

SehatGuide: AI-Based Public Health Chatbot for Disease Awareness

Prof. Prini Rastogi¹, Samruddhi Pathare², Shravani Pathare³

¹Assistant Professor, Department of Computer Application

²BCA, Student, Department of Computer Application

³BCA, Student, Department of Computer Application

Ajeenkya D Y Patil University, Maharashtra, India

Abstract - Access to prompt and dependable healthcare information continues to pose a significant obstacle, especially for individuals residing in rural and semi-urban areas where medical services are limited. To mitigate this deficiency, this research introduces Sehat-Guide AI, a web-based intelligent healthcare assistant designed to offer real-time guidance through the application of Artificial Intelligence (AI). This system integrates a variety of healthcare support features, such as an intelligent chatbot, a symptom checker, a physician locator, a vaccination center finder, medication reminders, and health alerts. The chatbot utilizes Natural Language Processing (NLP) techniques to comprehend user inquiries and formulate precise and contextually appropriate responses.

SehatGuide AI, in addition to offering conversational assistance, provides information concerning local medical professionals, vaccination facilities, and preventative health strategies, leveraging structured healthcare datasets. Integrated notification reminders further assist in improving medication adherence and sustaining user engagement. The system is developed using contemporary web technologies and follows a modular three-layer architecture, consisting of the frontend, backend, and AI processing layers.

Experimental evaluation indicates that SehatGuide AI achieves an average response time of 2–3 seconds and demonstrates an accuracy rate between 80% and 88% for general health care inquiries. These results underscore the potential of the system to enhance accessibility to health care services and provide timely support, particularly in under-resourced communities.

Key Words: AI Chatbot, Public Health Informatics, Preventive Healthcare, Vaccination Awareness, Doctor Appointment Discovery, Multilingual Health Assistant.

1. INTRODUCTION

Accessibility to healthcare remains a significant challenge in many developing countries due to limited medical infrastructure, high treatment costs, and low public

awareness [1], [2]. As a result, many individuals rely on unreliable online sources or delay consultations with healthcare professionals, often leading to incorrect self-diagnosis and worsening health conditions [3], [4].

In addition to geographical barriers, the shortage of skilled healthcare professionals and the presence of multiple languages across different regions further complicate access to appropriate medical services [5], [6]. These challenges highlight the need for an effective and accessible solution that can assist individuals in making informed healthcare decisions [7], [8].

The advent of Artificial Intelligence (AI) has enabled modern healthcare systems to deliver timely, reliable, and personalized support [9], [10]. AI-powered platforms can help bridge gaps in healthcare accessibility by providing immediate guidance, continuous monitoring, and alerts in areas lacking adequate physical infrastructure [11], [12].

To address these challenges, SehatGuide AI has been developed as a multi-functional healthcare platform. The system integrates AI-driven communication with structured healthcare services, offering features such as real-time chatbot assistance, symptom-based disease prediction, doctor and vaccination center search, medication reminders, and multilingual support for diverse communities.

By integrating all these features into a single platform, SehatGuide AI serves as a personal health assistant, encouraging users to engage proactively with their own well-being.

2. PROBLEM STATEMENT

SehatGuide AI was developed to address several real-world challenges in healthcare.

- Lack of reliable healthcare information sources
- Difficulty in locating nearby doctors and vaccination centers

- Poor medication adherence due to missed reminders
- Language barriers in healthcare communication
- Delay in receiving preventive health guidance

Most existing healthcare software solutions focus on a single function and do not offer comprehensive services. Consequently, there is a need for an integrated platform that leverages artificial intelligence to provide a wide range of healthcare support.

3. LITERATURE REVIEW

Recent progress in Artificial Intelligence (AI) and Natural Language Processing (NLP) has helped create smarter healthcare chatbots. These chatbots are designed to make healthcare more accessible, encourage users to get involved, and offer real-time medical support.

Passanante et al. [1] reviewed how conversational AI helps share information about vaccinations. Their study shows that AI chatbots can boost patient awareness and support vaccination campaigns, making them useful for sharing accurate health information.

Sawad et al. [2] investigated how conversational agents can assist patients in managing chronic diseases. They found that these systems support ongoing patient monitoring and can provide recommendations for healthcare services. Still, the authors pointed out challenges in integrating different healthcare services into a single platform.

Mohamed Jasim et al. [3] reviewed different healthcare chatbot applications. They found that AI chatbots help make healthcare more accessible and efficient. However, most current systems only answer user questions and do not offer features such as finding doctors or assisting with vaccinations.

Milne-Ives et al. [10] examined the effectiveness of AI-based conversational agents in healthcare and reported that chatbots can enhance patient engagement while providing reliable preliminary guidance. However, the authors emphasized that these systems cannot replace professional medical consultations, particularly in complex clinical scenarios.

