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Personalized Healthcare Chatbot Using AI

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Abstract: During this pandemic, the majority of people's health care requires medication and doctor's recommendations to improve and safeguard their health. Also, I've observed numerous incidents when many people have been afflicted with COVID. To limit physical contact and prevent the spread of infections, the recommended methodology is to introduce a personalised healthcare chatbot in hospitals. A personalised healthcare chatbot is one that uses natural language processing (NLP) in text format. AI and Deep Learning for Medical Diagnostics help to power a personalised healthcare chatbot. The project's purpose is to develop a personalised healthcare chatbot that overcomes the recommended technique. Many people were unable to see doctors for minor ailments like a cold or fever.

Keywords: Personalized healthcare, NLP, Chatbot

I. INTRODUCTION

In today's world where people are busy working and earning money they are left with very little or no time to take care of their health. Chatbots for personalized health care have become an important resource for giving people individualized advice, support, and direction on their journeys to wellbeing.

In recent years, there has been a surge of interest in using artificial intelligence (AI) to improve healthcare services. One such use is the creation of personalized healthcare chatbots. These chatbots communicate with users through AI algorithms, offering personalized health advice, information, and assistance. Natural language processing (NLP) and artificial intelligence (AI) developments have made health care more individualized and available. "Personalized Health Care Chatbot " aims to develop a cutting-edge chatbot that leverages the power of AI to deliver customized health-related information, advice, and recommendations to users.

The project "A Personalized Healthcare Chatbot using AI" aims to create a chatbot that can assist users in managing their health and well-being. This chatbot will be designed to understand natural language input and provide relevant responses based on the user's health data, preferences, and medical history.

The rest of this paper is organized as follows: Chapter 2 presents the related work. Chapter 3 gives a picture of the proposed system. Chapter 4 gives a brief about the methodology used in the project. Chapter 5 contains the snapshots of the experimental results.

II. RELATED WORK

Supervised Machine Learning Chatbots for Perinatal Mental Healthcare: Ruyi Wang, Jiankun Wang, Yuan Liao, Jinyu Wang in International Conference on Intelligent Computing and Human-Computer Interaction (ICHCI)2020: The study discusses how supervised machine learning chatbots can increase access to perinatal mental healthcare and give women with personalised support during this vital period. The authors end by outlining future study directions and the chatbots possible impact on the field of perinatal mental health.

Design and Development of Conversational Chatbot for Covid-19 using NLP: an AI application: Shivani Singh, Dr. Pooman Tanwar, Manmeet Kaur, Ms. Shweta Sharma in Sixth International Conference on Computing Methodologies and Communication (ICCMC) 2022: The study shows how NLP-based chatbots can be used to provide assistance and information in times of public health catastrophes, like the Covid-19 outbreak. The authors wrap off by outlining potential avenues for future research, include extending the chatbot's capabilities to handle additional healthcare problems and integrating it with telemedicine services.

Implementation of interactive healthcare advisor model using chatbot and visualization: Tae-Ho Hwang, Ju Hui Lee, Se-Min Hyun, Kang Yoon Lee in IEEE 2020: The paper describes the architecture of the interactive healthcare advisor model, which consists of three main components: a chatbot interface, a recommendation engine, and a

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visualization module. The chatbot interface allows users to interact with the system using natural language queries, while the recommendation engine analyses user data and preferences to provide personalized healthcare advice. The visualization module presents the advice and information in a visually appealing and easy-to-understand format.

Chatbot for Disease Prediction and Treatment Recommendation using Machine Learning: Rohit Binu Mathew, Sandra Varghese, Sera Elsa Joy, Swanthana Susan Alex in Third International Conference on Trends in Electronics and Informatics (ICOEI) 2019: The paper describes the architecture of the chatbot system, which consists of three main components: a symptom checker, a disease prediction module, and a treatment recommendation module. The symptom checker allows users to input their symptoms, which are then used by the disease prediction module to predict potential diseases. The treatment recommendation module provides personalized treatment recommendations based on the predicted diseases and the user's medical history.

