Chatbot for Healthcare System using Artificial Intelligence

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Brajesh Kumar[4], Prof. K. V. Wankhede[5]
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Abstract*: To lead a good life healthcare is very much important. But it is very difficult to obtain the consultation with the doctor in case of any health issues. The proposed idea is to create a medical chatbot using Artificial Intelligence that can diagnose the disease and provide basic details about the disease before consulting a doctor. The healthcare industry is continually seeking innovation solution to improve patient outcomes, reduce costs, and enhance overall efficiency. Artificial intelligence has emerged as a transformative technology with the potential to revolutionize the healthcare industry. Medical chatbots are AI-powered conversational solutions that help patients, insurance companies, and healthcare providers easily connect with each other. These bots can also play a critical role in making relevant healthcare information accessible to the right stakeholders, at the right time.*

These chatbots leverage Natural Language Processing (NLP) techniques to understand and respond to user queries, helping with tasks such as symptom assessment, appointment scheduling, medication reminders, and general health information.

The user can achieve the real benefit of a chatbot only when it can diagnose all kind of disease and provide necessary information. A text-to-text diagnosis bot engages patients in conversation about their medical issues and provides a personalized diagnosis based on their symptoms.

The Healthcare AI Chatbot can perform various tasks, including symptom checking, medication reminders, appointment scheduling, and general health information. The chatbot can also provide users with virtual consultations, which can be useful in situations where the user is unable to visit a healthcare professional in person

Keywords: Artificial Intelligence, Naïve Bayes Classifier, Cosine Similarity model, NLP

I. INTRODUCTION

1.1 Overview

The proposed idea is to create a medical chatbot using Artificial Intelligence that can diagnose the disease and provide basic details about the disease before consulting a doctor. To reduce the healthcare costs and improve accessibility to medical knowledge the medical chatbot is build.

This healthcare chatbot system will help hospitals to provide healthcare support online 24 x 7 it answers deep as well as general questions. It also helps to generate leads and automatically delivers the information of leads to sales. By asking the questions in series it helps patients by guiding what exactly he/she is looking for.

1.2 Objective

- To lead a good life healthcare.
- To create a healthcare chat bot with QA.
- To help patients by guiding what exactly he/she is looking for .

1.3 Motivation

A developing number of hospitals, nursing homes, and even private centers, presently utilize online Chat bots with QA for human services on their sites. These bots connect with potential patients visiting the site, helping them discover specialists, and getting them access to the correct treatment.

II. NAÏVE BAYES CLASSIFIER

The Naive Bayes classifier is widely used in machine learning for text classification, spam filtering, sentiment analysis, and other applications where the data can be represented as a set of features or attributes. The Naive Bayes classifier is widely used in machine learning for text classification, spam filtering, sentiment analysis, and other applications where the data can be represented as a set of features or attributes.A Naive Bayes classifier is a probabilistic machine learning model that's used for classification task. The crux of the classifier is based on the Bayes theorem. Using Bayes theorem, we can find the probability of A happening, given that B has occurred. Here, B is the evidence and A is the hypothesis. The assumption made here is that the predictors/features are independent.

Naive Bayes classifiers can be used in healthcare AI chatbots to perform various tasks such as sentiment analysis, email filtering, and disease prediction.In the context of healthcare AI chatbots, Naive Bayes classifiers can be employed for tasks like symptom analysis, disease prediction.

$$P(A|B) = \frac{P(B|A)\ P(A)}{P(B)}$$

III. COSINE SIMILARITY MODEL

Cosine similarity is a measure used to determine the similarity between two vectors in a high-dimensional space. It is commonly used in information retrieval, text mining, and recommendation systems. The cosine similarity model calculates the cosine of the angle between two vectors, which represents the similarity between the vectors.

Cosine similarity is often used to compare the similarity between two documents represented as vectors of their Frequencies:

- If the angle is small (they share many words in common), the cosine is large.
- If the angle is large (and they have few words in common), the cosine is small.

$$\text{Cosine}(X, Y) = \frac{X.\ Y}{||X||.||Y||}$$

Cosine similarity can be utilized in a healthcare AI chatbot to measure the similarity between different medical documents, patient records, or user queries. By employing cosine similarity, the chatbot can perform tasks such as information retrieval, finding relevant medical articles, or matching user queries with existing knowledge bases.

IV. NLP

Natural Language Processing (NLP) is a subfield of artificial intelligence and computational linguistics that focuses on the interaction between computers and human language. It involves the development of algorithms and techniques to enable computers to understand, interpret, and generate human language.

