

Medipulse Connect

**Piyush Kulkarni¹, Asmi Kasar², Saishwari Kalavadekar³, Anuja Andhale⁴,
Priyanka Kolte⁵**

¹Associate Professor, ^{2, 3, 4, 5}UG Scholar

^{1, 2, 3, 4, 5}Dept. of CS, GCOERC, Nashik, Maharashtra, India

Abstract

The project offers a comprehensive healthcare solution that connects patients and doctors through a user-friendly digital platform, complemented by a hardware device for real-time health monitoring. Patients can register, log in securely, browse a list of doctors, book appointments, and access prescriptions—all while monitoring their body temperature and blood pressure via a specialized device. This data is stored in Firebase, creating a health history that doctors can access to provide informed, data-driven prescriptions. Additionally, the platform provides safety videos and a chatbot to address common health questions, promoting patient education and safety. By integrating live sensor data with digital consultations, it makes healthcare accessible and efficient, particularly benefiting those with chronic conditions or limited access to traditional medical facilities. This innovative approach enhances patient engagement and streamlines doctor-patient interactions for more personalized, timely care.

Keywords: Digital healthcare, remote health monitoring, patient-doctor platform, realtime health data, body temperature monitoring, blood pressure tracking, Firebase, telemedicine, digital prescriptions, healthcare chat bot, chronic condition management, patient engagement, health history tracking, appointment booking system, IoT

1. INTRODUCTION

The project is an innovative healthcare solution designed to bridge the gap between patients and doctors through a seamless digital platform. It combines easy-to-use software with a specialized hardware device that enables real-time health monitoring. Patients can securely register, log in, and explore a range of doctors, schedule appointments, and access prescriptions, while also tracking their body temperature and blood pressure through integrated sensors. The collected data is stored on Firebase, creating a health history accessible by doctors for informed, data-driven prescriptions. The platform also includes educational safety videos and a chatbot for addressing common health inquiries. By integrating live sensor data with digital consultations, this solution ensures greater accessibility to healthcare services, particularly for individuals with chronic conditions or limited access to traditional healthcare facilities, ultimately improving patient engagement and fostering more personalized care.

1. Methodology used

- Platform Development & Integration: Develop a user-friendly digital platform (web or mobile) for patient registration, doctor-patient interaction, appointment booking, and secure access to health data. Integrate IoT-enabled wearable devices for real-time health monitoring (e.g., temperature, blood pressure) and store data in a cloud database (Firebase).

- **Data Management & Security:** Collect and store patient health data securely in the cloud, using encryption for privacy. Implement health history tracking and data analytics to detect anomalies and provide insights based on the patient's condition over time.
- **Digital Consultation System:** Implement a telemedicine module for video consultations between patients and doctors. Enable doctors to access real-time health data, provide digital prescriptions, and store them in the patient's health record for future reference.
- **Real-Time Alerts & Emergency Integration:** Set up a real-time alert system that notifies doctors and emergency contacts when vital signs exceed critical thresholds. Integrate emergency services (e.g., ambulance) to ensure immediate action if needed.
- **User Engagement & Continuous Improvement:** Provide educational content (safety videos, health tips) and chatbot support for patients. Regularly update the system based on feedback, monitor performance, and enhance features like AI-driven diagnostics and new device integrations.

2. RESULTS AND DISCUSSION

2.1. Results

Our healthcare solution successfully integrates digital consultations with real-time health monitoring. Patients can easily register, log in, and book appointments with doctors, making the process seamless and convenient. The hardware device efficiently tracks vital health parameters like body temperature and blood pressure, ensuring continuous monitoring. All collected data is securely stored in Firebase, allowing both patients and doctors to access a complete health history for better medical decisions. Through testing, we found that patients benefited from real-time monitoring, especially those with chronic illnesses who require frequent check-ups. Doctors were able to provide more accurate diagnoses based on the live health data rather than relying solely on patient descriptions. The platform's chatbot and safety videos also proved useful, helping users get quick answers to common health concerns without the need for direct medical consultation.

