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The Smart Health Care Prediction using Chatbot

K Jayashree, Monika K A, Preetha R, Piraisoodan S P

Abstract*: Our healthcare is very much important to lead a peaceful and honest life. If any health issue occurs, we need to go to the hospital and consult the doctor for the very minor problems. our healthcare chatbot is developed to help the people to predict their health issue early at home before they visit the doctor or hospital for the mi nor problems. For the minor issues we are spending lots of costs. The healthcare chatbot is design to reduce such costs and also its improves the efficiency of the medical healthcare. There were many chatbots available they act as a reference for the patient to know more about their health issue. The healthcare chatbot is something different from the other chatbots which predicts the diseases by using symptoms and gives the doctor details to consult the doctor. The healthcare chatbot is developed by using AI in the text to text conversation mode. The user who knows only to write and read can use this chatbot for their minor issue. In this healthcare chatbot, the system predicts the diseases based on the symptom given by the user using the pattern concept in AIML algorithm. The system also predicts the prescription and also give the doctor details to the user based on the diseases predicted for their symptom given. By using this healthcare chat bot people will know the minor diseases at early stage with no costs. Whenever the patient or user gets the time they will consult doctor for their health issue. This will make people to know more about their health issue anywhere at any time.

Keywords: AIML, Disease, Pattern, Symptoms, Chatbot.

I. INTRODUCTION

The people are nowadays affected by many diseases The human beings are nowadays tormented by many diseases. They aren't capable of predict their illnesses at their early stage [2]. If a person is aware of the reasons for their illnesses, it enables them to triumph over their sicknesses. Suppose if a person identifies their diseases they don't have any idea approximately remedies and additionally the medical doctors who will treatment their sicknesses. To conquer all this difficulties, the smart health care machine is developed [5]. There are few Medical Chatbots that already exist, but they do now not provide customers with medicinal
drug to any illness however connect them with a Medical QA Forum and display them similar questions to their symptoms that docs may additionally have formerly answered. Our main aim is to develop the healthcare chatbot which should be efficient from the other present medical based chat bots [8]. The proposed device offers a text-text conversation that asks the consumer about their health difficulty and it's going to expect the diseases. The person can chat as though talking to an individual's. The healthcare chatbot predicts the diseases from the symptom given by the user or patient. Chatbot suggest guidelines approximately various signs and symptoms to clear out the ailment [1]. Supported the response message from the patient the predicted disorder has discovered. It shows the details of the doctor who should be the patient wishes to visit just in case of any major disorder.

II. LITERATURE SURVEY

On a basis of Chatbot based totally Smart Pervasive Healthcare Medical Emergency Cases. Nour et al., [10] proposed a basic knowledge of the thanks to address such situations should save several human lives. To avoid deterioration of a sufferer's circumstance and preserving the bodily integrity, the essential difficulty at developing a chatbot based clever pervasive healthcare to assist sufferers or incident witnesses properly perform first-aid in the course of a clinical emergency situation till the assist arrives. Therefore, even a personal with no care skills, might want to help a sufferer to survive by means of acting care support as counselled by means of the digital assistant. This assistance makes everyday humans greater assured to become a rescuer. Chatbots meet eHealth: automatizing healthcare via Flor et al., [9] aimed to research the effectiveness of novel human to machine conversation paradigms for eHealth applications. Specifically, it advises to update standard human to machine conversation mechanisms with a method that pull a chatbot program, opportunely programming and teaching for you to do and conversation with sufferers the individual's being. More over, we've verified the current interplay transformation in an exceedingly original scientific context, in a chatbot employed inside a clinical choice aid chatbot has the intention of giving beneficial suggestions taking care of various sickness protecting pathways.

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* Correspondence Author
Jayashree K, Department of Computer Science and Engineering, Rajalakshmi Engineering College, Chennai, India. E-mail: jayashree.k@rajalakshmi.edu.in
Monika K A, Department of Computer Science and Engineering, Rajalakshmi Engineering College, Chennai, India. E-mail: monikaanand267@gmail.com
Preetha R, Department of Computer Science and Engineering, Rajalakshmi Engineering College, Chennai, India. E-mail: preetha.rnsa@gmail.com
Piraisoodan S P, Department of Computer Science and Engineering, Rajalakshmi Engineering College, Chennai, India. E-mail: akashkaviya@yahoo.com

Moreover, the chatbot have been realized to instruct sufferers for selecting their foremost right pathway for preventing the diseases by means of asking for various statistics (from starting of general stage till unique pathways queries) and help the associated check-up protection and consequently the last word treatment. Experiments at the first stage report the proposed method effectiveness approximately. Chatbot for healthcare gadget the utilization of AI with the help of kavi et al., [8] the Chatbots is pc packages which engage the patient using herbal language.