III. PROPOSED SYSTEM

In the proposed system, we have deigned a chatbot which helps the user's to enquire regarding their health, find hospitals nearby and provides proper diet plans and tips. Our chatbot model is also able to take voice input and converts in to text format. The chatbot also navigates the users to the hospital websites so that the user does not have the difficulty in finding the official website of the hospital.

The main objectives of the proposed system are as follows:

- Provide instant and efficient customer support by answering for asked questions.
- Assist users in troubleshooting health issues and resolving problems.
- Conversational interfaces for clinical routines.
- Save time and effort for users by handling repetitive processes.

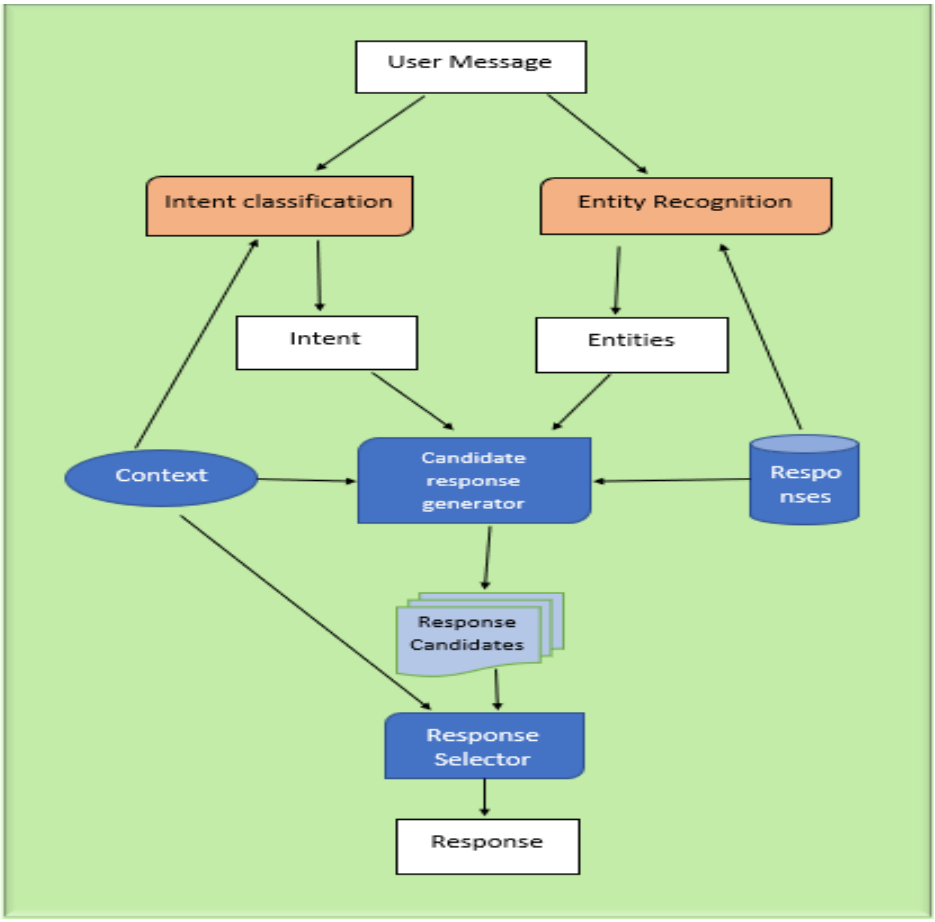

Fig. 1:System Architecture

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IV. METHODOLOGY

1. Data Collection: Gather relevant medical data, including symptoms, diagnoses, treatments, and outcomes. This data may come from medical literature, clinical guidelines, electronic health records, or other sources.
2. Data Pre-processing: Clean and pre-process the data to remove noise, handle missing values, and standardize formats. This step is crucial for ensuring the quality of input to the machine learning models.
3. Feature Engineering: Extract meaningful features from the data that can be used to train the chatbot model. These features might include patient demographics, medical history, symptom descriptions, and more.
4. Model Selection: Choose appropriate machine learning algorithms or deep learning architectures for the task. Consideration should be given to models capable of handling voice input, such as convolutional neural networks (CNNs) or recurrent neural networks (RNNs).
5. Training: Train the selected models using the pre-processed data. This step involves optimizing model parameters to minimize prediction errors and maximize accuracy.
6. Integration with Speech Recognition: Incorporate a speech recognition system to convert voice input into text. This may involve using pre-trained models or developing custom solutions depending on the requirements.
7. User Interface Design: Design an intuitive and user-friendly interface for the chatbot, allowing users to interact via voice input and receive personalized medical advice.
8. Testing and Evaluation: Evaluate the performance of the chatbot using test data or through user testing. Measure metrics such as accuracy, response time, user satisfaction, and adherence to medical guidelines.
9. Iterative Improvement: Gather feedback from users and continuously improve the chatbot based on their input and evolving medical knowledge.

By following these steps, developers can create a personalized medical chatbot with voice input that offers accurate and relevant healthcare advice to user.

