

CHATBOT IN HEALTHCARE

A MINI PROJECT REPORT

18CSC305J - ARTIFICIAL INTELLIGENCE

Submitted by

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Under the guidance of

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in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE & ENGINEERING

of

FACULTY OF ENGINEERING AND TECHNOLOGY



S.R.M. Nagar, Kattankulathur, Chengalpattu District

MAY 2023

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

(Under Section 3 of UGC Act, 1956)

BONAFIDE CERTIFICATE

Certified that Mini project report titled “**CHATBOT IN HEALTHCARE**” is the bona fide work of **M.S.KOUSHIK,K.M.DEEPAK CHANDU,JOSHI KARAN** who carried out the minor project under my supervision. Certified further, that to the best of my knowledge, the work reported herein does not form any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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ABSTRACT

As the demand in Machine Learning and AI keeps growing, new technologies will keep coming in the market which will impact our day-to-day activities, and one such technology is Virtual Assistant Bots or simply Chatbots. Chatbots have evolved from being Menu/Button based, to Keywords based and now Contextual based. The most advanced among all of the above is contextual based because it uses Machine Learning and Artificial Intelligence techniques to store and process the training models which help the chatbot to give better and appropriate response when user asks domain specific questions to the bot. The idea is to create a medical chatbot that can diagnose the disease and provide basic details about the disease before consulting a doctor. This will help to reduce healthcare costs and improve accessibility to medical knowledge through medical chatbot. The chatbots are computer programs that use natural language to interact with users. Our project focuses on providing the users immediate and accurate prediction of the diseases based on their symptoms. For the prediction of diseases, we have used Decision tree algorithm. Chatbots can play a major role in reshaping the healthcare industry by providing predictive diagnosis.

INTRODUCTION

Since the past few decades, humans have been tirelessly working day in and day out that they fail to prioritize their health on a regular basis. In the longer run, this problem leads to jeopardizing the quality of life. Nevertheless, with the aid of Artificial Intelligence, we can now provide health care services to individuals at their convenience at reasonable prices. One of the biggest blessings we possess is a healthy body. A healthy body and enhanced quality of life is something each one of us looks up to. The primary focus of this paper is to provide these services to fulfill the above mentioned purpose. It is difficult to imagine our lives without high tech gadgets because they have become an essential part of our lives. Therefore the field of Artificial Intelligence is prospering due to the various applications of it in the research field. Disease prediction is one of the main goals of the researchers based on the facts of big data analysis which in turn improves the accuracy of risk classification based on the data of a large volume. E-healthcare facilities in general, are a vital resource to developing countries but are often difficult to establish because of the lack of awareness and development of infrastructure. A number of internet users depend on the internet for clearing their healthcare based queries. We have designed a platform for providing online medical services to patients with a goal to provide assistance to healthcare professionals. The user can also seek medical guidance in an easier way and get exposure to various diseases and diagnosis available for it. In order to make communication more effective, we have implemented a chatbot for disease prediction. Chatbots are the human version of software that is based on AI and uses Natural language processing (NLP) to interpret and accordingly respond to the user. This study proposes the disease prediction chatbot using the concepts of NLP and machine learning algorithms. The prediction is carried out using the Decision tree algorithm.

LITERATURE SURVEY

[1]An application of counseling chatbot, which provides conversational service for mental health care based on emotions recognition methods and chat assistant platform. This application doesn't consider the user's psychiatric status through continuous user monitoring.

[2]In this text-based healthcare chatbots can be designed to effectively support patients and health professionals in therapeutic settings beyond on side consultations. It does not have face to face care and where THCB are likely to fail.

[3]This paper reports a primary care chatbot system created to assist healthcare staff by automating the patient's intake process. In this paper they did not include more disease and also a symptom synonym thesauri also should be produced.

[4]This provides a text-to-text conversational age that asks the user about their health issue. The user can chat as if chatting with a human. The bot then asks the user a series of questions about their symptoms to diagnose and gives suggestions about the different symptoms to clarify the disease. Doesn't give detailed information No features such as duration, intensity of symptoms etc.

[5]Conversational agents have many technical, design and linguistic challenges. They introduced the nature of conversation user interface(CUI) for health and described UX design. Some technical limitations like voice message are not accurate, some corruptions are faced due to the network so the timing of bot remainders is corrupted.

[6]The system uses a question and answer protocol in the form of a chatbot to answer users' queries. The complex questions and answers present in the database are viewed and answered by an expert. This chatbot is comparatively time consuming.