Chatbot shops statistics within the database to become attentive to the key phrases given in sentences based queries and call for the question and gives out solutions for the given question. Within the paper, grading and words matching calculation are happened the utilization of ngram, cosine similarity and TF-IDE. The each and every sentence from the patient is graded and also each sentence from the patient is compared with the other sentence for the similarity in the questions in the database. Suppose if the sentence or queries does not match to the sentence in the database then it will be take care by the third party which is an expert system to manage the unmatched queries.

A Self-Diagnosis Medical Chatbot Using computing by Divya et al., [6] describes to guide a healthcare is extremely important to guide a safe life. But it now become very difficult situation to visit the doctor for the very small problems. The proposed idea of this paper is to diagnosis the diseases by using the AI and suggesting the doctor details for consulting doctor. This paper is mainly designed to improve the efficiency and reduce the healthcare cost to the patients. This paper talks about various other chatbot system which act as a reference for the patients to deal with their health care problems. This is designed in such a way that only user id used this system when it satisfies all the queries of the patient clearly or accurately. This paper uses the text to text conversation to improvers the efficiency of the people to use it wisely. By using this the user will have a correct idea about their diseases and they will lead a protected life. Krish et al., [5] aims to present a design for a medical Chatbot that provides diagnosis and remedies supported the symptoms provided to the system. The system is ready to measure the seriousness of the diagnosis and if needed, it'll connect the user to a doctor available online. A Medical Chatbot by Rash et al. [4] Normally Users don't seem to recollect the information about the particular disease's symptoms or treatment. For the very minor problems the patient is going to the hospital there they are waiting for ling time to consult a doctor and also they spent more time for waiting for checkup. Because of the company problems many people are becoming stress and they are making way for the illness. To solve this issues, the people need a proper and correct healthcare chatbot to solve their problems. This chatbot is functioning based on the tongue processing of the user which is highly useful for the person ns who don't know to read and write also. The patient can make any queries to the system regarding their health issues at any time. This chatbot is suitable for voice to text and vice versa conversation a google API. The questions from the patient are taken by the system and will give the related answer to the patient on the android app. This chatbot is mainly designed to solve the patient's problems easily.

III. PROPOSED SYSTEM

In the proposed system, Doctor Patient Communication without any physical contact and the doctor can give an appointment to the patient (user) is in this proposed system which setup an online communication between a doctor and a patient. This method is useful to patients to ask questions and state their concerns to doctors regarding their health condition. In this system the patients can making a briefing by requesting to the doctor, on using this system patient should register the small print about himself or any member of family can also register by their self for the user from user number. Then patient possesses to login by selecting as patient module. The doctors list is given specialization, among the list given patient can select the particular doctor they want to consult. The patient wants to urge an appointment for a specific doctor, they will get it by this web application

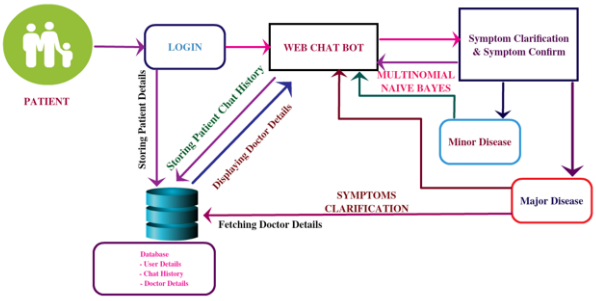

Figure 1 Architecture

The above Figure1 proceeds with the user's login where the users' details will be stored in the database. Then the user can start their conversation with the chatbot and it will be stored in the database for future reference. The chatbot will clarify the user's symptoms with serious of questions and the symptom conformation will be done. The disease will be categorized as minor and major disease. Chatbot 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.