Shaikh et al. [11] developed an AI-driven healthcare chatbot capable of performing basic symptom evaluation

and delivering general healthcare information. While the system generates responses efficiently, it lacks advanced functionalities such as multilingual support and integration with broader healthcare services.

Kurian [15] highlighted the role of AI-powered chatbots in improving healthcare access in rural regions of India. The study suggests that such chatbots can help bridge the gap between patients and healthcare professionals by facilitating real-time consultations.

Comparison of Existing Systems

Table-1: Functional Comparison Of Healthcare Chatbot Systems

Feature	Existing Systems	SehatGuide AI
Chatbot	Yes	Yes
Doctor Search	No	Yes
Vaccination Info	Limited	Yes
Reminders	No	Yes

Gap in Research

The literature review indicates that most existing healthcare chatbots are limited to a single functionality, such as answering general health queries or providing basic symptom analysis. Few systems integrate multiple healthcare services, including physician search, vaccination information, and medication reminders, within a single platform. This limitation underscores the need for a more comprehensive solution.

Proposed Solution

To address this gap, the SehatGuide AI system has been developed as a holistic healthcare platform. It combines chatbot-based interaction, symptom analysis, healthcare service exploration, and reminder notifications into a single integrated system. The platform is designed to provide comprehensive, real-time healthcare assistance while promoting accessibility and user engagement, particularly in rural and semi-urban regions.

4. METHODOLOGY

SehatGuide AI is built on a layered architecture that leverages Artificial Intelligence (AI), Natural Language Processing (NLP), and structured healthcare datasets to deliver real-time health assistance. The system is engineered to ensure rapid response times, accurate information, and accessible healthcare guidance for users across diverse locations [1], [3], [10].

4.1. System Architecture

SehatGuide AI is developed using a three-layer architecture, integrating a conversational AI system to enable intelligent interactions within the healthcare domain. The architecture ensures scalability and efficient communication between its layers.

- **Frontend Layer:**

The frontend is implemented using HTML, CSS, and JavaScript, providing an interactive and user-friendly interface. It allows users to communicate with the chatbot, search for healthcare services, and receive real-time responses [9].

- **Backend Layer:**

The backend is built with Node.js and Express.js frameworks. It handles requests from the frontend, manages API communication, interfaces with the chatbot, and connects the frontend with datasets and AI systems [11], [14].

- **Knowledge Base Layer:**

Healthcare information is stored in JSON-formatted datasets, including details about physicians, vaccination centers, and predefined healthcare responses [12].

- **Conversational AI Module:**

The chatbot leverages **Natural Language Processing (NLP)** techniques to interpret user queries, identify intents, and provide context-aware healthcare responses. User requests are processed by the backend and routed to the AI module to generate appropriate replies [1], [2], [3].

This layered architecture supports efficient data flow, modularity, and the potential for future expansion, ensuring that SehatGuide AI can deliver responsive and reliable healthcare assistance.

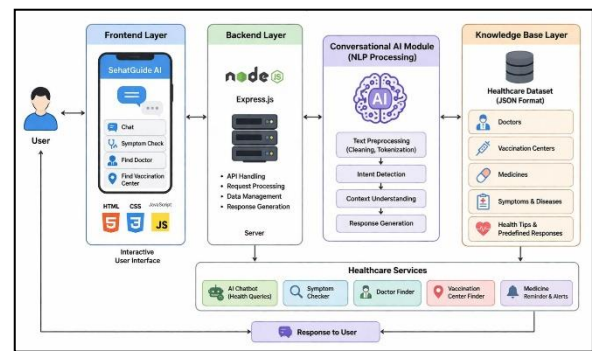


Fig.-1: System Architecture of SehatGuide AI

4.2. System Implementation

The implementation of SehatGuide AI is divided into independent modules to improve flexibility and maintainability.

4.2.1. Chatbot Implementation

The chatbot is integrated using a conversational AI API for healthcare query handling.

- User queries are entered through the frontend
- Input text is preprocessed using NLP techniques such as cleaning and tokenization
- Query is forwarded to the AI processing module
- A context-aware response is generated and returned to the user

This improves interaction quality and supports real-time healthcare assistance [2], [10].

4.2.2. User Interface Implementation

The user interface is designed for simplicity and accessibility.

- Interface developed using HTML, CSS, and JavaScript
- Chat window integrated for live communication
- Backend API connected for dynamic response generation
- Multilingual support added for wider accessibility

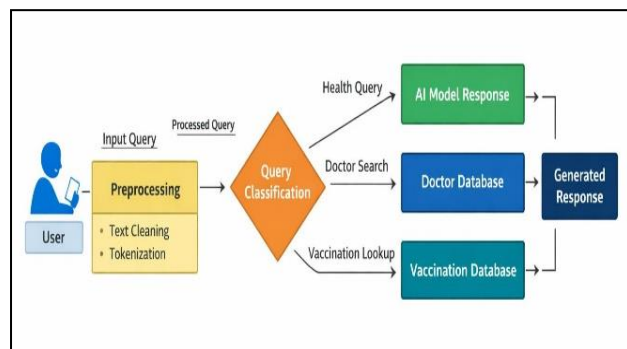
This improves usability for users from different language backgrounds [4], [15].

