Healthcare Search with QA

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Abstract— To lead a decent life, healthcare is extremely important. But it's very difficult to get the consultation with the doctor just in case of any health issues. The proposed idea is to make a medical chatbot using AI which will diagnose the disease and gives basic details about the disease before consulting a doctor. To reduce the healthcare costs and improve accessibility to medical knowledge the medical chatbot is developed. Certain chatbots acts as a medical reference books, which helps the patient know more about their disease and helps for the improvement of their health. Users are able to acquire the benefits of a chatbot, only when it can diagnose all quite diseases and gives necessary information. A text-to-text diagnosis bot engages patients in conversation about their medical issues and provides a customized diagnosis as per their symptoms. Hence, people will have an information about their health and have the proper treatment.

Keywords: Chatbot, Artificial Intelligence

I. INTRODUCTION

Through chat bots one can communicate with text or voice interface and get feedback through AI. Typically, chatbot will communicate with a person. In applications such as ecommerce customer service, call centers and Internet gaming, chatbts are used. Chat bots are programmed to automatically engage with received messages. Chat bots can be often programmed to reply in an equivalent way anytime, to give feedback differently to messages containing certain keywords and even to use machine learning to adapt their responses to fit the situation. A developing number of hospitals, nursing homes, and even private centers, presently utilize online Chat bots for human services. These bots connect with potential patients visiting the site, helping them discover specialists, booking their appointments, and getting them access to the proper treatment. In any case, the utilization of artificial intelligence in an industry where individuals' lives could be in question still starts misgivings in individuals. It brings up issues about whether the task mentioned above need to be assigned to human staff. This healthcare chat bot 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.

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. RELATED WORK

The literature was studied to address the aims, understanding of the research area, focus on the research questions, planning of the data collection approach, clarification of the meaning of the terms and proper identification of the framework.

Simon Hoermann [3] discuss the current evidence for the feasibility and effectiveness of online one-on-one mental health interventions that use text-based synchronous chat. Synchronous written conversations (or "chats") are becoming increasingly popular as Web-based mental health interventions. This review is based on an evaluation of individual synchronous Web-based chat technologies. Through the current evidence of the application of this technology, the tentative support for mode of intervention is seen. Interventions utilizing text-based synchronous communication showed better outcomes compared with Waitlist conditions and overall equivalent outcomes compared with Treatment as usual, and were at least as good as the comparison interventions. However, the issue of whether these technologies are cost effective in clinical practice remains a consideration for future research studies.

Saurav Kumar Mishra [4] says that the chatbot will act as a virtual doctor and makes possible for the patient to interact with virtual doctor. Natural language processing and pattern matching algorithm for the development of this chatbot. It is developed using the python Language. Based on the survey given it is found that the no of correct answer given by the chatbot is 80% and incorrect/ambiguous answer given is 20% from this survey of chatbot and analysis of result suggested that this software can be used for teaching and as a virtual doctor for awareness and primary care.

DivyaMadhu [5] proposed an idea in which the AI can predict the diseases based on the symptoms and give the list of available treatments If a person's body is analyzed periodically, it is possible to predict any possible problem even before they start to cause any damage to the body. Some Challenges are research and implementation costs, and government regulations for the successful implementation of personalized medicine, they are not mentioned in the paper.

HameedullahKazi [6], describes the development of a chatbot for medical students, that is based on the open source AIML based Chatterbean. The AIML based chatbot is customized to convert natural language queries into relevant SQL queries. A total of 97 question samples were collected and then those questions were divided into categories depending on the type of question. According to the number of questions in each category the resultant categories were ranked. Questions were based on queries, where 47% are of posed questions. Other categories have less than 7%. The system has not been specially designed

for the task of supporting natural dialog in chatbots or, providing responses to student queries.
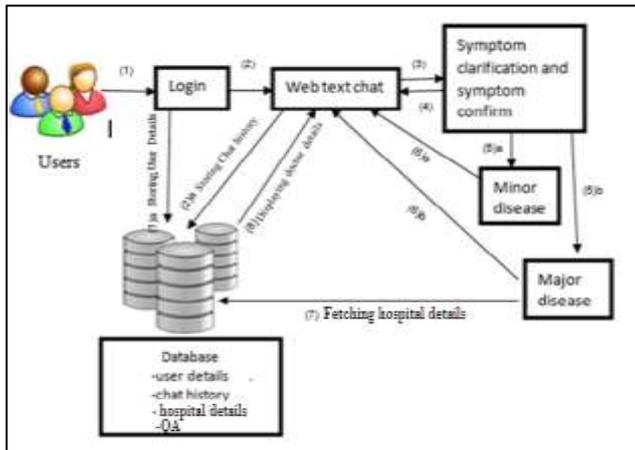
III. PROPOSED SYSTEM

Fig. 1: System Architecture

The above figure proceeds with the user login. After login to the system user must have allow system to fetch his/her location then only he/she can go to the chat bot system. Once redirecting to the chat bot system, user can put his queries to the chat bot and can find solution to his/her problem. The system searches for the user input in the database and finds the accurate results with which disease users symptoms are related by using Naive Bayes and Cosine Similarity algorithm. Once getting the disease related to the specified system, user can search for nearest hospital which gives treatment on that disease.