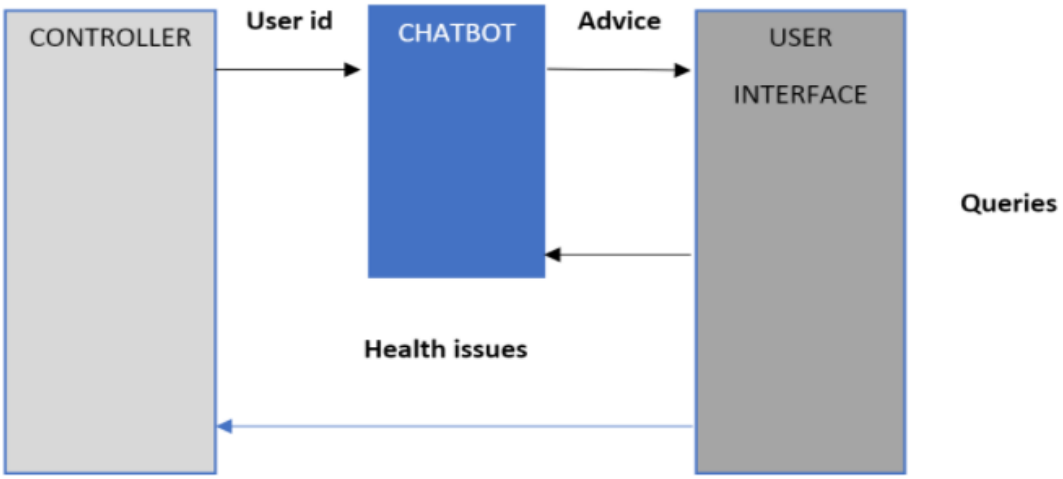

Fig.2: Processing Steps for Chatbot

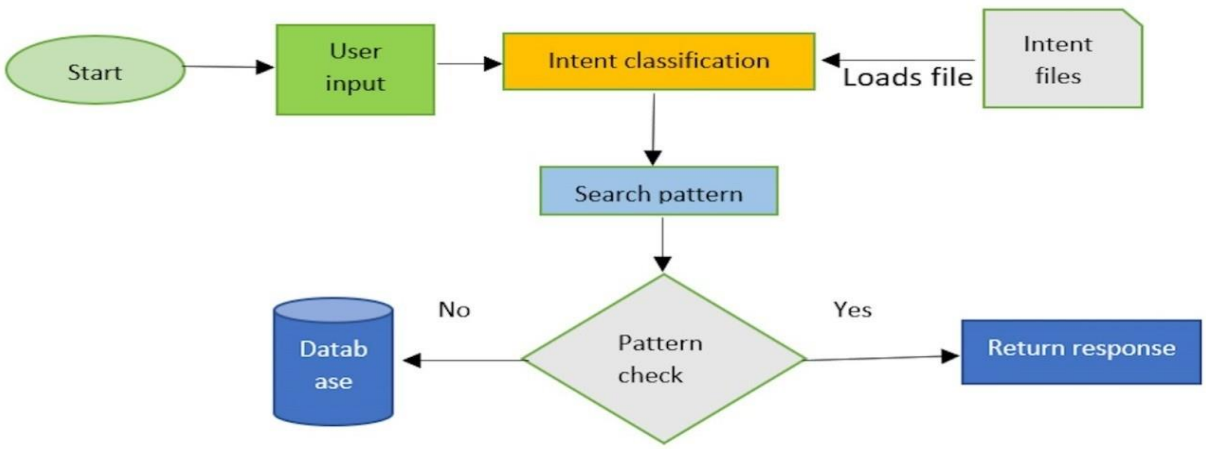

Fig 3: Design Flow Diagram

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V. EXPERIMENTAL RESULTS

