iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 14 **Issue:** VIII **Month of publication:** August 2026

DOI: https://doi.org/10.22214/ijraset.2026.84722

www.ijraset.com

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 14 Issue VIII Aug 2026- Available at www.ijraset.com

HealthCloud: An Intelligent IoT-Based Healthcare Monitoring System Using Cloud Technology

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Abstract: ***The rapid advancement of Internet of Things (IoT) and Cloud Computing has created significant opportunities in the healthcare sector.***
This paper proposes Health Cloud, an intelligent IoT-based healthcare monitoring system using cloud technology for real-time patient monitoring.
The proposed system collects vital health parameters such as heart rate, body temperature, blood pressure, and oxygen level using IoT-enabled sensors and transmits the data to a cloud platform for storage and analysis. The cloud-based approach enables remote access to patient information and supports efficient healthcare decision-making. The system provides continuous monitoring, early detection of health abnormalities, and improved patient care.
The integration of IoT and cloud technologies reduces manual monitoring efforts and enhances the efficiency of healthcare services.
Keywords: IoT, Cloud Computing, Healthcare Monitoring, Smart Healthcare, Remote Patient Monitoring.

I. INTRODUCTION

Healthcare is one of the most important sectors where continuous monitoring and quick decision-making are essential. Traditional healthcare monitoring systems require manual observation and frequent hospital visits, which may not provide real-time health information.
The advancement of Internet of Things (IoT) and Cloud Computing has introduced smart healthcare solutions. IoT devices collect patient health information using sensors, while cloud platforms provide secure storage, processing, and remote accessibility. The proposed Health Cloud system combines IoT devices and cloud technology to monitor patient health conditions efficiently. It enables doctors to access real-time patient data and provide timely medical assistance.

II. LITERATURE REVIEW

Several researchers have explored IoT-based healthcare monitoring systems using cloud technology.
1) IoT devices are widely used for collecting real-time patient health information.
2) Cloud platforms provide scalable storage and data processing capabilities.
3) Remote patient monitoring systems help reduce hospital workload.
4) Security and privacy of healthcare data remain major challenges.
Existing systems provide basic monitoring facilities, but improvements are required in data security, accuracy, and real-time analysis.

III. PROPOSED SYSTEM

The proposed Health Cloud system consists of IoT sensors, communication networks, cloud servers, and healthcare monitoring applications.
The system collects patient health parameters through IoT-enabled sensors. The collected data is transmitted through the Internet to a cloud platform, where it is stored and analyzed.
Doctors can access the information remotely through a monitoring application.

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IV. SYSTEM ARCHITECTURE

Patient
↓
IoT Sensors
↓
Data Collection
↓
Internet / Communication Network
↓
Cloud Server
↓
Data Processing & Storage
↓
Doctor / Healthcare Provider

V. METHODOLOGY

The working process of Health Cloud includes:

1) Data Collection

IoT sensors collect patient information such as:

- Heart rate
- Body temperature
- Blood pressure
- Oxygen saturation level

2) Data Transmission

Collected data is transferred securely through the Internet.

3) Cloud Processing

Cloud platforms store and analyze healthcare data.

4) Monitoring

Doctors monitor patient conditions and provide medical support.

VI. APPLICATIONS

1) Remote Patient Monitoring
2) Smart Healthcare Systems
3) Emergency Alert Services
4) Electronic Health Records
5) Disease Monitoring Systems

VII. CHALLENGES

1) Data privacy and security issues
2) Cybersecurity threats
3) Internet connectivity dependency
4) High implementation cost
5) Device compatibility problems

VIII. FUTURE SCOPE

Future improvements may include:

1) AI-based disease prediction
2) Machine learning-based health analysis
3) Advanced wearable healthcare devices
4) Blockchain-based medical data security
5) 5G-enabled healthcare monitoring

IX. CONCLUSION

HealthCloud demonstrates the effective integration of IoT and Cloud Computing for smart healthcare monitoring. The system enables real-time data collection, secure storage, and remote patient monitoring. By reducing manual efforts and improving healthcare accessibility, IoT-based cloud solutions can significantly enhance modern healthcare services.

