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Medical Diagnosis Chat bot Powered by Artificial Intelligence

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Abstract

If you want to live a long, healthy life, healthcare is essential. Getting an appointment with a doctor when you need one might be difficult. One possible answer is to employ AI to develop a healthcare chatbot that can do basic diagnostics and deliver basic information about the patient's status without requiring human participation. The medical Chabot was created with the hopes of lowering the exorbitant cost of healthcare and expanding people's access to medical information. Some chatbots act as virtual medical encyclopedias, dispensing advice to patients on how to improve their health. Using a Chabot also has the added advantage of revealing any unnoticed medical conditions the user may be suffering. Depending on the patient's symptoms, a text-to-text diagnostic boot might have a conversation with the patient about their health issues and provide a diagnosis. Because of this, people will start to care about their health and start taking preventative measures.

Introduction

When all members of a community have good health, that society as a whole thrives. If you want to be happy in life, taking care of your health is crucial. People's productivity and well-being both improve when their bodies are in good shape. People now pay less attention to their health than in the past. Due to their hectic schedule, people seldom think about their health and rarely take the necessary precautions to ensure it. The most recent TOI headlines reveal that few care about their health and few go for recommended medical checkups because of the time commitment involved. There's no time for fitness in your hectic schedule. The working class as a whole often complains that they are too busy to have regular checkups and often ignores minor symptoms of illness until they become critical. The influence of Medical Chabot on the health care system in the state is substantial. It's more dependable and less prone to mistakes than before. People in the modern day are less likely to worry about their health and more likely to be hooked to the internet. They tend to put off going to the hospital for minor ailments that might develop into serious conditions down the line. The recommended solution is an excellent one. The purpose of this proposal is to develop a Chabot that is both cost-free and accessible at all hours of the day. The Chabot's accessibility and low barrier to entry—whether at home or in the office—encourage its adoption. The cost of seeing a specialist may be avoided.

Related Work:

A conversational agent that interacts with users using natural language is called a Chabot. Many chat bots have been developed using text communication starting from ELIZA that simulates a psychotherapist to PARRY which simulates a paranoid patient [1-2]. ELIZA is well known artificial therapist. The boot attempts to rephrase the questions of the client and responds on certain keywords. If no keyword is found ELIZA replies with fixed phrases to keeps the conversation going [2]. Medicine is a field in which help is critically needed.

Robots and other forms of artificial intelligence are used in some sorts of medical applications [4]. Chabot Erica is developed in Netherlands for a dental practice. This online assistant is used to answer frequently asked questions of patients and visitors on the website [5]. Chabot goes about as an individual medicinal services colleague and comprises of a robotized symbol with an installed Chabot and different innovations to give the mentioned data required by the client [6].Phone Consultation which uses phone that offers time-productivity and cost-sparing advantages as well as the open-finished accessibility and the danger of fuelling request[7]. Online doctor Consultation overcomes geographic obstacles as well as gives the professional understanding for the patient with their concern, with no need to hold back for any medical expert, journey or even losing business days [8]. There are some ways to achieve weight loss success: increasing exercise, reducing food intake, self-monitoring of diet, exercise as well as weight, self-regulation[9].Dietary change and exercise are the most commonly used weight loss strategies and prior study indicates that weight loss program combining diet and physical activity are more effective[10]. Self-monitoring of diets and exercise are the components of the standard behavioral treatment protocol for weight loss [1]. Short message service (SMS) and voice call to help people with cardiovascular disease (CVD) to improve lifestyle and behaviour or make positive lifestyle and behaviour changes [5]. In recent years, due to the rapid evolution of information and communication technologies (ICT), the use of devices as a tool for weight loss management has shifted from mobile text messaging [6], websites [7], to mobile apps [8]. It surveys the present proof for the attainability and adequacy of online one-on-one psychological well-being mediations that utilization content based synchronous talk. Synchronous composed discussions are getting progressively mainstream as Web-based emotional wellness intercessions [9]. The chatbot will go about as a virtual specialist and makes workable for the patient to interface with virtual specialist. Natural language processing and pattern matching algorithm for the development of this Chabot [2]. In this paper, AI can predict the diseases based on the symptoms. If a person's body is analyzed, it is possible to predict any possible problem even before they start to cause any damage to the body It has some problems for example, research and usage expenses, and government guidelines are additionally difficulties which are basic to the effective execution of customized medication, yet not tended to by the calculations talked about in [1]. Bot can get the common health related question and prediction of disease without a human interference. This system helps users to submit their queries regarding the health. Customer satisfactions the major concern for developing this system [2]. This system provides a text-to-text conversational agent that asks the user about their health issue. The user can chat as if texting with human. The bot then asks the user a series of questions about their symptoms to diagnose the disease. It gives suggestions about the different symptoms to clarify the disease. Based on the reply from the user the accurate disease is found and it suggests the doctor who needs to be consulted in case of major disease [3]. The conversational service can provide personalized counseling service to

individual head-to-head. It is important to resolve the isolation of the patients who have a mental dies-order such as depression and lethargy One-to-one conversation can resolve the isolation effectively. Personal dialogues can also operate efficiently when a user needs urgent interventions [2].