[7]This chatbot is an attempt to let users understand the symptoms they are facing and get a basic diagnosis about the disease they could be having. Complex interface, time consuming, high installation cost.

[8]A chatbot is an interactive software application to simulate natural user interactions based on AI modeling. We have proposed a dataset for the commonly occurring medical conditions together with a prototype model to provide quick assistance to the patients.It only gives solutions for the common medical conditions.

METHODOLOGY

The program above is a healthcare chatbot developed using the GPT-3.5 architecture from OpenAI. It uses the Gradio library to create a user interface for users to interact with the chatbot.

The program works by taking user input from the text box, and using the OpenAI API to generate a response based on the input. The response is then displayed in the chatbot window.

The chatbot maintains a conversation history using a list, and appends each input-output pair to the history list. This allows the chatbot to provide more contextually relevant responses based on the user's previous inputs.

The chatbot also includes some conditional logic to handle specific user inputs. For example, if the user mentions "appointment" in their input, the chatbot will open a web browser to the Practo website where they can book an appointment with a doctor. Similarly, if the user says "thank you", the chatbot will open a Google form where they can provide feedback.

Finally, the program uses the Gradio library to create a user interface for the chatbot, which includes a text box for user input, and a chatbot window to display the chat history and chatbot responses.

To submit a report on this program, you could include a description of how the program works, as well as an evaluation of its performance and usability. You could also discuss any limitations or areas for improvement, and provide suggestions for future development. Additionally, you could provide screenshots or videos of the program in action to demonstrate its functionality.

ARCHITECTURE

Step 1

**Collect demonstration data,
and train a supervised policy.**

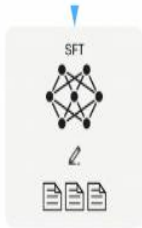
A prompt is
sampled from our
prompt dataset.



A labeler
demonstrates the
desired output
behavior.



This data is used
to fine-tune GPT-3
with supervised
learning.



Step 2

**Collect comparison data,
and train a reward model.**

A prompt and
several model
outputs are
sampled.



A labeler ranks
the outputs from
best to worst.



This data is used
to train our
reward model.



Step 3

iq.opengenus.org

**Optimize a policy against
the reward model using
reinforcement learning.**

A new prompt
is sampled from
the dataset.

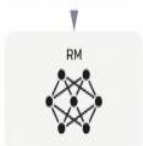


The policy
generates
an output.



Once upon a time...

The reward model
calculates a
reward for
the output.



The reward is
used to update
the policy
using PPO.



