AI Based Healthcare Chatbot System Using Natural Language Processing

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Artificial Intelligence has core branches like, Machine Learning which takes in data, searches pattern, improves itself using the data and displays the outcome. To lead a healthy lifestyle healthcare is very much important. In few unsocialized areas it is quite hard to find the consultation of doctor that easily regarding health issues. The main idea here is to make a healthcare chat bot based on Artificial Intelligence using NLP that can diagnose the disease and provide required details about the specific disease before consulting or visiting a doctor .Reduces the healthcare costs and improve accessibility to this medical chat bot. Certain chat bots acts as a medical reference books, which helps the patient know more about their disease and helps to improve their health. The user can achieve the real benefit of a chat bot only when it can diagnose all kind of disease and provide necessary information. A text-to-text Chatbot engages with patients in online conversation considering their medical problems which provides a set of personalized diagnosis based on their provided symptoms. These bots connect with potential patient visiting the site, helping them discover specialist, booking the appointments, and getting them access to correct treatment. This chatbot uses Natural language processing technique to process and analyze the data and give the output in appropriate manner. It brings up the issues about whether the task mentioned above ought to be assigned to human staff. This healthcare chatbot system will provide patients healthcare support online 24x7. It helps to generate leads and automatically delivers the information of leads to sales. By asking the questions in series it helps patient by guiding what exactly he/she is looking for queries.

Keywords - Machine Learning, NLP, Chatbot, symptoms, healthcare

Introduction

The Current artificial intelligence has developed to a point where programs can learn by the humans and effectively simplistic human conversations which is essential. One of the best known examples of chatbot in recent history is Siri the AI assistant that is part of Apple's standard software for its products. Siri took chatbot mainstream in 2011.Since then brands in every industry have started to use them, eventually sparking a new trend conversational UX. This refers to a User Experience in which your interaction with a company or service is automated based on your prior behaviour. If users are developing the artificial intelligent applications like Alexa, which enables the use of voice to control devices. If you are a user, you can already interact with this Artificial Intelligence chatbot on popular messaging platforms such as Facebook, Skype. Nowadays the use of chatbots has spread from user customer service to life and death risks. Chatbots are coming into the healthcare industry and can help to solve the health problems. Health and fitness chatbots have begun to gain the popularity in the market. Previous year Facebook has started allowing healthcare industries to create Messenger chatbots which would then communicate with users. A great example is Health Tap the first company to release a health bot on the Messenger app. It allows users to ask their medical related queries and receive answers.

Background and Literature review

In the paper, Most of the people detect the cancer at the last stage. Cancer is a disease which causes due to lasting growth, and spread of abnormal cells. Cancer patients lose hope to live longer and healthier lives. Depression is expeditiously becoming one of the difficult phases in the health sector. In this paper, communication helps a lot to improve one's mental health, this problem gets solved partially if the patient tries to open up to someone, but nobody is available at right time. This is the reason where chatbot comes into limelight. People in distress can communicate with chatbot which uses Natural Language Processing (NLP) [1].So here, NLP is used which is a component of artificial intelligence which makes the computer nearer to the human level understanding. Artificial intelligence makes it possible for the chatbot to analyze the conversation and NLP helps to interpret the text. The huge amount of information related to the cancer is retrieved from the web and successfully stored in its database which in return allows these bots to impart accurate and efficient information based on the patient's requirement. After getting enough information the chatbot can answer to their concerns

with information about treatments, symptoms and can provide remedies. NLP is used in making of this chatbot which is a important component of artificial intelligence, so we can imbibe same thing in our chatbot for generation of accurate and responsive answers [2].

In this paper, with the technological innovation smartphones have quickly gained the popularity and almost all users have their smartphones with them. Here, mobile application is developed to collect the data from user side which then gives the appropriate response to the patient. This response helps to user which allows the early detection of a particular disease as well as treatments, and also provides clinical assistance. The main objective was to generate a solution which would ease the data reception and transmission in real time. This real time data is fed to web server, encrypted and further analysis of data takes place [3]. The overview of the development as well as implementation smart wireless interactive healthcare system is depicted.

Proposed System

The proposed method for developing the system consist of web application. Firstly, chatbot is created which can help the users to get the symptoms of their diseases. Then we will add the chatbot link over the respective hospital website which will help the other people to gain the information of medical as well as staff reports. Database of the system helps to store the records of the users.

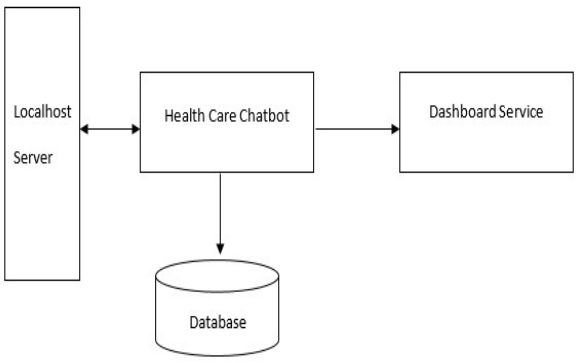

Figure 1 System Architecture of the proposed system

The backend will be responsible to process input from the chatbot and convert it into action to be performed in database. We will train a chatbot using chatterbot library and also train the bot to identify certain types of keywords in order to recognize the user's intent. This information shall then be forwarded to the backend. The chatbot can be trained to perform some logical reasoning and responses without referring to the backend. A block diagram is a use case which is used in the system analysis to clarify, identify, as well as organize system the stored and later the corresponding data of the users' gets segregated and stored and relatedly matched. It elaborates the business aspects of the proposed system. The user's ordered groceries can be tracked with this structural perspective of delivery process. The hierarchy of passing the goods from the stores to the users is the focal point in every system. In this manner processes are taken in this chatbot and responses are recorded in the form of data.