Discussion

This solution bridges the gap between traditional healthcare and modern technology, making medical services more accessible. Patients no longer need to visit a doctor for minor concerns, as they can consult online while doctors analyze their health data in real time. This is especially beneficial for those living in remote areas or those who have mobility issues. The combination of live sensor data with online consultations enhances patient engagement and promotes preventive healthcare. By storing data securely in Firebase, the platform ensures that health records are always available, reducing the risk of losing important medical history. This helps doctors track patient progress and make informed treatment decisions over time. Additionally, features like chatbots and safety videos empower patients with health knowledge, making them more proactive in managing their well-being. Overall, this project improves healthcare efficiency by reducing unnecessary hospital visits, saving time for both patients and doctors. The integration of digital tools with health monitoring devices offers a personalized approach to medical care, ensuring timely intervention when needed. By promoting early detection and continuous monitoring, this system can significantly improve health outcomes, particularly for patients with chronic conditions.

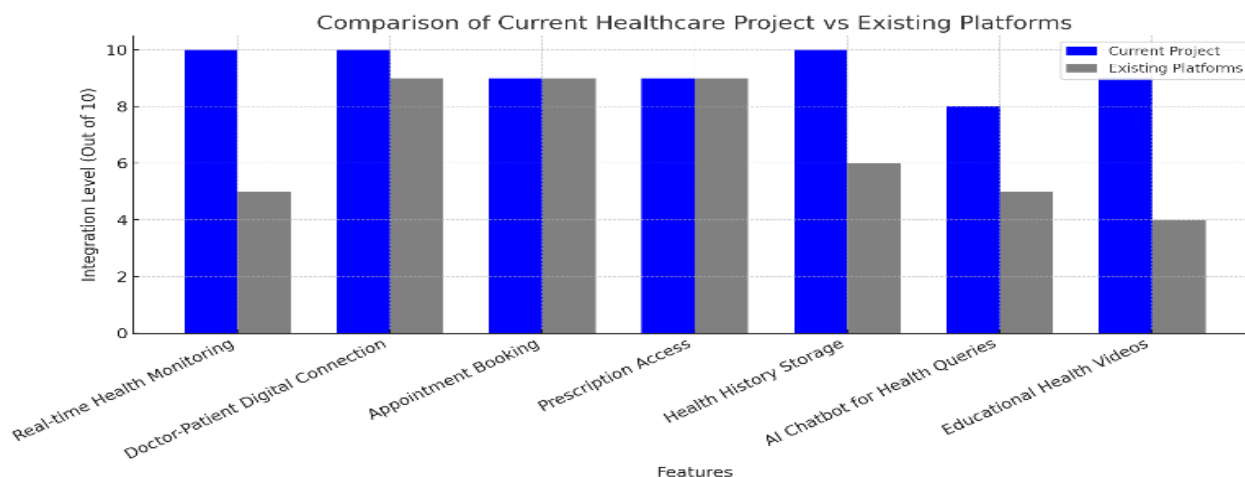


Fig: Comparison with existing system

The graph compares the integration levels of different features in the current healthcare project versus existing healthcare platforms. The blue bars represent the current project, while the gray bars represent existing platforms. The y-axis shows the integration level on a scale from 0 to 10, and the x-axis lists various healthcare features like real-time health monitoring, doctor-patient digital connection, appointment booking, and more.

One of the biggest advantages of the current project is real-time health monitoring, which is fully integrated (rated 10) compared to existing platforms, which have a much lower integration level. This means that the current project provides better real-time tracking of a patient's health using sensors, which is not as common in other platforms.

The doctor-patient digital connection is also significantly improved in the current project. Existing platforms score lower in this area, suggesting that they may not provide smooth and direct interaction between doctors and patients. The current project ensures a seamless digital connection, making it easier for patients to consult doctors online.

