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Pharmabot - A Recommendation on General Medicines– Survey

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ABSTRACT: The real benefit to designing this particular ChatBot is to provide advice and information for a healthy life by interacting with patients for any personal query related to health care without physically available to the hospital for the small problem. A voice -to- text analysis bot connect the patients in conversation about their medical issues and give the answer to there query. If the user asked about heart disease then system asked some diagnosis based on their symptoms it and after getting the answer from the user it predicts the disease. Hence, people will have an idea about their health and have the right protection.
There are various techniques available for designing the ChatBot for healthcare. This paper signifies the important enhancement in Chatbots most recently. Many of the existing systems have some limitation such as There is no instant response given to the patients they have to wait for experts acknowledgment for a long time. In this paper we giving the overview of different methods used for designing the ChatBot.

KEYWORDS: Natural Language Processing, SVM, Medical ChatBot, API, Google Voice API, Medicine API.

I. INTRODUCTION

Chat-Bots aims to make a conversation between both human and machine. The machine has the knowledge to recognize the sentences meaning and make a decision itself as a response to answer a query. Generally, Chat-bots are stateful services, recalling preceding information so as to give functionality.

To build the language gap between the user and health providers by giving immediate replies to the questions asked by the user the chatbots are designed. With the use of chatbots, we can reduce healthcare cost and improves access to medical knowledge.

The inquiry chat-bots will be built using artificial algorithms which imitate the human way of thinking and behaving to a computer that analyzes user's queries and understands user's message. Chatbots are such kind of computer programs that interact with users using natural language. Using this capability we have decided to add some contribution on to the Health Informatics.

II. RELATED WORK

Chat-bots are mainly to used to provide conversation between both human and machine. Admin feeds some knowledge to the machine so that machine can identify the sentences and taking a decision itself as a response to answer a question. Such as Question Answering (QA) systems[1] which try to answer to natural language queries[1][2] by providing answers instead of providing the simple list of document links. The aim of QA system is to offer valuable data concerning to the products of interest supporting customers to get what they need clearly with a pattern-matching [9] technology.
Artificial Intelligent Markup Language[4] is used as a training model and Microsoft voice synthesizer used for identification of the word spoken by the user for chatbot designing in [2]
The chatbots can also be used for prediction of the disease depending on the symptoms and suggest the list of available treatments for the predicted disease. [3]

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The comparison of the different web-based chat technologies is compared in [5] text-based synchronous chat. In addition one - on - one mental health interference that makes use of text-based synchronous chat is also used.

The idea to build a health care chatbot [6] with Artificial Intelligence which analyses the disease and give fundamental facts about the disease before taking advice from a doctor that can minimize the healthcare expenses and get better convenience to medical knowledge. Certain chatbots act as a medical reference book, which helps the patient know more about their disease and helps to improve their health.

The paper [7] gives the method which can help to find out health problem just by entering symptoms or just scanning an ECG. It can help the user to deduce the problem and verify the solution. It gives the composition of the medicines and their prescribed uses. It helps them to take the correct treatment along with the prediction with artificial intelligence.

Godson Michael D'silva1 at al. [8] propose a system that analyzing messages of each user to check if it is actionable or not. If it's actionable then an automated Chatbot will begin the conversation with that user and help the user to determine the issue by providing human way interactions using LUIS and cognitive services. This system is implemented on AWS public cloud.

Bayu Setiaji et al. [9] used bigram for sentence similarity estimation for making a final choice as the response to the query by matching the input sentence from user i.e. pattern-matching requirement [1]. The bigram separates the input sentence as two letters of so as to find the meaning of the sentences more effectively.

The paper [10] gives chatbot system that performs as a virtual diabetes physician to carry out a basic diagnosis on diabetic patients. The chatbot will keep in mind previous discussion path using the parameter called Vpath. Vpath gives a reply to the question which matches with the whole conversation as it exclusively intended for a virtual diabetes physician

Paper [11] introduces a Pharmabot, used to recommend and provide information on general medicines symptoms for children with the use of Left and Right Parsing Algorithm. The author built a web-based application so that everyone can access and use it.