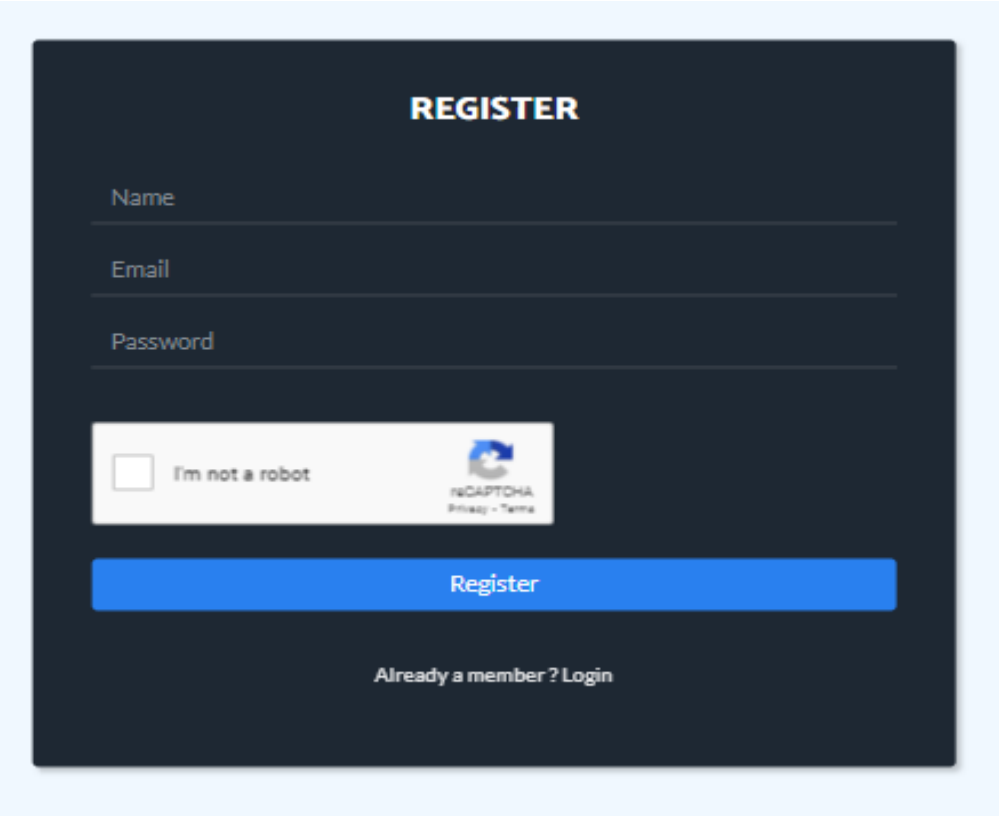

Fig 4: Registration Window

The snapshot given above is the registration window to our chatbot. The user can register once b giving the credentials such as name, email id and password.