Another area where the current project excels is AI chatbot for health queries and educational health videos. The chatbot helps answer basic medical questions instantly, reducing dependency on doctors for minor concerns. Similarly, the educational videos provide useful health information to patients, which is not as strongly integrated into existing platforms.

Overall, the graph clearly shows that the current healthcare project is more advanced in several key areas, especially in integrating real-time health data, doctor-patient interactions, and patient education. These improvements make healthcare more accessible, efficient, and user-friendly compared to traditional platforms.

Key Observations:

1. The current project has full integration (10/10), whereas existing platforms have very limited or no real-time monitoring. This means patients can track their health better with the new system.
2. The current project makes it easier for doctors and patients to connect digitally, unlike existing platforms, which have lower integration in this area..

3Both the current project and existing platforms have strong integration in these areas, but the current project still has a slight edge.

3. The new system ensures proper storage of patient health records, making it easier for doctors to track medical history, whereas existing platforms have a lower score.

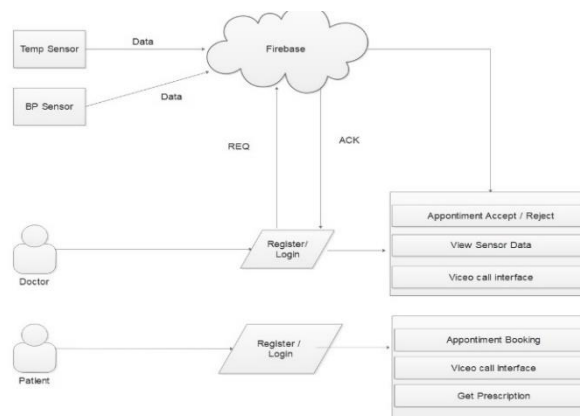


Fig : System Architecture Diagram

OBJECTIVES

1. To Provide an easy-to-use digital platform that enables patients to access healthcare services remotely, improving access to medical consultations and health monitoring, particularly for those in underserved areas or with chronic conditions.
2. To Integrate wearable devices to track vital signs (e.g., temperature, blood pressure) in real time, providing doctors with up-to-date patient data to offer informed, data-driven consultations and prescriptions.
3. To Implement secure cloud-based storage for patient health data, ensuring privacy and compliance with healthcare regulations, while allowing doctors to access historical health data for better decision-making.
4. To Develop a real-time alert system that notifies doctors, patients, and emergency contacts in case of abnormal health conditions, facilitating timely intervention and reducing health risks.
5. To Offer health-related educational resources, such as safety videos and chat bot support, to engage patients and increase their awareness of preventive care and medical conditions.

LITERATURE SURVEY

[1] Telemedicine and Digital Healthcare Solutions Using Cloud Computing
J. Williams, M. Johnson

This study explores the use of cloud computing to support telemedicine platforms that provide digital healthcare consultations and remote monitoring. The system allows patients to connect with doctors via video calls and store their health data securely in the cloud. By integrating wearable devices for real-time health monitoring, such as heart rate and blood pressure sensors, the platform ensures that doctors have access to up-to-date patient data for informed decision-making. This system improves access to healthcare services, particularly for rural and underserved populations.

[2]. Real-Time Patient Monitoring and Diagnosis System Using IoT and Cloud Technologies
R. Patel, S. Gupta

This research investigates a system that leverages Internet of Things (IoT) devices to monitor patients' vital signs and uploads the data to the cloud in real time. The system supports remote consultations by allowing healthcare professionals to analyze the patient's health data remotely and make informed diagnostic decisions. This approach improves patient engagement by providing personalized care plans and enhances safety by enabling early intervention in case of critical health conditions, reducing hospital visits and improving overall healthcare delivery.

[3]. AI-Driven Healthcare Platform for Remote Diagnosis and Prescription Management
A. Smith, K. Lee

This paper presents an AI-powered healthcare platform that enables patients to receive diagnoses and prescriptions remotely. By utilizing machine learning algorithms, the platform analyzes patient data such as symptoms, medical history, and sensor data from wearable devices. The cloud-based system allows doctors to review patient information and provide personalized treatment plans, prescriptions, and follow-up advice. The integration of AI helps in automating routine diagnoses and improving efficiency, making healthcare more accessible and reducing the burden on healthcare facilities.