4.2.3. Query Processing

The system classifies user input to improve response accuracy.

- User input is cleaned and analyzed
- Query intent is identified (symptom, doctor search, vaccination, medicine reminder)
- Routed to AI module or healthcare dataset
- Response formatted and displayed to the user

This approach enhances the relevance of responses while



also improving the overall efficiency of the system [8], [9].

Fig-2: Query Processing Flow of SehatGuide AI

4.2.4. Dataset Management

Healthcare information is maintained in lightweight databases to ensure efficient storage and quick access.

- JSON datasets prepared for doctor details and vaccination centers
- Predefined fallback healthcare responses stored
- Data retrieval optimized for fast response
- Periodic updates ensure data reliability

This approach supports both the scalability and the stability of system performance [5], [12].

4.2.5. Backend Processing

The backend layer ensures seamless communication between the different modules.

- Handles frontend API requests
- Connects AI module and healthcare datasets
- Processes responses efficiently
- Returns output with low latency

This improves responsiveness and integration quality [11], [14].

4.2.6. Navigation Assistance

The platform provides access to location-based healthcare services.

- Searches nearby doctors and vaccination centers
- Generates navigation links
- Displays accessible healthcare options to users

This feature enhances access to healthcare services, particularly in remote and underserved regions [4], [15].

The system’s modular design allows for scalability and the integration of new healthcare services without affecting other components.

5. RESULTS

For performance evaluation, SehatGuide AI was assessed across several functional modules, including the chatbot interface, symptom checker, healthcare service search, and overall system efficiency.

The AI-powered chatbot generates natural conversational responses, enabling users to interact using everyday language. It provides accurate healthcare information regarding symptoms, preventive measures, and other relevant medical guidance. The average response time is 2–3 seconds, facilitating real-time interaction.

The symptom checker analyzes user-reported symptoms and suggests possible causes along with recommended actions. This feature helps users better understand their condition and make informed decisions about seeking medical consultation.

The doctor search module allows users to locate physicians in their area based on specialization, while the vaccination module provides information about nearby vaccination centers.

Additional features, such as medication reminders and health information updates, enhance user engagement and support proper adherence to prescribed treatments. Furthermore, outbreak alerts inform users about prevailing diseases in their region, helping them take timely preventive measures.

Generally, the system performs consistently with an accuracy rate of about 80–88%.

(Results are illustrated in Fig. 3–Fig. 6.)

