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Healthsense AI Chatbot For Disease Prediction and Health Guidance

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Abstract- ***This paper presents HealthSense AI, an intelligent healthcare chatbot designed to provide instant medical guidance and preliminary disease prediction based on user symptoms. The system uses a hybrid approach combining a local health knowledge database with a generative AI model (Google Gemini API). Natural Language Processing (NLP) is used to understand user queries and generate meaningful responses. The chatbot improves accessibility to healthcare guidance and reduces unnecessary hospital visits.***

Index Terms- ***Artificial Intelligence, Chatbot, Healthcare, Machine Learning, Natural Language Processing***

I. INTRODUCTION

Artificial Intelligence (AI) is playing a significant role in transforming the healthcare sector by enabling intelligent systems that can assist users in making informed decisions. With the increasing demand for quick and reliable health information, many individuals find it difficult to access immediate medical guidance for minor symptoms without visiting a doctor.

HealthSense AI is an AI-based healthcare chatbot developed to address this issue. The system is designed to interact with users through a chat interface, understand their health-related queries using Natural Language Processing (NLP), and provide appropriate responses. It acts as a virtual health assistant that offers preliminary guidance based on user symptoms.

The chatbot follows a hybrid approach, where it first searches for relevant information in a local health knowledge database. If no suitable match is found, it utilizes a generative AI model (Google Gemini API) to produce accurate and context-aware responses. This ensures both reliability and flexibility in handling different types of user queries.

The main objective of HealthSense AI is to improve accessibility to basic healthcare information, reduce unnecessary hospital visits, and promote early awareness of health conditions. However, the system is intended only for informational purposes and does not replace professional medical consultation.

II. PROBLEM STATEMENT

People often face difficulty in getting quick and reliable health information for common symptoms. Searching online can be confusing due to incorrect or complex information, and visiting a doctor for minor issues is time-consuming.

Existing healthcare chatbots are limited and cannot handle complex queries effectively. Therefore, there is a need for an intelligent system that can provide instant, accurate, and easy-to-understand health guidance.

HealthSense AI is developed to solve this problem by providing quick and reliable responses using AI technology.

III. OBSERVATION AND RESULTS

A. Bits and Pieces Together

The HealthSense AI chatbot was tested using different health-related queries. The system provides fast responses for common symptoms by retrieving information from the local database. For queries that are not found in the dataset, the chatbot combines available information and generates meaningful responses.

The system effectively integrates different components such as the user interface, database, and AI model to provide accurate and understandable health guidance.

B. Use of Simulation Software

The system was tested in a simulated environment using web technologies. Various test cases were executed to evaluate the chatbot's performance, including normal queries, complex queries, and error conditions.

The results show that the chatbot performs efficiently by providing quick responses and maintaining reliability. The simulation helped in verifying the system's functionality and improving overall performance.

IV. ADVANTAGES

- Provides quick and instant health guidance
- Reduces unnecessary hospital visits
- Easy to use and user-friendly interface
- Handles both simple and complex queries
- Available anytime for users

V. LIMITATIONS

- Does not replace professional medical advice
- Accuracy depends on available data and AI model
- Requires internet connection for AI responses
- Limited understanding of very complex medical conditions

VI. FUTURE SCOPE

The HealthSense AI chatbot has significant potential for future enhancements. The system can be improved by integrating advanced medical databases to provide more accurate and detailed health information. The use of more powerful AI models can further enhance the accuracy and reliability of responses.

Voice-based interaction can be added to make the system more user-friendly and accessible, especially for non-technical users. Additionally, multi-language support can be implemented to reach a wider audience.

The system can also be integrated with mobile applications and wearable devices to provide real-time health monitoring and personalized suggestions. Features like user authentication and health history tracking can further improve the user experience.

In the future, the chatbot can evolve into a more advanced healthcare assistant capable of providing predictive analysis and personalized healthcare recommendations.

VII. CONCLUSION

HealthSense AI is an intelligent healthcare chatbot designed to provide quick and reliable health guidance based on user queries. The system effectively combines a local health database with a generative AI model to deliver both fast and accurate responses.

It helps users understand their symptoms, suggests basic precautions, and improves awareness about common health conditions. The chatbot enhances accessibility to healthcare information and reduces the need for immediate medical consultation for minor issues.

Overall, HealthSense AI demonstrates the practical use of Artificial Intelligence in the healthcare domain. However, it is intended only for preliminary guidance and should not be considered a replacement for professional medical advice.

VIII. ACKNOWLEDGMENT

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