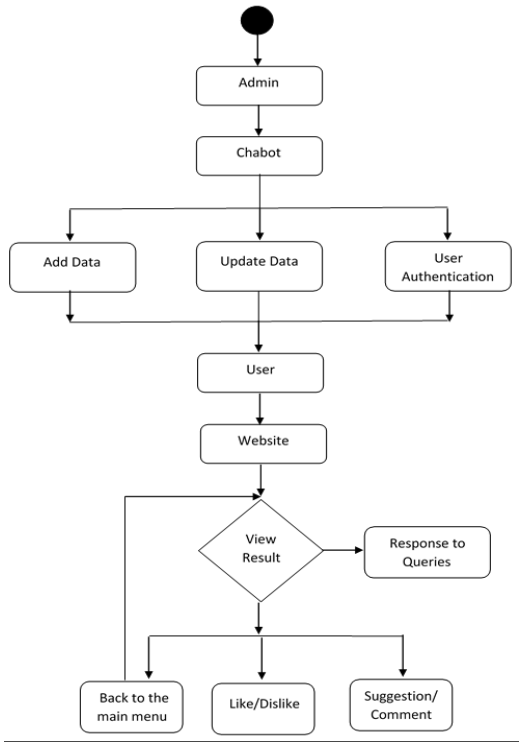

Figure 2 Flow Chart

From this flowchart are used to show the flow of message from one activity to the other activity. Activity is the specific operation. The user will give the personal details such as name, age, date of birth, contact number, etc. Chatbot will ask the symptoms from the user and by using natural processing language process it will respond to the disease and suggest the medicines for specific disease. Afterwards it will ask to book the appointment in the hospital. The details will be stored in the hospital database in which every staff members can access the reports. At last the health care bot will provide the appointment details and allow user to exit the portal by ending up the conversation.

5 Experimental Results

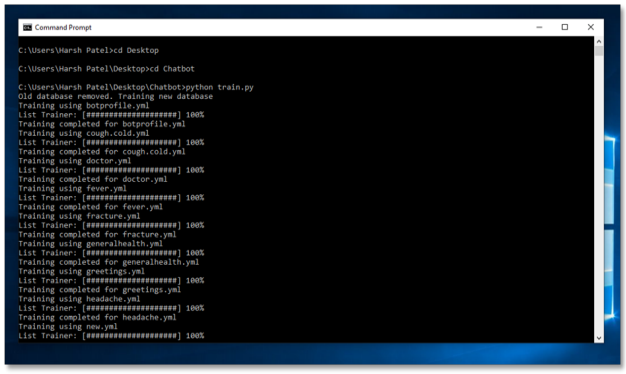

Fig 3 Training Phase for AI based Healthcare Chatbot System Using NLP

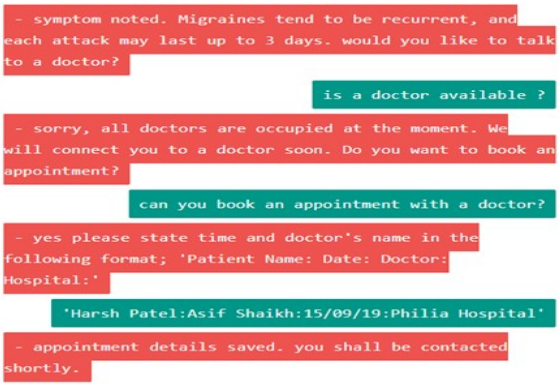

Fig 4 Identifying the disease for AI based Healthcare Chatbot System Using NLP

The above figure 3 shows the training phase the train.py file is executed and the new database is created. All the database files are in yml format which are trained in the initial stage of the application model.

After taking the personal information shown in figure 4 the chatbot will ask for the symptoms of the particular disease and it will suggest the medicines as per the symptoms. As the patient get the medicine details from the chatbot it will ask for booking the appointment in the hospital

Conclusion

In this project, we are implementing an AI Based Healthcare chatbot system using NLP which is easy to use and more secure than the current system it will cure the diseases and helps to maintain proper health in the current system. It will reduce the possibility of diseases. It will provide an accurate information about the heath symptoms and medicines to the patients. The government will also keep the track of the medicines supplied to the medicals and hospitals. However, this system has some drawback like network issues in rural areas might cause a delay in delivering an OTP. The implementation of the system is not costly.

Future Work

Future scope of the project could be AI Based Healthcare chatbot system using NLP can also include an mobile assistant in it which will be more functions will be added and can be accessed by many users. Which will also reduce the time and will also be accurate in the health details of patients given to the doctors. We can add biometric system for more secure authentication process.

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