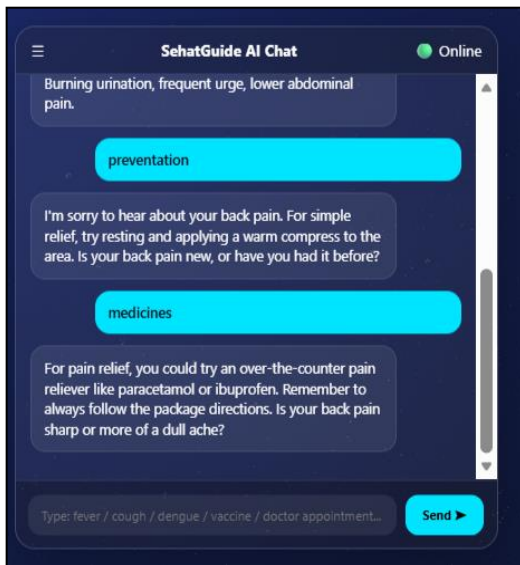


Fig-3: Chatbot Response

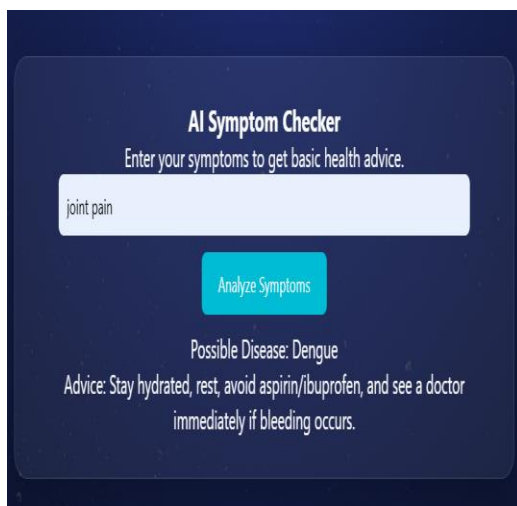


Fig-4: AI Symptom Checker

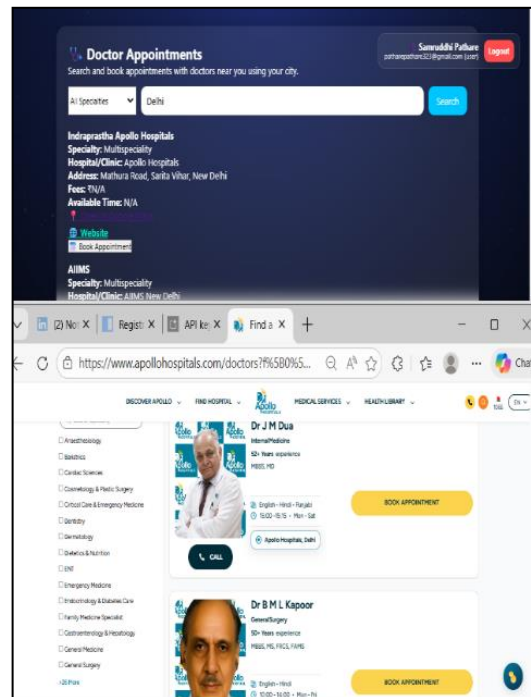


Fig-5: Doctor Search and Appointment Interface

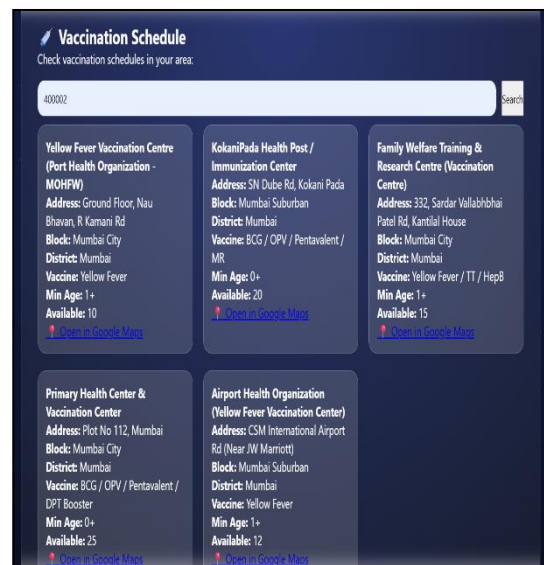


Fig-6: Vaccination Center Search

The evaluation of the system involved the use of different user searches in various healthcare situations to determine the accuracy, efficiency, and reliability of the system.

Table-2: System Performance Evaluation

Metric	Value
Average Response Time	2-3 seconds
Query Accuracy	80-88%
Multilingual Support	5 major languages
Facility Discovery Accuracy	90%
System Uptime	>99%

A. Observations

- The chatbot offers precise answers to queries about general healthcare
- Symptom checker facilitates early identification of diseases
- The doctor and vaccination modules enhance accessibility to essential healthcare services.
- The system operates efficiently, with minimal response delays.
- Support for multiple languages increases usability

6. DISCUSSION

The findings prove the capability of SehatGuide AI as an effective AI-based health care assistant that can improve access to essential information about health care. Integration of the NLP-based chatbot technology with structured data sets makes it possible for the system to offer timely relevant and context-aware answers to inquiries.

The system performs well in providing general information concerning health care, with its efficiency estimated at 80-88%, which is enough for providing preliminary guidance and raising people's awareness. Timely feedback (within 2-3 seconds) provides users with a satisfactory experience while using the platform.

Moreover, inclusion of multiple modules (such as symptom checking, doctor finder, vaccination, and

medicine reminders) makes the system more universal than other single-module health applications currently available on the market.

However, there are several disadvantages associated with this system. Firstly, it should be noted that it does not provide a substitute for professional medical help and consultations, especially in complicated cases. Secondly, its effectiveness largely depends on the quality of both the database and the NLP model used in the application. Thirdly, it works online, so Internet connection is required.

7. CONCLUSION AND FUTURE SCOPE

This paper introduced SehatGuide AI, an AI-enabled healthcare guidance system combining chatbot interaction, symptom analysis, and healthcare service discovery in one single system.

It offers accurate healthcare guidance with excellent accuracy and quick response times. The system is especially helpful for rural and semi-urban communities.

Future Scope

- Integration with real-time healthcare databases
- Use of advanced AI models for higher accuracy
- Mobile application development
- Enhanced data privacy and security

SehatGuide AI can make a significant contribution towards improving the availability and awareness in the healthcare sector.

The suggested system showcases the ability of an AI-driven solution to increase awareness among the public and close the gulf between the user and healthcare facilities.

Further advancements can increase the effectiveness of the system and make it scalable for large-scale deployment.

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