IV. WORKING MODULES

1. AIML Component Design

By Using AIML, our Chatbot can probably detect the patterns from the user messages and would be able to produce the correct and the meaningful responses. By Using AIML pattern detection, our Chatbot can determine if the user or patient already knows or predicted their disease, that they are affecting through they need the solution there for the respective disease. Also our Chatbot can detect if the user is providing the symptom and wishes the Chatbot to hunt out the disease he could even be suffering through.

A.Pattern Detection

Our Chatbot must understand patterns within the user messages to work out the necessity of the user through predefined tags within the AIML component. Our Chatbot can provide solution supported the symptoms provided by the user and also it can provide the answer if the user inputs any disease name.

In AIML Pattern Tag () contains the predefined pattern that the bot should search for within the messages and if it matches, the actual category is executed.
Understanding the concept of Pattern Detection Using Snippets
i) I am not feeling well
ii) I am sick
If we see the above two patterns (i &ii), our healthcare Chatbot will search for the above mentioned pattern utterance from the chats send by the user or patient.
If the chat send by the patient or user are matched with the patterns, the healthcare chatbot will process the next stage of our chatbot.
iii) suggest me remedies for *
iv) what precautions I should deem *
v) suggest me precautions for *

From the above mentioned snippets (iii iv & v), the system will understand that the user or patient is already knows their diseases they only need the precautions and prescriptions for their diseases, the system understood this by the pattern concept. Here star (*) indicates the symptoms that the user or patient is chatting about. The healthcare Chatbot will checks that the chat is initiated by the "suggest me remedies for" and it is then followed by the star. After this the disease name mentioned by star is given to the healthcare Chatbot engine.

B. Category Classification

In AIML we'd like to possess different categories defined to let the Chatbot differentiate one action from the other. In our Chatbot we specialize in two main categories-
◦ User wants to retrieve solution by providing the name of the symptoms -

i) Tell me remedies for *
ii) What medicine should I deem *
iii) Tell me solutions for *
◦ User wants the Chatbot to seek out out the disease then provide the answer -
iv) I am feeling like *I am having the *
v) I am affected by *

C. Connecting to The Engine

We assume that our Chatbot engine is setup on an online server and our Chatbot can interact with it using REST APIs. Our Chatbot would call the remainder API of the server using GET Method. Our server is meant to get response in XML format. AIML provides us with SRAIX () tag that helps our Chatbot to call the GET API URL and also parse the results that it receives.
Understanding Engine Connection Using Snippets
i) I am feeling like *
ii) I am having *
iii) I am affected by *
http://chatbot?
param=
In the above code (i, ii &iii), we use the template tag to display the response message to the user and that we use the sraix tag to pass the worth of Star (*) to the URL parameter.

2.Engine Design

The Chatbot engine is that the most back-end logic of our chat Chatbot that accepts input using the Get method through the web Api. The Chatbot engine interacts with the XML file that contains all the medical remedies written by the medical professionals. The Chatbot engine accepts symptom then interacts with the user to hunt out the illness that the user could even be suffering from. It can also accept a diseases name and suggest the treatment for the same. It maintains sessions to form the info persists between different API calls.

A.Medical Data Storage Design

The data regarding Diseases, Symptoms and Remedies must be stored in an organized manner for creating it easier for the engine to access it. Our Chatbot stores data in XML format. The thought is that the Medical Professionals would write this data and feed this data to our Chatbot and thus the Chatbot engine would interact with this data. We've separate divisions for each disease that's present in us records. The info is correctly organized and is compatible to be parsed by standard XML parsers.

B. Shortlisting Diseases

The user provides the health care Chatbot with symptoms that he or she is experiencing, the AIML component sends the symptom to the Chatbot engine using Web Api. The symptom is shipped within the sort of a String. The Chatbot engine shortlists diseases using user's input string in following ways: -

a. Eliminating end word and Punctuation

The engine searches the predefined end word and Punctuation marks within given sentence. The end word and therefore the Punctuation marks are removed by replacing them with a Null character.

b. Tokenizing Words from the Sentence-Now because the sentence is free from stop-words and punctuation, the sentence is word tokenized and stored in an Array. It's done by using the space tokenization technique.

c. Assigning Scores to the Diseases- After the engine gets an Array of the Keywords present within the Symptoms, then it must assign a Score to all or any or any the Diseases related between Keywords and Tags [9]. The engine iterates a loop for every of the Symptoms and for each Tag that matches with the keyword array, it adds one (+1) to the score of that disease.
Formula to calculate Disease Score.
Disease Score= Number of Tags that matches with the Symptoms Keyword Array

d. Disqualifying Diseases

The engine now features a list of diseases with scores allotted to every one among them. The engine will remove all the diseases from the list with score = 0. This simply means that, the Tags of the predicted diseases that doesn't match with any of the keywords present in that are disqualified.

e. Sorting the list

The engine would now sort the list in descending order supported the scores allotted to every of the diseases.

