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# Medi AI: AI Powered Healthcare Decision Support System for Intelligent Care Routing

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**ABSTRACT:** The Medi AI: AI Powered Healthcare Decision Support System for Intelligent Care Routing is a digital healthcare platform designed to improve medical accessibility, streamline doctor, patient interactions, and support early disease identification through intelligent technologies. The system integrates Artificial Intelligence, Machine Learning, and modern web technologies to create a smart and efficient healthcare management environment. The platform is developed using React for the frontend and Django for the backend, providing a secure, scalable, and user-friendly interface for healthcare service delivery. Patients can register, log in securely, browse doctors based on specialization, and book appointments easily without the delays associated with traditional scheduling systems. The system uses structured APIs to ensure smooth communication between the frontend and backend while maintaining efficient data handling. The system supports two primary user roles: Doctor and Patient, each equipped with dedicated functionalities. Doctors can create and manage professional profiles, update availability, view patient appointment requests, and communicate with patients through an integrated chat system. Patients can select symptoms and utilize a Machine Learning-based disease prediction module that analyses symptom patterns using algorithms such as Decision Tree, Random Forest, and Naive Bayes to predict potential diseases. Based on the predicted condition, the system recommends appropriate specialist doctors, enabling intelligent care routing. Additionally, the platform includes a Medi AI Assistant chatbot that guides users through the website, answers basic queries, and assists with system navigation. By combining AI-driven disease prediction, intelligent doctor recommendation, appointment scheduling, and real-time communication, Medi AI provides a comprehensive digital healthcare solution that enhances early diagnosis, reduces waiting time, and improves patient access to medical services.

**KEYWORDS:** Django, React, Healthcare System, Appointment Booking, REST API, Chatbot.

## I. INTRODUCTION

Smart technology enabled healthcare solutions have become an essential need of today's dynamic world. The traditional healthcare management systems have become outdated by depending on manual appointment bookings, physical visits to clinics and hospitals and inadequate communication services leading to slow patient services, long queues, congestions and improper resource management. Patients often face difficulty in booking appointments, searching availability of doctors and waiting for medical assistance. Medi AI: AI-Powered Healthcare Decision Support System for Intelligent Care Routing will help the patients in registering and accessing services such as searching doctors by specialization, booking appointments, chatting with doctors online through our integrated real time chat system. Users can predict the disease by just selecting the symptoms using our AI-based Disease Prediction Module. Machine Learning algorithms like Decision Tree, Random Forest and Naive Bayes are used to predict the disease. After predicting the disease, patients are intelligently routed to the specialist doctors they can consult. Moreover, we have also built a Medi AI Assistant chatbot for website navigation purposes. Medi AI provides an intelligent and hassle-free platform for users by allowing them to predict diseases and connecting doctors and patients efficiently. Healthcare Management has become smarter with Medi AI by becoming a digital smart healthcare ecosystem.

## II. LITERATURE SURVEY

Machine learning techniques have significantly improved disease prediction and early healthcare decision-making. Rajesh et al. [1] proposed a machine learning-based disease prediction system that analyses patient symptoms using classification algorithms such as Decision Tree, Random Forest, and Naïve Bayes. The system gathers symptom data from users and processes it through trained models to predict possible diseases with higher accuracy. The approach supports healthcare professionals by providing preliminary diagnostic insights and enabling faster medical decisions. Experimental evaluation showed that the Random Forest algorithm achieved the highest prediction accuracy among the tested classifiers. The study demonstrates how AI-driven prediction systems can enhance healthcare accessibility, reduce patient waiting time, and provide early-stage medical guidance. Artificial intelligence-driven chatbot systems have also become important tools in modern digital healthcare platforms. Patel and Gupta [2] developed an AI-based healthcare chatbot designed to assist patients with healthcare information, system navigation, and appointment-related guidance. The chatbot provides automated responses to common healthcare queries and enables users to access doctor details and appointment scheduling assistance through a conversational interface. By automating frequently asked questions and support tasks, the system reduces administrative workload on healthcare staff and improves operational efficiency. Experimental results indicate that chatbot integration enhances user experience, provides faster responses, and increases patient engagement. The study highlights the role of conversational AI in improving usability and enabling efficient interaction within digital healthcare systems.