Paper [12] gives an idea to design a chatbot which is used in mental health counseling. The demonstration which gives a more interactive technique of leading the user into the PDF worksheets, and asking them which areas they would like to receive information on. The method implemented with the use of Emoji. By incorporating mental health screening tools into a chatbot interface, the user can have a more interactive and user - friendly experience. It gives 60% of accuracy.

The paper gives the method of recognizing the reality in texts and giving the past content for developing a conversation which is used in middle-school CSCL scenarios. The system takes a plain text as input and output is a qualified user that is capable of answering all type of questions. The purpose is to provide a generic solution to this problem [13].

The hybrid deep neural network (DNN) and Hidden Markova Model(HMM) can be used to improve speech recognition performance. The DNN technique is more proficient and reliable than any other methods used in for speech recognition. The conventional neural networks (CNN) is used in speech recognition in such a way that CNN's structure directly accommodates some types of speech variation CNN reduces the error bit by 6% to 10%, so it is effective in improving speech recognition[14].

III. CHAT BOT RESPONDING SYSTEM

After getting the query from the user commoner morphological and inflexional endings from words are removed with Porter stemmer process and Similarity between Sentences is checked to measure how similar the word order in two sentences is so that meaning of the sentences is extracted and finally NLP is applied to detect the sense of the query.

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Following are the methods used in chatbot for responding to the user to give the answer as the response to the user's query.

A. Natural Language Processing

Natural Language is mandatory when you want to take the decision based on the clinical expert system. When user asks any health-related query to the system, then NLP is applied to detect the sense of the query. The sense of the words is found using part of speech tagging and WordNet dictionary.

The process of NLP as given below−

- Natural Language Understanding (NLU)
- It contains the following process
-

Map the given input into the functional demonstration.

- Evaluating different features of the language.
- Natural Language Generation (NLG)

It is the course of creating major phrases and sentences in the form of natural language from some internal depiction.
It involves –

Text Scheduling − It includes retrieving the relevant content from the knowledge base.

Sentence planning – Selecting the necessary words, making significant phrases, setting nature of the sentence.

Text comprehension − It is mapping sentence plan into sentence formation.

WordNet is a lexical and semantic database for the English language. It is used to group English words in to set of synonyms called synsets, it gives short definitions, usage model, and records various relations in between these synonym sets or their members for getting the meaning of sentences.

B. Word Order Similarity between Sentences

Preprocessing:
In this technique, we reduce inflectional forms of words to a common base form.

Tokenization –
It is the job of cutting up sentences into token and removing punctuation and other redundant characters. We make use of WordNet to discover associations between two tokens. The results of the exploration are the duration of the shortest path in between the two tokens and intensity of the most specific common subsumer of the tokens. Both these values are cover in WordNet Relationship.

Tagging -
Tagging is the process of spotting up a word in a text as matching to a specific part of speech, depending on both its definition and its context. In our case, we tagged the word to noun and verb.

Lemmatization –
It is a technique from Natural Language Processing which does full morphological analysis and identifies the base or dictionary form of a word, which is known as the lemma.

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Syntax Similarity –
It quantifies the degree up to which the word sets of two particular sentences are similar. A similarity of 1 would signify having common characteristics between vocabularies, whereas 0 signifies that there are no familiar words.

Synsets extraction from wordnet –
Synset is a list of synonyms having the same significance. It symbolizes an exact sense of a particular word. The relations that are presently defined in this way are synonyms, antonyms, derivationally related forms.

Semantic Similarity –
It indicates how similar two phrases or sentence are, depending on some parameters that give the senses it is - a taxonomy. The range for each measure is different.

IV. CONCLUSION

The functioning of the Medical assistant mainly depends on AI algorithms. Artificial Intelligence chatbot is a technology that makes the interaction between man and machine possible by using natural language. In this paper, we have proposed a medical chatbot that provides personalized diagnoses based on symptoms along with the prediction of the disease. It provides advice and pieces of information for a healthy life. This paper gives the overview of the different methods of chatbot used in the different scenario.

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