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HUMICARE-A CHATBOT FOR HEALTHCARE SYSTEM

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Abstract - *Chatbots are conversational software's which are available for the users either as standalone apps or web applications. These conversational agents imitate the human speech into human conversation. The technology that had proposed here uses Natural Language Processing (NLP) that recognizes the voices of the user and interprets what the user is saying using machine learning algorithms. Within the existing systems there are limitations like there's no sudden response given to the patients. The patients must watch for specialist acknowledgement for an extended time. Some may fire charges to perform live chat or telephony communication with doctors through online. To avoid such problems patients can address ask about their queries to chatbots first as they're instant.*

Here the proposed idea of this project is to build a healthcare chatbot that can identify the diseases through the patients queries and supply necessary details before consulting a doctor and also it may suggest the user to take care of their health with specific guidance. Hence, through this advanced technology people will get a thought about their health and have the measures for their right protection. Together with those it also includes about the symptoms, and measures to fight against the present pandemic situations. Mainly the concept behind is to make a chatbot to make sure the privacy for every and each person and thereby it makes lighter for the user to use this by finding the answers for their queries with the assistance of pictorial representations with none human interactions.

Keywords- Chatbot, Natural Language Processing, Prediction, Medicine, Technology

1.INTRODUCTION

The Chatbot is a service or tool that you can communicate with text message and voice as well. These conversational software's are available either via stand-alone applications or web applications. Chatbots within the medical field are providing patient assistance and care. The focus of the system is to build the language gap between the user and health providers by giving immediate replies to the user Queries. Nowadays, people are more likely addicted to internet, they are not concern about their personal health. They avoid going to the hospital for minor problems that may become major diseases in the future. There are some limitation with the existing systems such as there is no instant response given to the patients. The patients have to wait for specialist acknowledgement for a long time. Some may charge amount to perform live chat or telephony communication with doctors online.

Think of chatbots as human-to-robot instant electronic messaging. Using Artificial Intelligence and thoroughly written computer scripts,chatbots will acknowledge natural language to have rudimentary conversations with your customers. The healthcare chatbots functioning depends on natural language processing that helps users to submit their issues regarding their health. This method aims to duplicate one's discussion. The development of the chatbot application are often done by creating a computer program to send input and receive a response. This technique interacts with the user by keeping the track of the state of interaction and recollecting the preceding commands to grant practicality.

The healthcare chat-bots can be developed by using artificial algorithms that analyses and identifies user's queries and give reply to related query. A major disease can start from small problems such as headache which feels normal but it may be the beginning of a big disease. Most of the disease can be identified by common symptoms. If the patient body is analyzed periodically the disease can be predicted. Normally, people are not aware about all the treatment or symptoms regarding the particular disease. For small health problems people have to go personally to the hospital for check-up which is more time consuming. Also handling the telephonic calls for the complaints is quite difficult. The chatbot assist with medical queries, medication guidance, symptom checks, nutrition and other matters. The system uses an efficient Graphical User Interface hence, it gives a response such that if actual person is chatting with the user. The User can ask any query related to personal health

through the chat-Bot and there is no need of available physically to the hospital. Query is sent to Chatbot, by using Google API for voice and text conversion, and gets related answer and display it on android app. Therefore, it is an interactive system solve users query regarding health issues and its medicine through android app.

2. LITERATURE SURVEY

[1] Here the studies are based on to recognize emotions classification using AI methods. The studies train emotions classification models from a lot of labelled data based on RNN, deep learning, convolutional neural network. Linguistic interaction is most important in counselling using NLP and NLG to understand dialogues of users. Here the multi-modal approach is used of emotion-recognition. They have collected corpuses to learn semantic information of words and represent as vector using the word vector, synonym knowledge of lexical are collected.

[2] In this paper a voice recognition chat-bot is developed, if the questions are not understood asked to the bot is further processed using the third-party expert-system. The web-bots are created as text-based web-friends, an entertainer for the user. Here they focused on the improved system if the system is not only text-based but also voice-based trained.

[3] This chatbot aims to make a conversation between human and machine. The input sentence will get the similarity score of input sentences using bigram. The chatbot knowledge is stored in RDBMS.

[4] The chatbot implemented using pattern comparison in which the order of the sentence is recognized and saved response pattern and the author describes the implementation of the chatbot Operating system, software, programming language, and database. How results input and output is stored.

[5] Here they use n-gram technique for extracting the words from the sentences. and for comparison and deduction of the input with case data using Moro phonemes and phonemes as the deciding parameter. Probability analysis for the closest match is performed. The final expression is redirected through an expert system.

[6] The chatbot developed here for healthcare purposes for the android application. The user sends the text message or voice message using Google API and the user gets only related answer from the chatbot. SVM algorithm is used to classify the dataset. Here the Porter algorithm is used to discard unwanted words like suffixes or prefixes.

[7] The different documents served in web and the content is checked by tagging the dataset using n-gram based low dimensional demonstration, TF-IDF matrix that generates S, U, and V and finally multiplying the 3 matrices cosine similarity is calculated.

[8] Here the chatbot is created for the customer service that functions as public health service. The application uses Ngram, TF-IDF and cosine similarity. The knowledge base is created for storing the question and answer. Then the application clearly extracts the keyword from the question by using unigram, bigram, and trigram which helps in fast answering.

3. PROPOSED SYSTEM

Some chatbots are medical reference books not only for patients and doctors but also for people who want to know something about health. The users can interact through chatbots for the healthcare system and it is more helpful for them and the healthcare provider. The old chatbot are client communications system and its best effort may be a question-and-answer page on an internet site.

This system helps users to submit complaints and queries regarding their health. The customer satisfaction is the major concern for developing this application. The main purpose of chatbot is to facilitate the people by giving proper guidance regarding health. Some people live for years with debilitating but they don't pay attention to symptoms just because they think they don't require a doctor. The working of the system is as follows.

