Healthcare Chatbot using Decision Tree Algorithm

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Abstract—Artificial Intelligence(AI) and Machine Learning(ML) has become an integral part of our day to day life. A large number of technologies are coming forth to help us and make our life easier. Chatbot or virtual assistant is a technology that is coming forward in this regard. Previously, we had simple questions and answers or FAQs in the name of assistant, but now the chatbot will diagnose the disease based on queries answered by the users.

The model will be trained by using a highly diversified and accurate database with symptoms and diseases.The proposed model uses a decision tree algorithm to initiate a top down follow up and identify the complexity of the patient and produce a outcome.The user is provided a question and answer approach and a preferable and highly accurate diagnosis is produced.

Keywords—Healthcare Chatbot, Artificial Intelligence, Machine Learning,Decision Tree Algorithm.

Introduction

We live in the information age, the business with more information survives the market. AI plays a vital role in streamlining the data into the computer which gives a useful result to make human life easier.The chatbot is simply a code that runs on a software by copying human conversation and infer a fruitful result.The user will be given queries and they will answer based on which a symptoms will be diagnosed and a disease or health dilemma will be understood.This will help the patient to refer to the specific specialist. For instance, the patient can refer to a cardiologist if a heart problem is diagnosed by the chatbot.The design of the chatbot will suit the user and they can get a quick and accurate diagnosis based on the symptoms they produce in the questionnaire.

I. LITERATURE SURVEY

For our project we took into account several other previously successful works on the chatbots from the healthcare domain.This paper focuses on our model which resorts to question and answer patterns with the user.The user will feel that they are having a dialogue with another person and not a chatbot.

The diagnosis done by our chatbot will be more accurate than the existing models as our dataset is more enriched and factual.Our dataset gives accurate conclusions and better outputs with proper diagnosis.

The chatbot uses a decision tree classifier as the algorithm and gives proper diagnosis.The algorithm is quick and gives better conclusions.

II. PROPOSED WORK

1. The model we proposed has an interactive chat window that connects with the patient and gives them the feel as if they are talking to a person.

The chatbot provides a question and answer pattern to the user and asks them about the symptoms, intensity of the symptoms, number of days they are facing those symptoms and finally the chatbot gives a diagnosis.
The user gets the idea about which specialist they should visit and the severity of their situation can also be understood by them.

III. IMPLEMENTATION

The plan to implement the HealthCare chatbot is to use Python based libraries. The chatbot will be implemented as a Python application. In order to be helpful to the users, the chatbot will be fed with an enriched symptom mapped disease dataset which would help the learning algorithm to give appropriate results based on the symptoms a user query carries.
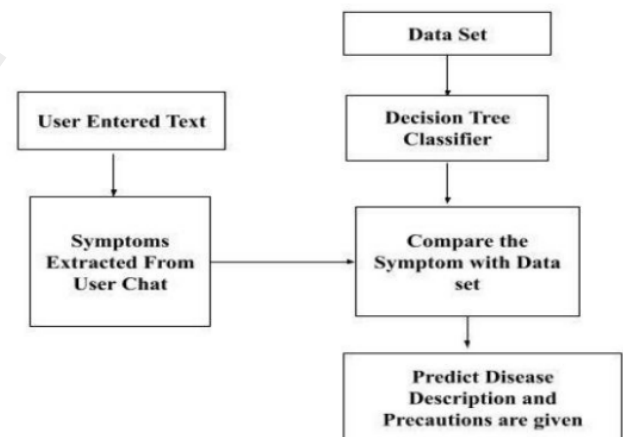
It is best to implement the learning algorithm using Python libraries such as Scikit learn, matplotlib, numpy, pandas, etc. We clean the dataset and the exploratory data analysis is done using the mentioned libraries. After the data cleaning and analysis module, we move into the training phase of the learning model using the resultant data. The Decision tree classifier is used to train the model. Additionally we have another feature which would direct the patient to a specific doctor based on their disease. The input to the chatbot

system will be mapped in the training dataset and accordingly the disease is predicted.

IV. RESULTS DISCUSSION

The finished model of the healthcare chatbot is a functional system with a large dataset of human health problems. The chatbot gives a very accurate diagnosis of the current health problem of the user as per the given user query.

V. CONCLUSION

In the medical field, a chatbot could help panicked patients to get a specific prediction of the disease that they may have and a proper roadmap that would ensure their proper recovery. This project is a way to help the medical world by being an immediate repellant to the patients in emergency situations. Gradually we can enhance the dataset and do further study in order to increase intelligence of the system.

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