PROPOSED SYSTEM

In the proposed system the user dialogue is a linear design that proceeds from symptom extraction, to symptom mapping, where it identifies the corresponding symptom, then diagnosis the patient whether it's a major or minor disease and if it's a major one an appropriate doctor will be referred to the patient, the doctor details will be extracted from the database, the user will be identified by the login details which is stored in the database.

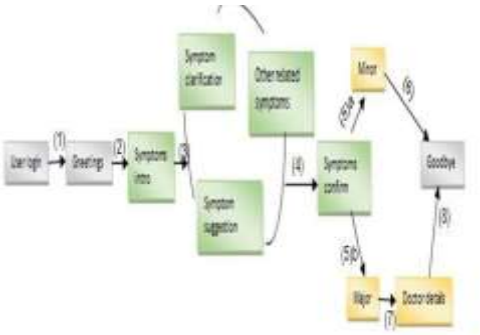


Fig1: Finite state graph

In fig1, Chabot's dialogue design is represented using finite state graphing order to achieve an accurate diagnosis, the logic for state transitions are made, natural language generation templates were used, and system initiative to the user and get responses from the user. Our agent has three main conversational phases: collection of basic information, symptoms extraction, and diagnosis. Our bot starts off by asking about the user's email and password for login and then enters a loop of symptom extraction states until it gets sufficient information for a diagnosis. Users have the option of entering the loop again to talk to the doctor about another set of symptoms after receiving their first diagnosis and another option is that the user can view their history of chats about what they have discussed.

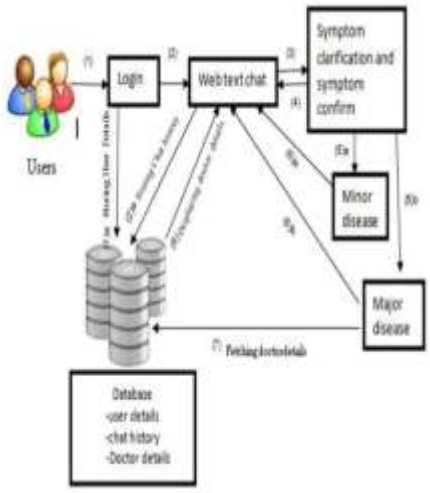


Fig2: Functional Architecture

The above Figure proceeds with the user's login where the users‟ details will bestrode in the database. The user can then start the conversation with the Chabot and it will be stored in the database for future reference. Thechatbot will clarify the user queries with series of questions and the conformation will be done. The disease will be categorized as minor and major disease. Chabot will reply whether it's a major or minor disease. If it's a major one user will be suggested with the doctor details for further treatment.

USER VALIDATION AND EXTRACTION OF SYMPTOMS

The validation of the user login details occurs here. Then Symptoms are extracted using String Searching Algorithm where substring representing the symptoms is identified in the natural language text input. When users give directly the symptom name such as the system will identify it. But however, the system should also be able to handle input like, "When I read, I'm okay at first, but over time, my eyes seem to get tired, and I start to see double." In this case, the system should extract words like "eyes tired" and "see double" (and not substrings like "read" or "okay").

MAPPING EXTRACTED SYMPTOMS WITH TRAINED DATASETS

Given some substring from the user's input, we generate a list of suggested closest symptoms. We then ask the user to confirm if they have any of the symptoms from the suggested ones. Based on their reply few diseases are being shortlisted. Then further symptom clarification and symptom suggestions are being done basking the users a series of questions and the mapping of the symptoms to the exact disease is done.

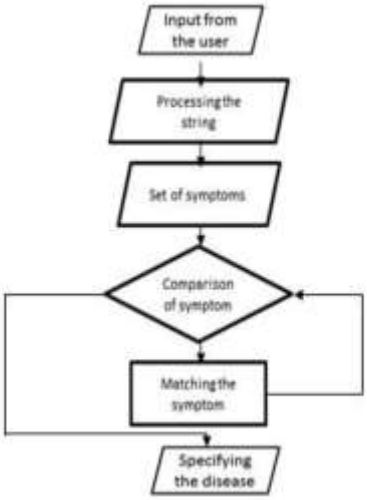


Fig 3: Specifying the disease

SPECIFYING THE DISEASE AND REFERRING A DOCTOR

This process carries the list of diseases in the database and each symptom being entered is compared to the symptoms of the common diseases. The next symptom is checked until a matching symptom is found. They are shortlisted based on the end users input on the question evaluation. The accurate disease is identified and specified to the end-user by the Chabot. The Chabot checks whether the identified disease is a major issue or minor issue based on the conditions built in thechatbot. If it is a major issue the Chabot refers a specialist to the end user by sending the doctor details. And if it is a minor issue the chatbotspecifies the disease and alerts the end user with first aid or remedy and asks to visit a doctor shortly.