- User Login to System User registers on Chatbot application and ask queries regarding to the health care and medical details.
- Ask some Questions -You can ask some questions regarding some healthcare and it is related to voice- text and text-voice conversation using google API for inter conversion of text-voice or vice versa.
- Age based Medicine dosage details You can ask medical dosage related queries to this app through voice and system gets output for medicine through voice or by displaying then get your age from registration data and provide data like age, area, gender and so on.

- Get Medicine Details on medicine name You can enquire about medicine related details on the basis of its names.
- Disease Prediction Depending on the disease symptoms and for this prediction SVM algorithm is used.
- Online API Google API is used for voice-text and text voice conversion. The Chatbot API sends query to chatbot to get related answers and refer this answer analysis on that. Then the answer is displayed on android app. When user ask question to the chatbot. Scheme and logic of the complaint is recognized by applying NLP. Sense of the words is found by speech tagging and wordnet dictionary by using this sentiment analysis.

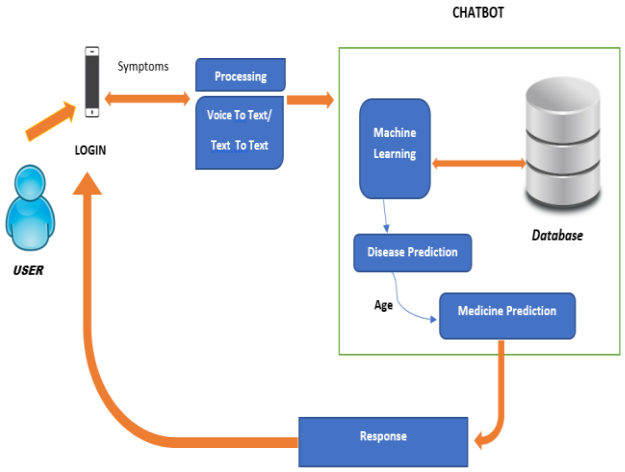

Fig 1: Architecture of Healthcare chatbot

The client inputs the question within the UI as the text or voice. The UI gets the user query and at that time sends it to the chatbot application.

3.1 NLP (Natural language Processing)

The enlargement of NLP function is sort of tough because computers usually need humans to "speak" with them in certain artificial language. Human language isn't accurate because it includes on lots of composite variables. NLP permits users to ask a question. The machine understands the important elements from user's speech, that will relate to particular features in a very data set, and offers a solution. the utilization of NLP is to acknowledge the meaning of the text. The stored information contains the text files, like patients' medical records, symptom associated with particular disease on the idea of which we will predict the disease also some medicine related information.

3.2 Machine Learning

Machine learning is that the study of programming computers that teaches the machines mechanically through past experiences that seen as a set of computing. Machine learning algorithms build a model supported sample data, called "training data", so as to create predictions or decisions without being explicitly programmed to try and do so. Data processing could be a related field of study, that specialize in exploratory data analysis through unsupervised learning. In its application across business problems, machine learning is additionally cited as predictive analytics.

3.3 Machine Learning Prediction

Prediction refers to the output of Associate in Nursing specific algorithmic program used here once it has been trained on a past knowledge set and applied to new data once prediction the chance of a particular outcome, just like the patient has the sure illness. The algorithm will generate probable values for an unknown variable for every record within the new data, allowing the model builder to spot what that value will presumably be.ML techniques like artificial neural networks facilitate to collaborate with this info and predict everything from minor diseases to severe chronic infectious diseases.

3.4 Why are Predictions Important?

Machine learning model predictions allow healthcare to create highly accurate guesses on the likely outcomes of a matter supported historical data, which may be about all types of things. These provide the healthcare with insights that lead to tangible business value.

3.5 Machine Learning Analysis

It is the tactic of understanding, diagnosing, and refinement a machine learning model with the help of interactive mental image, that is very vital for users to expeditiously solve real-world AI and processing issues. Dramatic advances in big data analytics have led to a large type of interactive model analysis task.

The user will have text to text communication with the chatbot and acquire the precise disease and also the user may get their previous chat history through their details which are stored within the database. It shows the user text

with the chatbot and therefore the accurate result was shown to the user at the tip of symptom clarification. Then the user can view their previous chat to grasp what they need to be discussed earlier.

We came to know that this system gave us 90% accurate results. As we are using a large dataset that is able to ensure a higher performance compared to earlier. Thus, we build up a system which will particularly provide services in rural areas and government hospitals for those who don't seem to be ready to make an appointment or medical information from the Doctor.

Here in this system gets output for medicine API and speaks out and displays all medicine names. We are using NLP because we wish a computer to speak with users on their terms. So, by using the Naïve Bayes classification algorithm a healthcare chatbot system was implemented to predict the diseases. Users can get related answers displayed on their respective screens and can refer to this account analysis.

5. CONCLUSION

Technology has gotten smart enough that it can help resolve the key problems in healthcare, like a shortage of doctors – not only within the US, but on a world scale. COVID-19 has dramatically changed the way we interact with others, and telemedicine is rapidly becoming a replacement normal with virtual doctor consultations. With these concepts in mind, here we had developed a healthcare chatbot which is extremely essential during this pandemic situation those that who have minor health issues. It can save the users time in consulting doctors or experts for health care solutions and also it reduces the burden of healthcare professionals.

Here the healthcare chatbot was developed using Naïve Bayes Algorithm to extract the keywords from the user's queries. Each keyword goes to be then weighed all the way all the way down to obtain proper declare users' query. The healthcare chatbot application here we implemented was improved with the protection and effective upgrades to make sure the user protection and also to retrieve answers in line with the questions raised by the patients.

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