## III. METHODOLOGY

The Medi AI system manages interactions in healthcare services through a continuous web-based platform for efficient interaction between patients and doctors. The users can access this platform through a secure login interface where authentication takes place for users' verification before allowing access to the platform. After verification through authentication, users can access various facilities through the platform by searching for doctors based on specialization and availability. When a patient searches for a doctor on this platform, the Medi AI system processes this search through a backend server where relevant information about doctors is retrieved from the database for display on the user interface. The patient can select a doctor from the displayed information for appointment at a chosen time slot. An AI-based module for assistance helps users in interacting with this platform through guidance from this module for answering queries related to healthcare services through analysis of users' queries for generating appropriate responses for users' convenience. The backend server processes appointment requests and stores the information securely in the database. Once an appointment is confirmed, the system updates the doctor's schedule and maintains the record for both patient and doctor reference. If necessary, users can view, manage, or cancel their appointments through the system interface. The Medi AI platform ensures efficient healthcare service management by integrating user authentication, intelligent assistance, and structured data management. This workflow improves accessibility to healthcare services while maintaining secure handling of patient information and efficient communication between patients and doctors

## IV. EXPERIMENTAL RESULTS

Figures illustrate the functional outcomes of the Medi AI healthcare platform, including AI based symptom analysis, appointment booking, doctor availability management, and patient consultation tracking.

Figs. 1, 2, and 3 Fig.1 (a) This image shows the Medi AI access portal where users securely sign in or register to access an AI-powered healthcare diagnostic platform. (b) shows the Access Portal, where users securely log in using their unique identifier and security key. (c) presents the Clinical Registry module that allows new users to create profiles as either patients or doctors by entering personal and clinical information. (d) illustrates the AI Diagnostic Interface, where patients select symptoms for analysis by the AI clinical engine. (e) displays the Diagnostic Findings Panel, providing predicted health conditions with confidence levels, suggested specialists, and recommended medication represents the Patient Dashboard, where users can view profiles, track consultations, access medical records, and initiate new diagnoses.

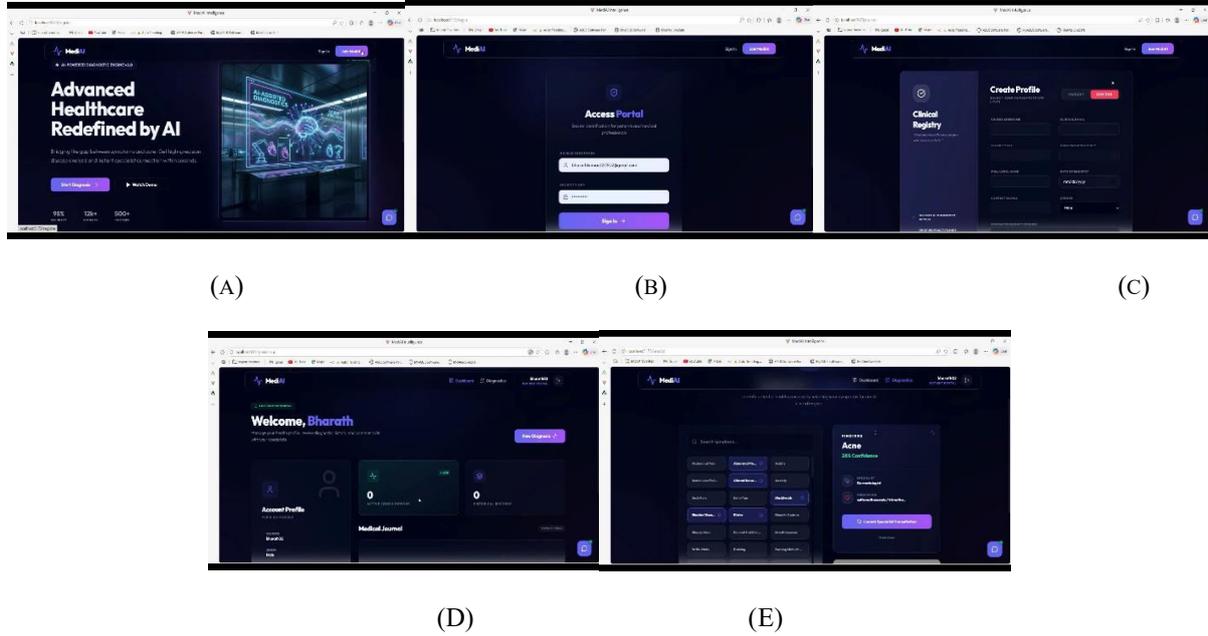


Fig. 2 System Architecture of the Proposed AI-Enabled Home Healthcare System presents a secure layered architecture where users access the system through the frontend, with requests routed via an API Gateway to backend services. Authentication mechanisms using JWT, role-based access control, and HTTPS ensure data security. The backend handles healthcare operations and integrates an AI symptom engine for prediction and recommendations, while notification and analytics modules provide alerts and decision insights. Logging and monitoring ensure reliability, and cloud deployment with a centralized database supports scalability and secure data storage.