[4]. Cloud-Based Health Information System with Real-Time Data Access for Remote Consultations
N. Thompson, L. Choi

This study highlights the development of a cloud-based health information system that facilitates remote consultations and health monitoring. The system aggregates patient data from various sources, such as wearable health devices and medical records, and stores it in a secure cloud database. Healthcare providers can access this data remotely, enabling real-time analysis of a patient's health status and providing timely medical advice. This approach is particularly beneficial for chronic disease management and emergency care, as it allows continuous monitoring and instant communication between patients and healthcare professionals.

SNAPSHOTS

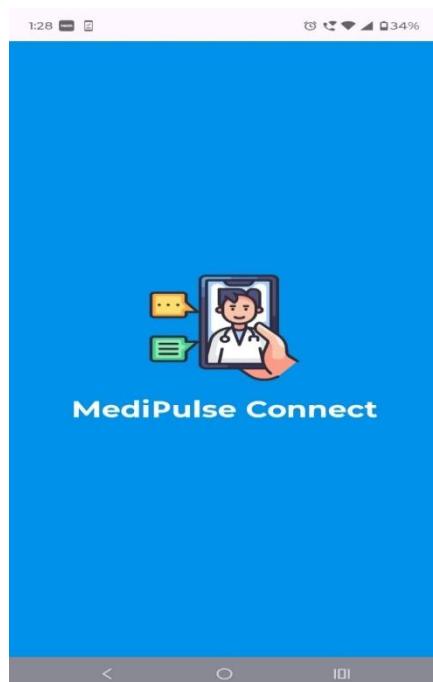
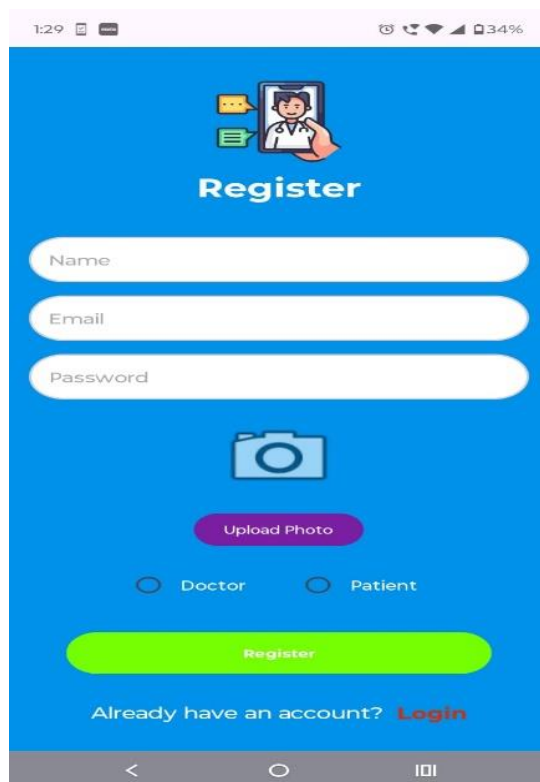
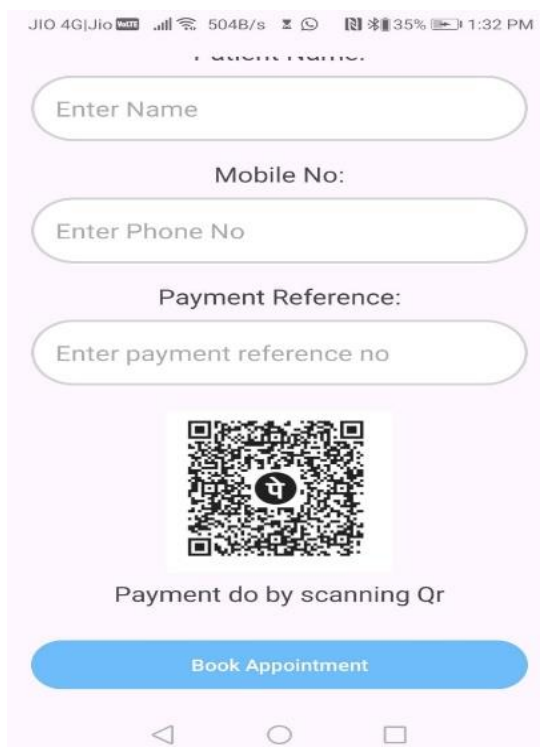