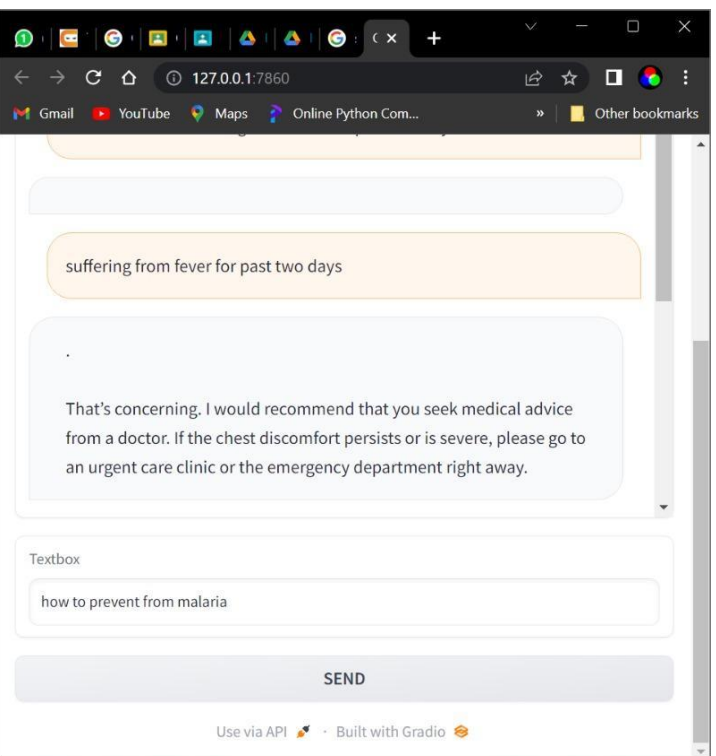
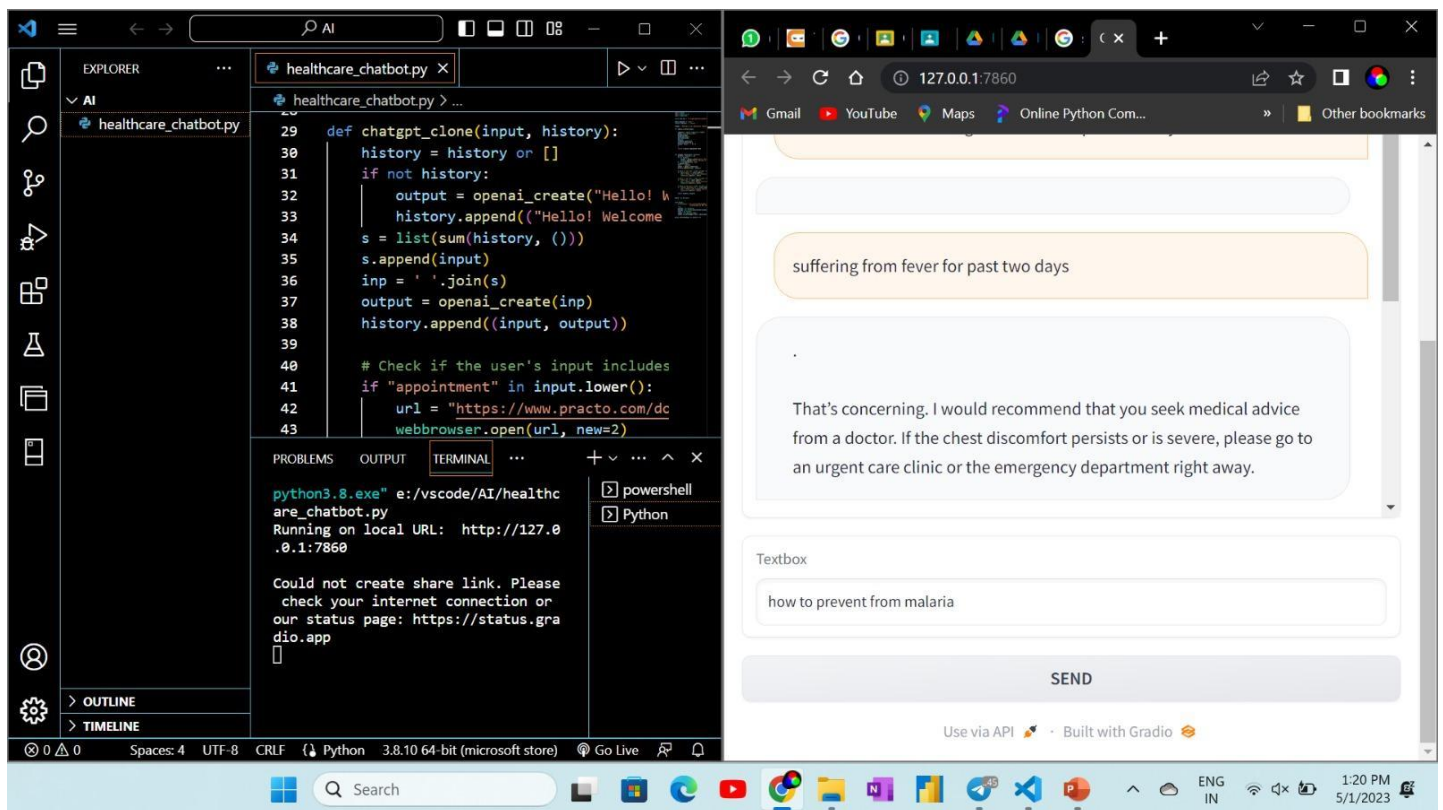
CODING AND TESTING

The screenshot shows the VS Code editor with the file `healthcare_chatbot.py` open. The code defines an OpenAI chatbot interface. The terminal shows the command to run the script and the output indicating it is running on `http://127.0.0.1:7860`. A message in the terminal states: "Could not create share link. Please check your internet connection or our status page: <https://status.gradio.app>".

```
1 import openai
2 import gradio as gr
3 import webbrowser
4
5 openai.api_key = "sk-ScgOVrU0Cn4UfCnmxEDxT3B1bkFJ8HZjs4YhC7RIJ2c9dFas"
6
7 start_sequence = "\nAI:"
8 restart_sequence = "\nHuman: "
9
10 prompt = "Welcome to our healthcare chatbot. prompt Ask a healthcare-related question or make a healthcare-related st
11
12 def openai_create(prompt):
13
14     response = openai.Completion.create(
15         model="text-davinci-003",
```

PS E:\vscode\AI> & "C:/Users/MS KOUSHIK/AppData/Local/Microsoft/WindowsApps/python3.8.exe" e:/vscode/AI/healthcare_chatbot.py
Running on local URL: <http://127.0.0.1:7860>

Could not create share link. Please check your internet connection or our status page: <https://status.gradio.app>



HEALTHCARE CHATBOT

Developed by MSK TEAM

Chatbot

Hello! Welcome to our healthcare chatbot. How can I assist you today?