After clicking on the Hospital details, certain hospital will receive information of user via SMS. User can also see hospitals and QA related to hospitals by clicking on view QA.

system provides online and offline results.

- Online: If user search entry does not match with the entries in the database, then system will redirect to the google interface and provides results for user search entry.
- Offline: If user search entry matches with the entries the database then system will provide the result that matches the user search entry and also provides hospital details along with QA.

IV. ALGORITHM

A. *Naive Bayes Classifier*

Naive Bayes algorithms are mostly used in sentiment analysis, spam filtering, and recommendation systems etc. They are fast and easy to implement.
Bayes theorem:

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

B. *Cosine Similarity Model*

- If the angle is smaller (they share many words in common), the cosine is larger.
- If the angle is larger (and they share few words in common), the cosine is smaller.

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

V. RESULTS

Healthcare Search with QA is a web based application, which is useful for patients to get the healthcare related results in an efficient manner.
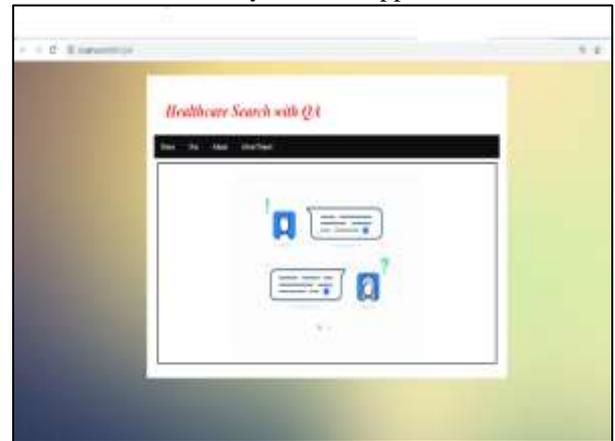Main Dashboard of the system will appear as follow:

Fig. 2: Home Page

User can register to the system by filling details. User Registration will appear as follows:

Fig. 3: User Registration Page

Admin of the system can login by entering email and password:

Fig. 4: Admin Login Page

After successful login, Admin Dashboard will appear:

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Fig. 5: Admin Home Page

Admin can also add the users and hospital to the system using following form:

Fig. 6: Admin Add User Page

Fig. 7: Admin Add Hospital Page

Admin can view all the registered users and hospitals.

Fig. 8: Admin View User Page

Fig. 9: Admin View Hospital Page

User login page image is as follows:

Fig. 10: User Login Page

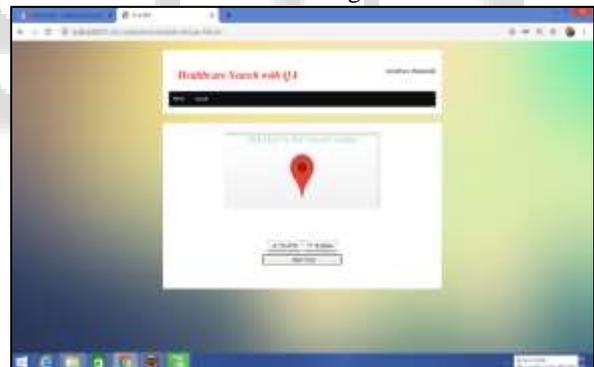User Dashboard after successful login will be as follow:

Fig. 11: User Home Page

User can search his/her queries through this page:

Fig. 12: User Search Page

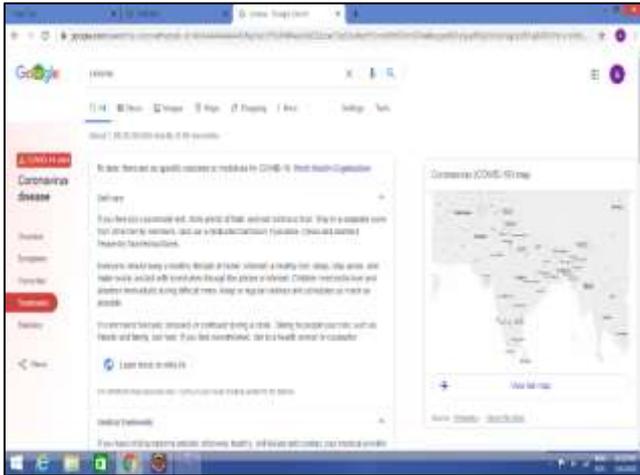Online and offline result of the user search entry:

Fig. 13: User Online Result Page

Fig. 14: User Offline Result Page

User can view hospitals and QA's according the search:

Fig. 15: User View Hospital and QA Page

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 hospitals.

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