A. Natural Language Processing Natural language processing (NLP) is a field of artificial intelligence that helps in designing a program to process and analysenaturallanguage data. It permits to set up communications among PCs and people in a characteristic language. The proposed framework is a talk interface that depends on Retrieval based model of NLP where the bot is prepared with a lot of inquiries with a set such a wise Chabot can manage the patients by comprehension and surveying their side effects that they are features of the Proposed System. Proposed system is a Web Application that has a Chabot in it.

I) build a simple and interactive real time chat system.

ii) Dedicated system which is able to solve all the queries regarding medicine.

iii) Effective Symptom based disease prediction.

iv) Suggest doctors based on the disease

v) Book a doctor’s appointment for the respective disease

vi) Propose specialist’s dependent on the manifestations

vii) Book a physical check-up

viii) Gives updates about the arrangement

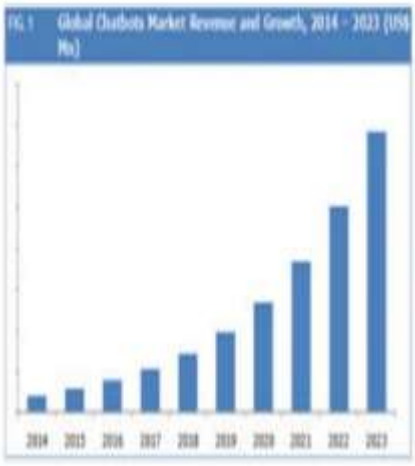
ix) An installment entryway (sham) will be there to gather the installment and pay it to the doctor.

RESULTS AND DISCUSSIONS

This area furnishes with the aftereffects of the thorough experimentation of the created system. The proposed framework is a proficient, modest, simple and a speedy method to assist patients with having a coordinated discussion with the Chabot that encourages and helps them to deal with their wellbeing adequately.

A. Improvement of AI and Chat bots in the field of Medicine

Man-made consciousness is a blasting innovation in the present time; numerous human services associations are creating Chabot applications to support patients and clinicians. The stage utilizes preparing calculation to prepare the Chabot framework dependent on clinical conventions that can assist with interpreting persistent symptoms and give a proper finding. The accompanying diagram shows the ascent of chat bots from 2014 - 2023:



The improvement and utilization of AI based chat bots is relied upon to ascend in the coming a long time as should be obvious in the above chart got from explore made on development of Chabot advertise income for the years 2014 – 2023.

B. The Proposed framework Design

The Proposed Web application permits clients to join and login to their profiles. The application is incorporated with the Chabot interface where the clients can represent their inquiries and get the arrangements from the bot.

Screen capture of the proposed framework is demonstrated as follows:

The clients can book a regular check-up; get an everyday wellbeing tip update as a spring up notice, and Appointment updates on the home screen. The application likewise gives an installment passage to the patients to make their underlying payment. (Optional) Patients or Customers may no longer need to visit the clinic or the clinical organization to get the data he/she is searching for. The framework can be gotten to from anyplace and at whenever advantageously. The Chabot is accessible 24/7.Thus improving the general client experience.

CONCLUSION AND FUTURE SCOPE

Based on a review of relevant publications, we may infer that Chat bots are intuitive to use and can be put to good use by anybody able to text in their native language, whether it in a mobile app or desktop version. A clinical Chabot offers individual evaluations based on adverse effects. Support for more comprehensive clinical features, such as region, span, and force of indications, and more precise side effect representation, might later greatly enhance the

boot's performance in symptom recognition and determination. Calculations used by artificial intelligence are as essential to the success of a personalized medical treatment as the information used in its production. In conclusion, widespread adoption of personalized medicine would save many lives and raise public awareness of the importance of clinical care. People are going to put more effort into informing apps than other types of applications, hence the future belongs to informing applications. So, the potential for clinical chat bots is massive and extensive. This therapeutic conversation may take place between people located anywhere in the world. They require just access to a computer or mobile device with internet service. For the clinical Chabot to be able to handle any illness, additional word combinations should be added, and the database used should be enlarged. In fact, voice chat may be included into the framework to make it even more user-friendly.

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