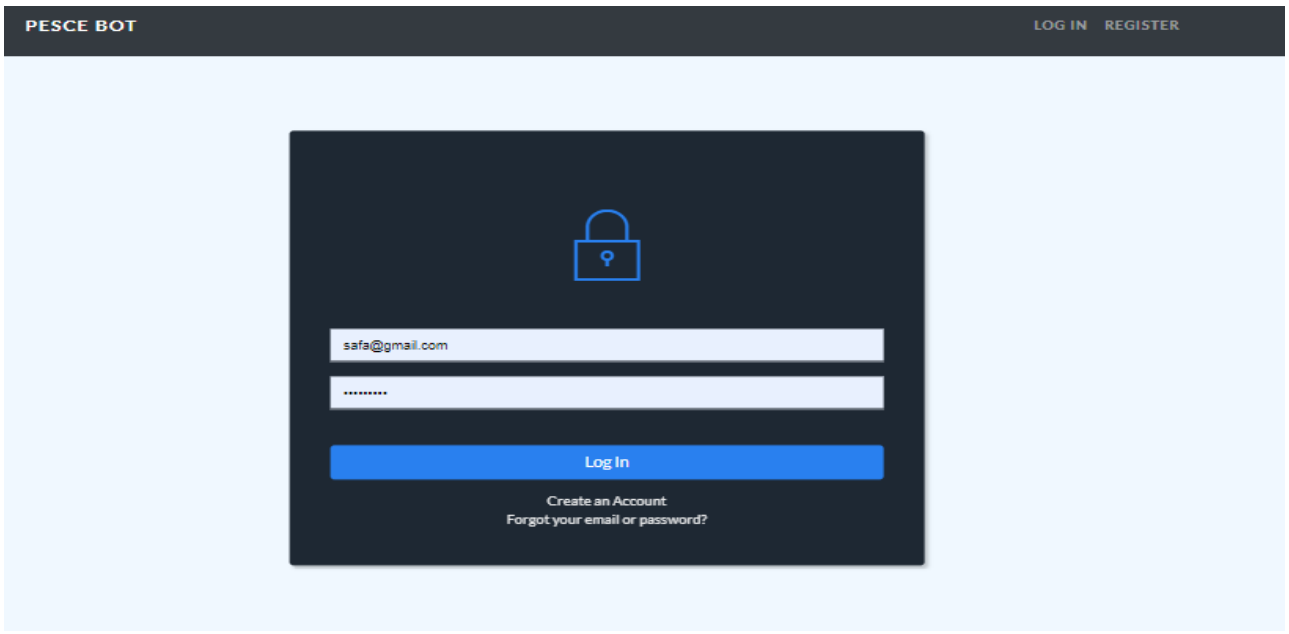

Fig 5: Login Page

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The above snapshot is the login page of our chatbot. The user can login by giving the correct credentials entered by the user during registration to the chatbot.