Natural Language Processing (NLP) plays a significant role in healthcare AI chatbots by enabling them to understand and respond to user queries, provide relevant information, and assist in various healthcare-related tasks.

By leveraging NLP capabilities, healthcare AI chatbots can provide personalized, timely, and accurate information, improve access to healthcare resources, support self-care management, and enhance overall patient experience and engagement.NLP techniques are also used for sentimental analy positive, negative, or neutral sentiment.
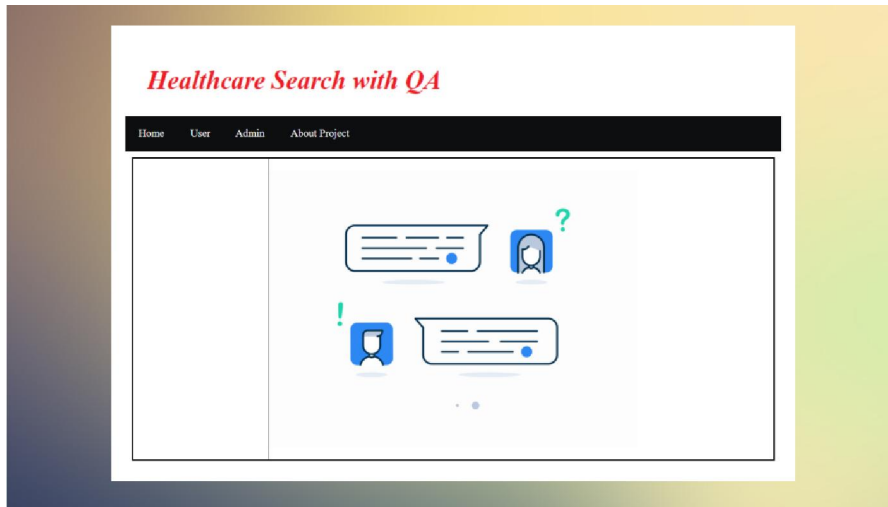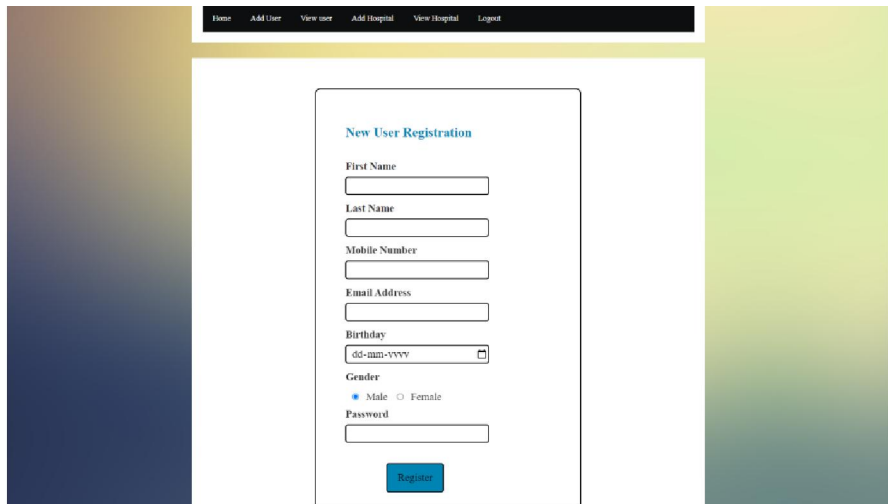
V. OUTPUTS

