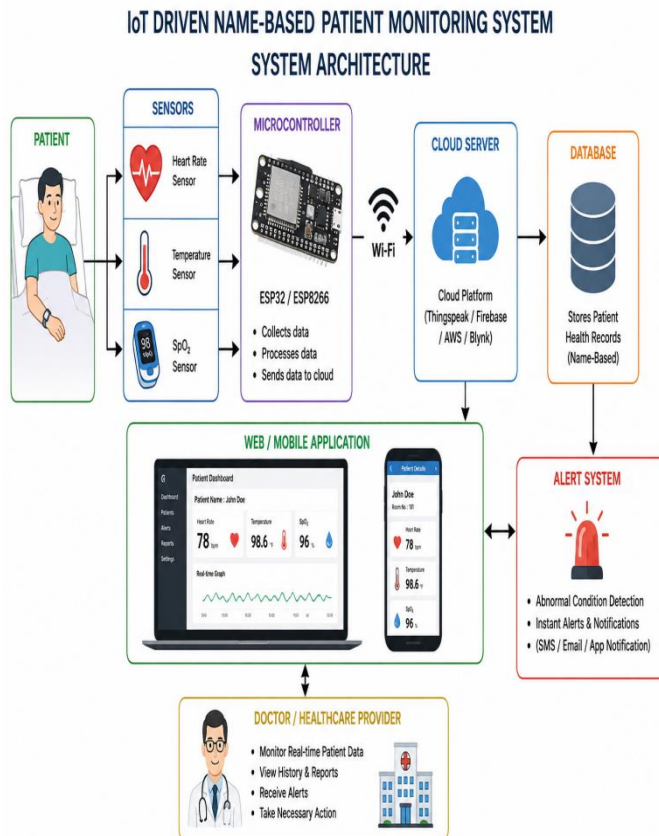


Fig 1. Architecture of IOT based Real time health monitoring system

#### V. WORKING METHODOLOGY

- Register patient details (Name / ID).
- Attach IoT sensors to the patient.
- Sensors measure vital signs (Heart rate, Temperature, SpO<sub>2</sub>).
- Microcontroller collects sensor data.
- Data is sent to cloud using Wi-Fi.

#### VI. HARDWARE REQUIREMENTS

- **Microcontroller:** Arduino Uno / ESP8266 / NodeMCU
- **Temperature Sensor:** LM35 / DHT11
- **Heart Rate Sensor:** Pulse Sensor
- **SpO<sub>2</sub> Sensor:** MAX30100 / MAX30102

- **Wi-Fi Module:** ESP8266 (if not inbuilt)
- **Power Supply:** 5V DC adapter / Battery pack
- **Breadboard:** For circuit connections
- **Jumper Wires:** For interfacing components
- **OLED/LCD Display (optional):** To show real-time values
- **Buzzer (optional):** For alert indication
- **Connecting cables:** USB cable for programming

#### VI. SOFTWARE REQUIREMENTS

- Programming Language: C / C++ / Python
- IoT Platform: ThingSpeak / Firebase / Blynk
- IDE: Arduino IDE
- Operating System: Windows / Linux

#### VII. RESULT AND DISCUSSION

The system successfully monitors patient vital signs in real time. Heart rate, temperature, and SpO<sub>2</sub> values are displayed accurately. Data is continuously updated on the web dashboard. Patient identification using name/ID works correctly. Health data is successfully transmitted to the cloud without delay. Abnormal conditions are detected based on threshold values.

#### VIII. ADVANTAGES

- Real-time patient monitoring
- Accurate measurement of health parameters
- Early detection of abnormal conditions
- Automatic alert system for emergencies
- Remote monitoring from anywhere
- Reduces manual work of healthcare staff
- Fast response in critical situations
- Easy patient identification using name/ID
- Cost-effective healthcare solution
- Improves patient safety and care efficiency

#### IX. CONCLUSION

The IoT-Driven Name-Based Patient Monitoring System provides real-time healthcare monitoring. It helps in continuous tracking of patient vital signs like heart rate, temperature, and SpO<sub>2</sub>. The system improves accuracy and reduces manual errors in hospitals. Alerts help in quick response during emergency conditions. Name-based identification ensures proper patient data tracking. Overall, the system enhances patient safety, efficiency, and remote healthcare support.

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