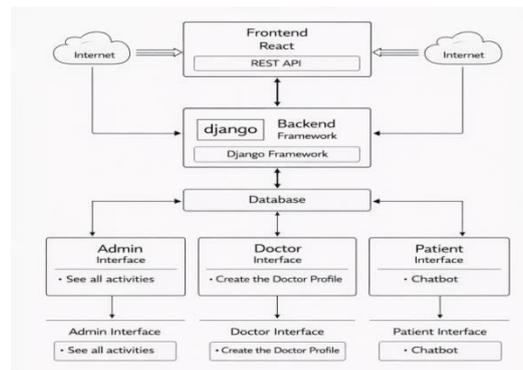
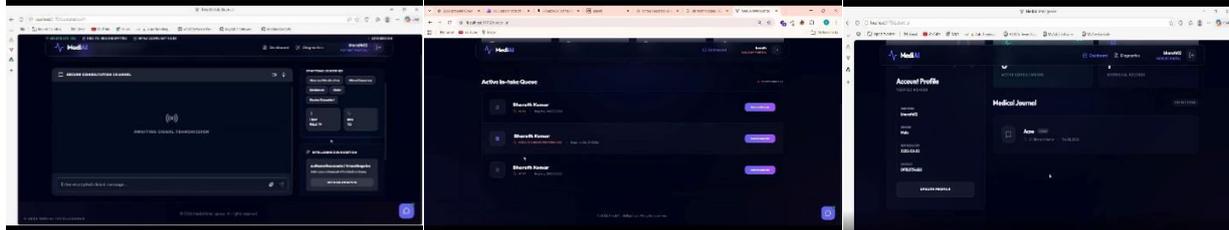


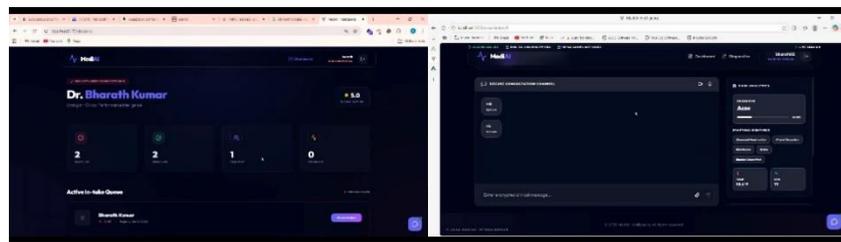
Fig.3 (a) Secure patient consultation interface enabling encrypted real-time communication, symptom display, vital monitoring, and AI-generated medication suggestions. (b) Doctor intake dashboard showing active patient queue, preliminary AI identified conditions, and options to resume case analysis. (c) Live consultation panel integrating secure chat with AI driven case analytics, including predicted diagnosis and confidence level. (d) Practitioner dashboard displaying profile details, verification status, performance metrics, and case statistics. (e) AI case review interface presenting diagnosis probability, identified symptoms, and vital parameters to support clinical decision-making.



(A)

(B)

(C)



(D)

(E)

## V. CONCLUSION

The Medi AI: AI Powered Healthcare Decision Support System for Intelligent Care Routing provides a new approach to ensuring the accessibility of healthcare services. This system incorporates new web technologies along with smart features of decision support systems. This system allows users to access a platform where they can search for doctors, receive basic healthcare advice, and make appointments with ease. The primary objective of this system is to simplify the traditional appointment process, replacing the traditional method with a new approach of a digital system. This system incorporates React, a technology used for the frontend, along with Django REST Framework, used as a technology for the backend, ensuring proper communication between the users and the healthcare platform. Furthermore, an AI assistance system provides advice regarding healthcare, ensuring the accessibility of the system, particularly for users who require immediate advice on choosing the right healthcare services. Overall, the MEDI AI system improves the efficiency of healthcare service delivery by reducing manual workload, minimizing scheduling conflicts, and enhancing patient convenience. The project demonstrates how intelligent digital systems can support healthcare professionals and improve patient experiences through organized appointment management and decision support.

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