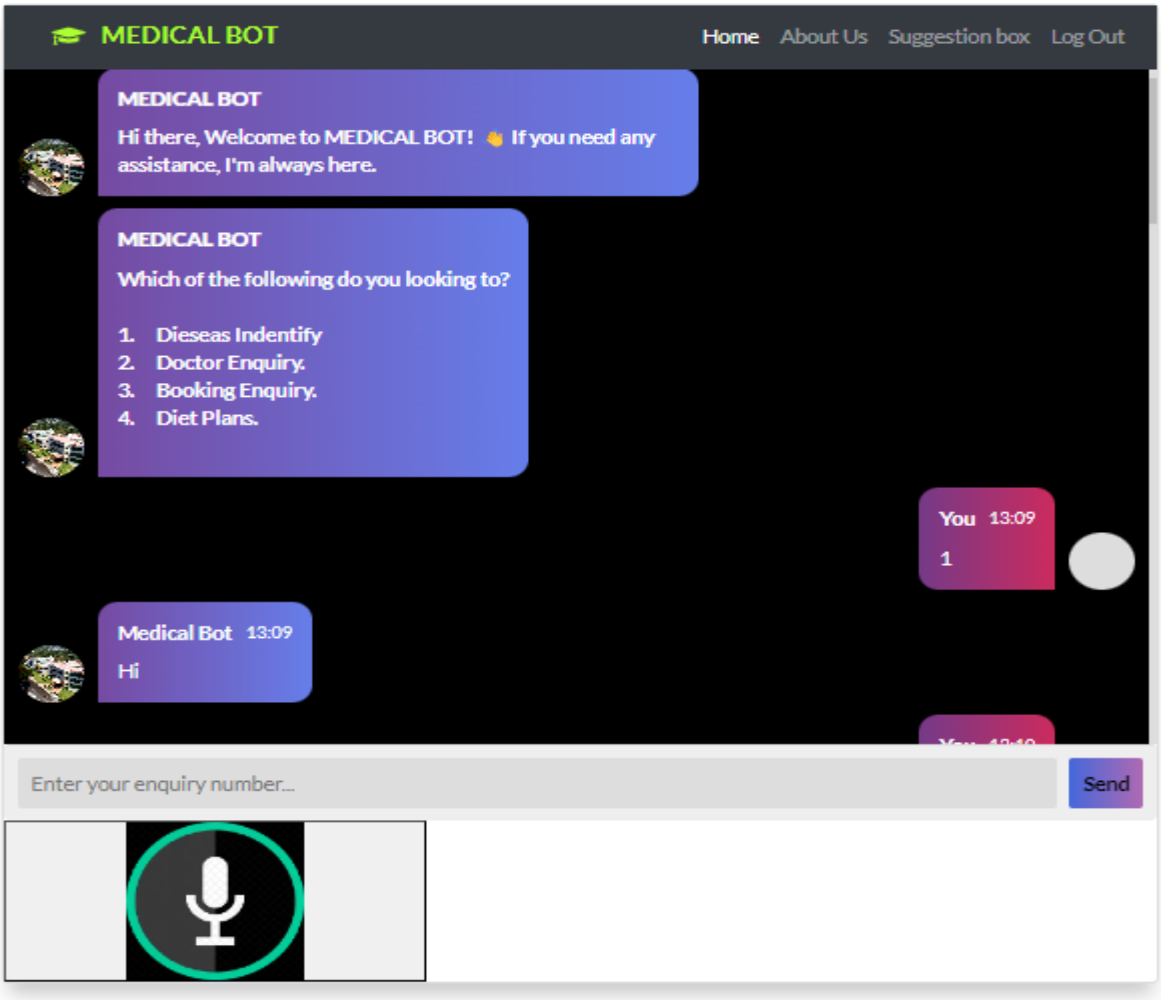

Fig 6: Main Page

The above snapshot is the main page of our chatbot. Here, the user can enquire regarding his/her enquiries and also use the voice input to enquire regarding any queries. The user can give symptoms to the chatbot and it will classify the disease, also the user can enquire regarding doctors, booking or diet plans.

VI. CONCLUSION

In today's world, where people are busy with their own worldly things. It is also important for them to take care of their health. Hence, the development of technology can contribute the most in solving this problem which is the major intent of this project. The use of AI to create a customized healthcare chatbot is a ground-breaking development in medical technology. The chatbot can facilitate realistic, conversational interactions between users by incorporating natural language processing (NLP) algorithms. Meanwhile, machine learning algorithms allow for personalized responses that are tailored to the user's health history, preferences, and current state of health. By providing customized health suggestions, medication reminders, and preventive care advice, this degree of personalization enables the chatbot to greatly enhance user health results. Furthermore, by evaluating user-provided health data, the chatbot may remotely monitor and manage health issues, allowing medical professionals to improve patient care and make prompt interventions. All things considered, the deployment of this chatbot holds the potential to completely transform the way healthcare is delivered by offering people all over the world easily accessible, effective, and customized healthcare services.

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