I'm experiencing some chest discomfort and I'm wondering if I should be concerned.

hi i am koushik suffering from fever for past two days

suffering from fever for past two days

EXPLORER

healthcare_chatbot.py

29 def chatgpt_clone(input, history):
30 history = history or []
31 if not history:
32 output = openai_create("Hello! Welcome
33 history.append(("Hello! Welcome
34 s = list(sum(history, ()))
35 s.append(input)
36 inp = ' '.join(s)
37 output = openai_create(inp)
38 history.append((input, output))
39
40 # Check if the user's input includes
41 if "appointment" in input.lower():
42 url = "https://www.practo.com/dc
43 webbrowser.open(url, new=2)
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PROBLEMS OUTPUT TERMINAL

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are_chatbot.py
Running on local URL: http://127.0
.0.1:7860

Could not create share link. Please
check your internet connection or
our status page: https://status.gra
dio.app
[]

powerShell
Python

127.0.0.1:7860

Gmail YouTube Maps Online Python Com... Other bookmarks

how to prevent from malaria

There are several things you can do to help prevent malaria, including using insect repellents, sleeping under mosquito nets, and avoiding stagnant water. Make sure to consult with a doctor to determine an appropriate treatment plan for malaria prevention.

Textbox

how to prevent from malaria

SEND

Use via API Built with Gradio

EXPLORER

healthcare_chatbot.py

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dio.app
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powerShell
Python

HEALTHCARE CHATBOT

Developed by MSK TEAM

Chatbot

Hello! Welcome to our healthcare chatbot. How can I assist you today?

I'm experiencing some chest discomfort and I'm wondering if I should be concerned.

hi i am koushik suffering from fever for past two days

suffering from fever for past two days

CONCLUSION

In conclusion, the healthcare chatbot developed by the MSK team is an AI-powered conversational interface that can help users with healthcare-related questions and statements. The chatbot is built on top of OpenAI's GPT-3 model, which makes it capable of generating human-like responses. The chatbot can provide information on topics such as symptoms, diagnosis, treatment options, prevention, and precautions. It can also help users book appointments with doctors or specialists.

This is a Python code for a healthcare chatbot that uses OpenAI's GPT-3.5 language model. The chatbot can help with healthcare-related topics such as symptoms, diagnosis, treatment options, prevention, precautions, and booking appointments with doctors or specialists. The code uses Gradio to create a simple user interface where users can interact with the chatbot by typing in their messages. The chatbot also includes some additional functionalities, such as opening web pages in a new tab based on specific user inputs.

FUTURE ENHANCEMENTS

There are several possible future enhancements that can be made to this chatbot. Here are some ideas:

Integration with electronic health records (EHRs): The chatbot could be enhanced to access the patient's EHR and provide personalized recommendations based on their medical history, medication list, allergies, and other relevant information.

Natural language understanding (NLU): The chatbot could be enhanced to better understand and interpret user input. This could involve training the model on a larger and more diverse dataset, as well as incorporating techniques such as sentiment analysis, named entity recognition, and intent classification.

Multilingual support: The chatbot could be enhanced to support multiple languages, allowing users from different countries and cultures to interact with the system.

Integration with telemedicine platforms: The chatbot could be integrated with telemedicine platforms, allowing users to schedule appointments, receive video consultations, and access other healthcare services directly from the chatbot interface.

Improved user experience (UX): The chatbot could be enhanced to provide a more engaging and user-friendly experience. This could involve adding visual elements such as images, videos, and interactive buttons, as well as improving the flow of the conversation and providing clearer and more concise responses.

Integration with voice assistants: The chatbot could be enhanced to work with popular voice assistants such as Alexa, Google Assistant, and Siri, allowing users to interact with the system using natural language voice commands.

Continuous learning: The chatbot could be enhanced to learn from user feedback and improve over time. This could involve incorporating a feedback loop into the system, where users can rate the quality of the responses and provide additional information to help the chatbot improve.

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