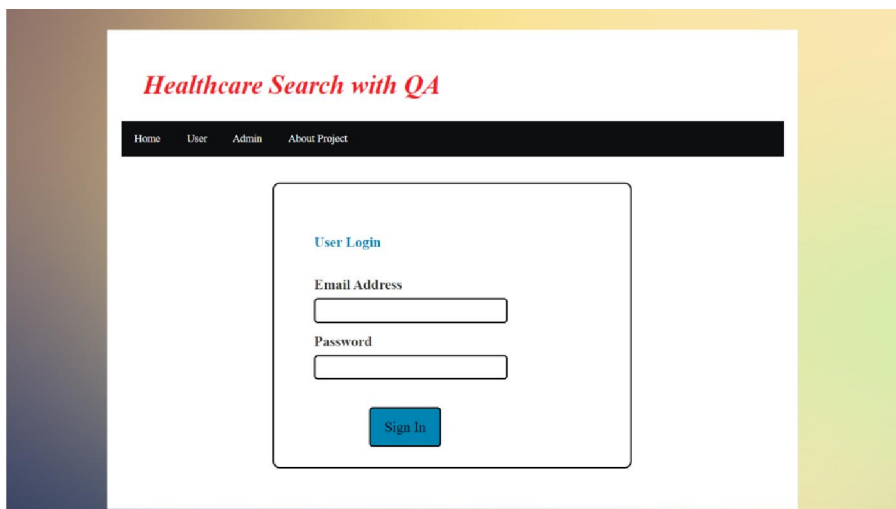
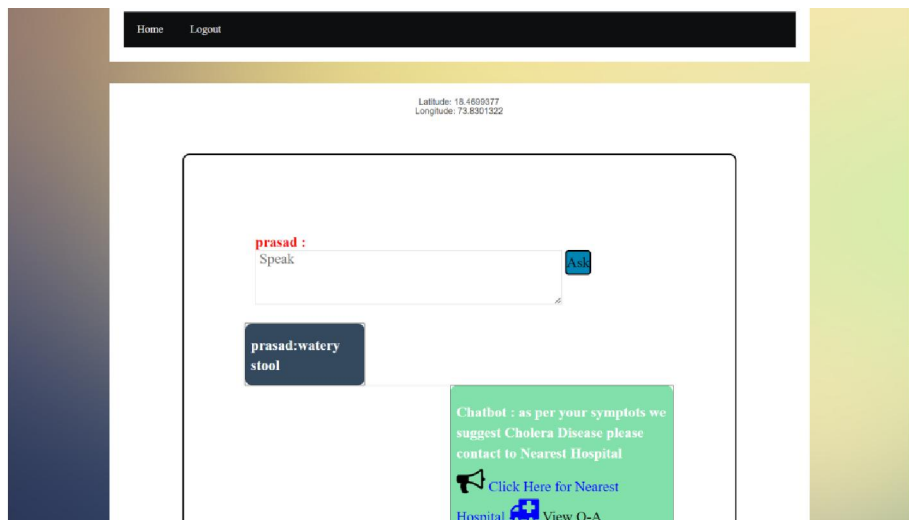Fig 1. GUI Main Page

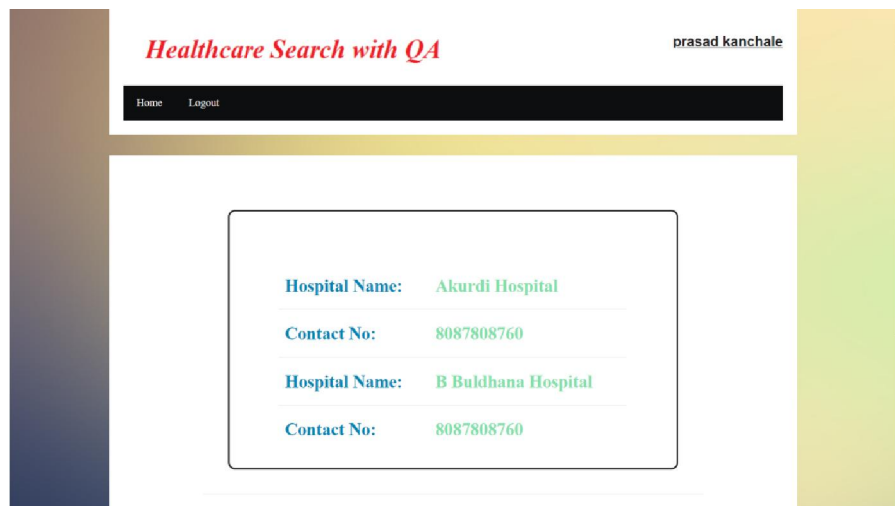Fig 2. Registration Page

Fig3. Login Page

Fig 4. Test Output 1

Fig 5. Test Output 2

VI. CONCLUSION

It is concluded that, the usage of Healthcare search is user friendly and can be used by any person who knows how to type in their own language in desktop version. A healthcare chat bot with QA provides personalized diagnoses based on symptoms and also provides hospitals details and QA related to that hospital.

It removes the burden from the answer provider by directly delivering the answer to the user using an expert system. The project is developed for the user to save the user their time in consulting the doctors or experts for the healthcare solution. Serve as 24/7 companions, monitor health status in real-time, and automatically call for assistance in case of an emergency.

VII. ACKNOWLEDGMENT

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