C.Detecting Disease

The engine may have shortlisted various diseases by considering the initial symptoms provided by the user. Now the engine has got to determine the precise disease that the user must presumably be suffering from so as to suggest remedies to the user. The engine does this by goes through the sorted list of predicted diseases and asking a question to the user from each of the predicted diseases.

V. EXPERIMENT AND RESULT

Our Medical Chatbot will have a good impact on the lifetime of its users. It'd provide them the advantage of carrying a virtual Doctor in their pockets. It'd also give the liberty for them to chat with a doctor at any time. If needed they can get a suggestion from the doctor available. This healthcare chatbot will definitely help the people who are not interested in going hospital for the small minor issues. The healthcare chatbot is definitely useful to the aged people and physically disabled people to knows about their health issues anywhere at anyplace we'd bring Doctors and Medical Professionals to our platform to feed the medical data into our records and also to speak with our users when required. Having plenty of medical data would make our healthcare Chatbot function more efficiently and accurately.

Our Chatbot is in a very design phase without delay. We'd be implementing the entire design into code. We are implementing the Chatbot engine in JAVA and using AIML algorithm.

VI. CONCLUSIONS

The objective of the proposed system is to the use the healthcare Chatbot user friendly. It can be employed only by someone who knows to way to type their known language in their mobile app or computing device version. A health chatbot provides only the predicted disease and diagnoses for the predicted symptoms. In the upcoming generations, the chatbot's symptom recognition can be made more efficient and analysis performance is probably highly stepped forward by means of including some support for more medical features and depth of symptoms, and will give more details about symptom description. The execution of Personalized health professional heavily is based on AI algorithms also due to the fact the schooling data. At last, the implementation of customized medicinal drug would effectively save many lives and make a scientific awareness among the humans. As stated before, the longer term technology is that the generation of messaging app because people getting to spend longer in messaging app than the other apps. Thus medical chatbot has huge utilization and vast destiny scope. No matter how far humans are, they may have this medical communique. The sole requirement they have can be an easy computer or cellphone with internet connection. The efficient of the chatbot are often stepped forward by adding greater combination of words and increasing the usage of database just so of the medical chatbot could manage all type of diseases. Even voice conversation may be delivered inside the system to shape it less tough to use.

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AUTHORS PROFILE

DR K Jayashree is working as a Professor within the Department of computer science and Engineering at Rajalakshmi Engineering College, Chennai. She has completed the doctorate degree. Her areas of interest include Data mining, Machine Learning, Big Data Analytics and Data Structures. She has published various research works in national and international journals.

Monika K A, is now studying her Bachelor degree in engineering(BE) in computer science and Engineering department at Rajalakshmi Engineering College, Anna University. She has done 3 Mini projects on the topics HTML, CSS and JavaScript with database connectivity. She has interested in areas include HTML, CSS, JavaScript, Java, DBMS and IoT. She has placed in TCS Ninja. She has participated in workshop on IoT.

PREETHA R, is now studying her Bachelor degree in engineering (BE) in computer science and Engineering department at Rajalakshmi Engineering College, Anna University. She has done 3 Mini projects on the topics HTML, CSS and JavaScript with database connectivity. She has interested in areas include HTML, CSS, JavaScript, Java, DBMS and IoT. She has placed in Virtusa. She has participated in workshop on IoT.

PIRAI SOODAN S P, is now studying his Bachelor degree in engineering(BE) in computer science and Engineering department at Rajalakshmi Engineering College, Anna University. He has done 3 Mini projects on the topics HTML, CSS and JavaScript with database connectivity. He has interested in areas include HTML, CSS, JavaScript, Java, DBMS and IoT. He has placed in Sutherland.