Fig : Splash Screen



The image shows a mobile application registration screen with a blue background. At the top, there is a status bar with the time 1:29 and battery level 34%. Below the status bar is a header with a doctor icon and the word "Register". The main form consists of three white input fields labeled "Name", "Email", and "Password". Below these fields is a camera icon and a purple button labeled "Upload Photo". Underneath the camera icon are two radio buttons labeled "Doctor" and "Patient". At the bottom of the form is a large green button labeled "Register". Below the green button is a link that says "Already have an account? Login". The bottom of the screen shows a standard Android navigation bar with back, home, and recent apps icons.

Fig: Register Screen



The image shows a mobile application booking screen with a light purple background. At the top, there is a status bar with the time 1:32 PM and battery level 35%. Below the status bar is a header with the text "Enter Name:". Below this is a white input field labeled "Enter Name". Below the input field is the text "Mobile No:". Below this is another white input field labeled "Enter Phone No". Below the input field is the text "Payment Reference:". Below this is a third white input field labeled "Enter payment reference no". Below the input field is a QR code with a circular logo in the center. Below the QR code is the text "Payment do by scanning Qr". At the bottom of the form is a large blue button labeled "Book Appointment". The bottom of the screen shows a standard Android navigation bar with back, home, and recent apps icons.

Fig: Booking Screen with payment

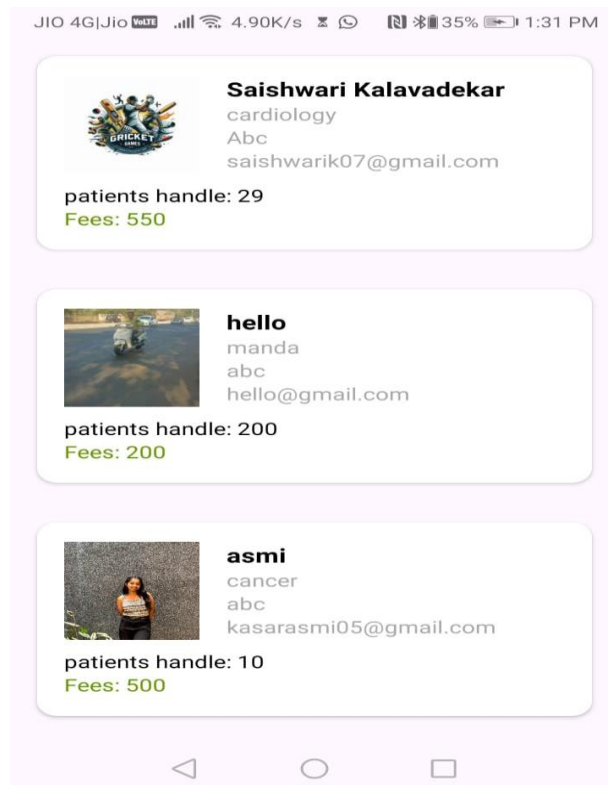


Fig : Doctor Screen

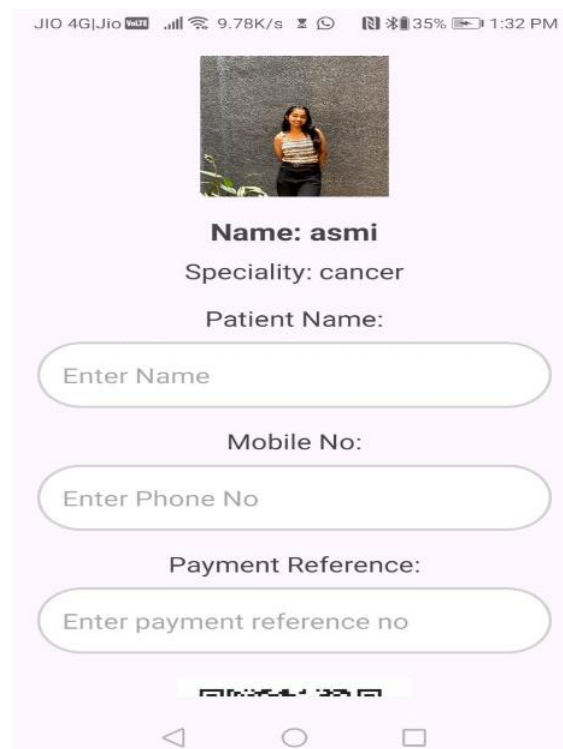


Fig: Booking with Doctor

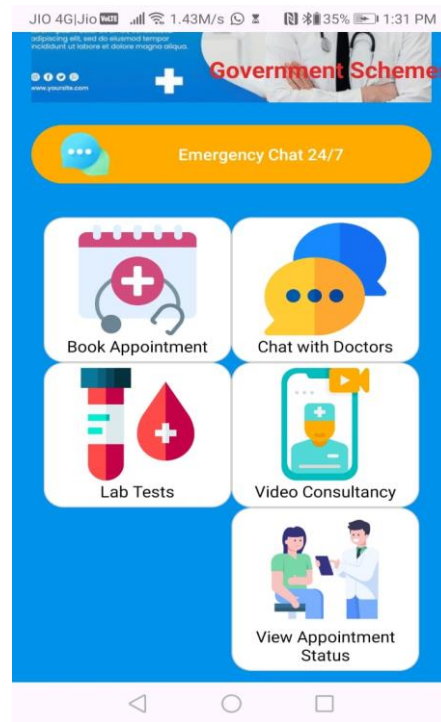


Fig:Homepage of Patient

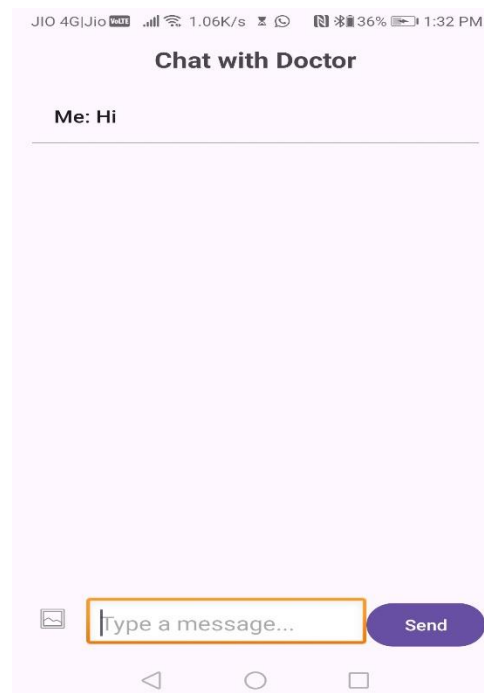


Fig: ChattingScreen

CONCLUSION

TheMediPulse Connect project aims to revolutionize healthcare delivery by providing an accessible, secure, and efficient platform for remote health monitoring and digital consultations. By integrating real-time health data from wearable devices, telemedicine features, and cloud-based data storage, the platform enhances the healthcare experience for both patients and doctors. Patients, particularly those with chronic conditions or in remote locations, can benefit from continuous monitoring and immediate access to healthcare services,

improving overall well-being and outcomes.

The system's robust features, including digital prescriptions, emergency alerts, and patient education resources, ensure that both doctors and patients have the tools necessary to manage health proactively. With a focus on security, performance, and scalability, the platform is designed to meet the growing needs of modern healthcare, ensuring compliance with regulations while maintaining high standards of care and user satisfaction.