Editorial note: The supplied reference list contains general descriptions rather than complete bibliographic references. Full author names, article titles, journal/conference details, year, volume/issue, pages, and DOI/URL should be added before submission.

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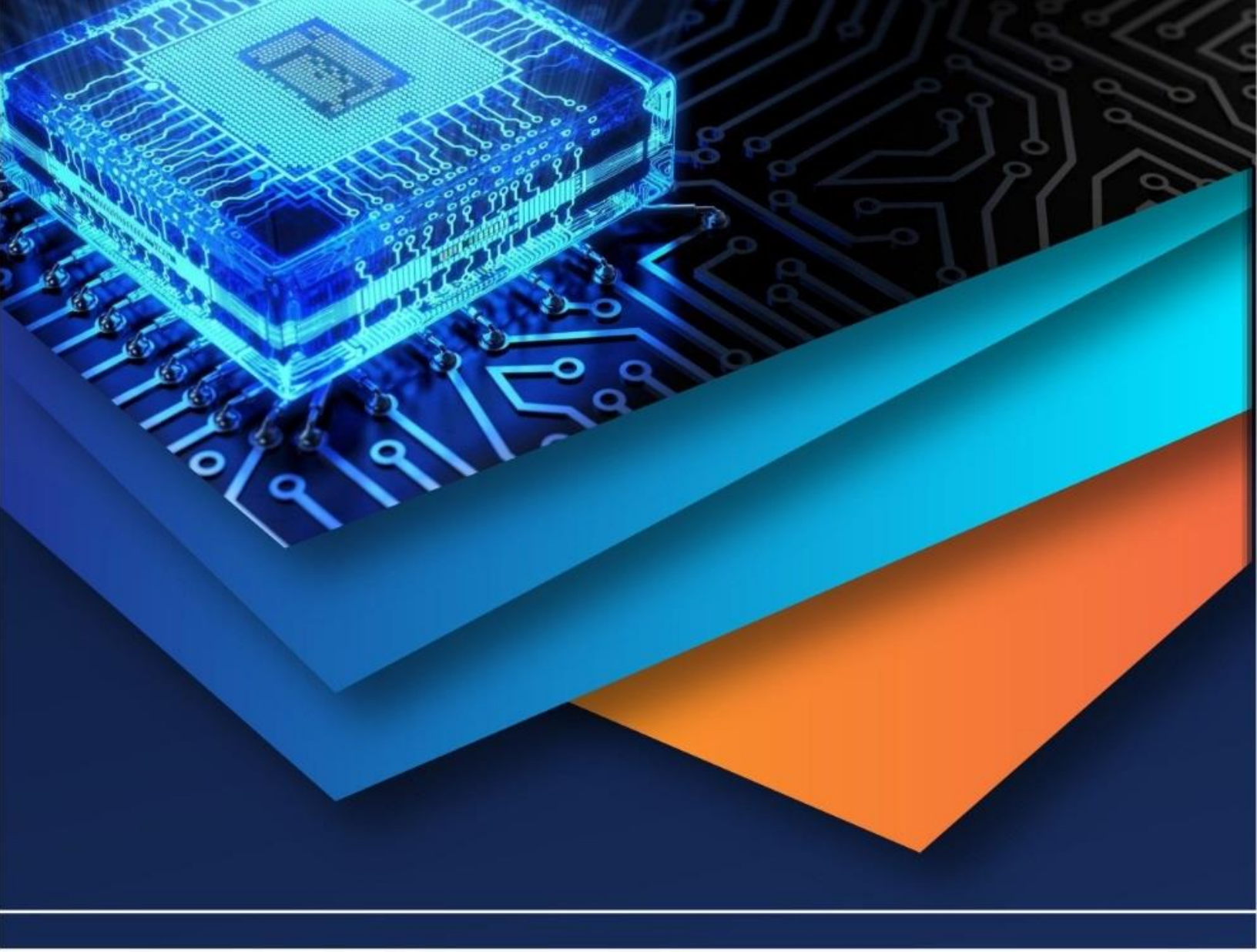

10.22214/IJRASET

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