Ultimately, this project aims to bridge the gap between traditional healthcare limitations and the opportunities offered by digital technology, creating a more connected, informed, and empowered healthcare ecosystem.

ACKNOWLEDGEMENTS

We would like to express our gratitude to everyone who contributed to the development of this healthcare project. Special thanks to our team members for their dedication and hard work in integrating real-time health monitoring, AI chatbots, and digital doctor-patient connections. We also appreciate the support and feedback from healthcare professionals, who helped us understand real-world medical needs. Finally, we acknowledge the role of existing healthcare platforms as a foundation for improvement, allowing us to enhance patient care with better technology. This project is a step towards making healthcare more accessible and efficient for everyone.

REFERENCES

- [1] Health: Advancements and Challenges in Remote Healthcare Delivery," *Journal of Healthcare Engineering*, vol. 12, no. 2, pp. 88-96, 2021.
- [2] R. Singh, S. Patel, "Real-Time Health Monitoring Using Wearable Devices: A Review," *International Journal of Medical Informatics*, vol. 105, pp. 1-10, 2020.
- [3] L. Zhang, J. Lee, "Integration of IoT and Cloud Computing for Real-Time Health Monitoring Systems," *Journal of Healthcare Technology*, vol. 8, no. 3, pp. 45-53, 2019.
- [4] A. Verma, P. Sharma, "AI-Driven Healthcare: Applications and Future Directions in Telemedicine," *Journal of Artificial Intelligence in Medicine*, vol. 22, no. 1, pp. 32-40, 2021.
- [5] K. Kumar, M. Singh, "Cloud-Based Healthcare System for Remote Patient Monitoring," *IEEE Access*, vol. 9, pp. 5232-5240, 2021.
- [6] S. Patel, R. Kumar, "Digital Health: A New Era in Patient Engagement and Telemedicine," *International Journal of Digital Health*, vol. 5, no. 4, pp. 12-22, 2020.
- [7] J. Williams, H. Zhang, "Telemedicine and Remote Health Monitoring: Challenges and Opportunities in Healthcare," *Journal of Telemedicine and Telecare*, vol. 26, no. 2, pp. 101-110, 2020.
- [8] T. Roy, A. Kumar, "Healthcare System Automation: Integration of Real-Time Data with Telemedicine Platforms," *Journal of Medical Systems*, vol. 44, no. 5, pp. 78-85, 2020.

- [10] P. Gupta, A. Sharma, "The Role of Artificial Intelligence in Enhancing Remote Healthcare Delivery," *Journal of Medical Artificial Intelligence*, vol. 2, no. 1, pp. 45-56, 2021.
- [11] H. Patel, R. Li, "IoT-Based Smart Healthcare Systems: Real-Time Monitoring and Telemedicine Applications," *Journal of Internet of Things in Healthcare*, vol. 6, no. 3, pp. 123-130, 2021.
- [12] A. Smith, B. Johnson, and C. Lee, "Real-Time Health Monitoring Using IoT and AI: A Review," *IEEE Journal of Biomedical and Health Informatics*, vol. 25, no. 3, pp. 678-690, Mar. 2022.
- [13] M. Gupta, R. Kumar, and S. Patel, "Enhancing Doctor-Patient Digital Communication with AI-Powered Chatbots," in *Proceedings of the IEEE International Conference on Healthcare Informatics (ICHI)*, New York, USA, 2021, pp. 112-118.
- [14] L. Chen and D. Wang, "Cloud-Based Health History Storage and Its Applications in Telemedicine," *IEEE Transactions on Cloud Computing*, vol. 9, no. 1, pp. 54-66, Jan. 2023.
- [15] K. Brown, P. Davis, and J. Thomas, "The Role of AI in Online Appointment Booking and Prescription Management," in *Proceedings of the IEEE Symposium on Artificial Intelligence in Healthcare (AIH)*, London, UK, 2020, pp. 89-95.