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A Major Project (16CS483) Report on

"CHATBOT USING NLP"

Seminar report Submitted in partial fulfillment of the requirement for the degree of

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In

Computer Science and Engineering

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Under the guidance of

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BONAFIDE CERTIFICATE

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The completion of a major project brings a sense of great satisfaction, but it is never complete without thanking the people responsible for its successful completion.

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ABSTRACT

The Chatbots are the computer programs that interact with the users using natural language. The chatbot stores the information in the database to identify the keywords from the sentences and make a decision for the query and answers the question. In this project keyword, ranking and sentence similarity calculation is done using cosine similarity. From the given input sentence, the score will be obtained for each sentence and more similar sentences are obtained for the given query. The chatbot stores the data in the database to identify the sentence keywords and to make a query decision and answer the question.

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1. INTRODUCTION:

Healthcare is very important to lead a good life. However, it is very difficult to obtain the consultation with the doctor for every health problem. The idea is to create a medical chatbot using Artificial Intelligence 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.

Computers give us information , they engage us and help us in a lot of manners. A chatbot is a program intended to counterfeit smart communication on a text, the chatbots are computer programs that use natural language to interact with users.

These systems can learn themselves and restore their knowledge using human assistance or using web resources. This application is incredibly fundamental since knowledge is stored in advance. The system application uses the question and answer protocol in the form of a chatbot answer user queries. This system is developed to reduce the healthcare cost and time of users, as it is not possible for the users to visit the doctors or experts when immediately needed.The response to the question will be replied based on the user query and knowledge base. The significant keywords are fetched from the sentence and answer to those sentences. If the match is discovered or the significant, answer will be given or similar answers will be displayed.

CHATBOTS are automated systems which replicate user's behavior on one side of the chatting communication. They are mimic systems which imitate the conversations between two individuals. They provide a simulating platform for effective and smart communications with the user on the other end. They copy marketers, sales person, counsellors and other mediators and work to provide services that the abovementioned people provide. There are wide ranges of chatbots catering in many domains some of them are as follows: business, market, stock, customer care, healthcare, counselling, recommendation systems, support system, entertainment, brokering, journalism, online food and accessory shopping, travel chatbots, banking chatbots, recipe guides, etc. The most famous chatbots like Alexa or Google assistant are the best examples that can be given for smart communicating chatbots. These are general purpose chatbots that provide services for all domains and are not restricted to a specific domain. There are also domain-specific chatbots which provide functionalities to the above-mentioned domains. Some of them are as follows: Botsify is a chatbot which helps developers to create smart Facebook Messenger Chatbots and is used to collect information from Facebook users. Imperson is a chatbot which helps developers to create business chatbots and provide customer care services. NBC is a chatbot which helps the newsreaders to navigate quickly through top headlines.

2. PROBLEM STATEMENT:

The proposed Medical Chatbot can interact with the users, giving them a realistic experience of chatting with a Medical Professional. Our Chatbot can detect human message patterns using Natural language processing. It retrieves keywords from the initial messages to know the possible medical problems that the user has, based on their input.

There are few Medical Chatbots that already exist, but they do not provide users with medication to any illness but connect them with a Medical Q and A Forum and show them similar questions to their symptoms that doctors may have previously answered.

3. OBJECTIVE:

The main objective of this project is to build an efficient Chatbot, which is an AI-powered service for people to interact with. A medical chatbot uses a messenger feature to facilitate interaction between users and the bot. The purpose of the chatbots is to provide general and disease-related information to their users by this we can save the time of the user, in this we also included a feature of getting information of nearest doctors, who specialist for thegiven diseases.

4. LITERATURE REVIEW

Research says 60% of visits to a doctors are for simple small-scale diseases, 80% of which can be cured at home using simple home remedies. These diseases mostly include common cold and cough, headache, abdominal pains, etc. They may be caused due to the changes in the weather, intake of improper diet, fatigue, etc. and can be cured without the intervention of a doctor. There are a number of chatbots which provide services for the healthcare domain. But the problem with these chatbots is that they only provide answers for general healthcare FAQs.

That is, these systems are unable to provide a natural communication with the user just as a doctor can. Work is being carried out to enable the chatbots to communicate in a way similar to the communication carried out between two humans. That is, the user must experience the feel of communicating to a person and not to a bot. This makes the chatbot a virtual communicating friend of the user. This type of smart communication (usually used in healthcare counselling) can be achieved by inclusion of NLU, NLP and ML techniques in the conventional scripted chatbots.

There are a number of domains wherein the smart chatbots provide their functionalities. This paper briefs about the chatbot system for the healthcare domain. Also, it specifies various NLU, NLG and ML techniques to be incorporated in the chatbot and the comparison of the same.

The system takes a plain text as input and answering all type of questions output by qualifieduser is the output. The purpose is to provide a generic solution to this problem. this paper helps in recognizing the reality intexts and giving the past content for developing a conversation

A smart chatbot for customer care by using Software as a Service which analyze message ofeach application server.

The evaluation of sentence equivalence is completed with bigram that splits the input sentence in to two parts. The data of chatbot are deposited in the database. The database is appointed as information storage and predictor is used for storing the function and perform pattern matching.

5. DESIGN

5.1 FLOW CHART

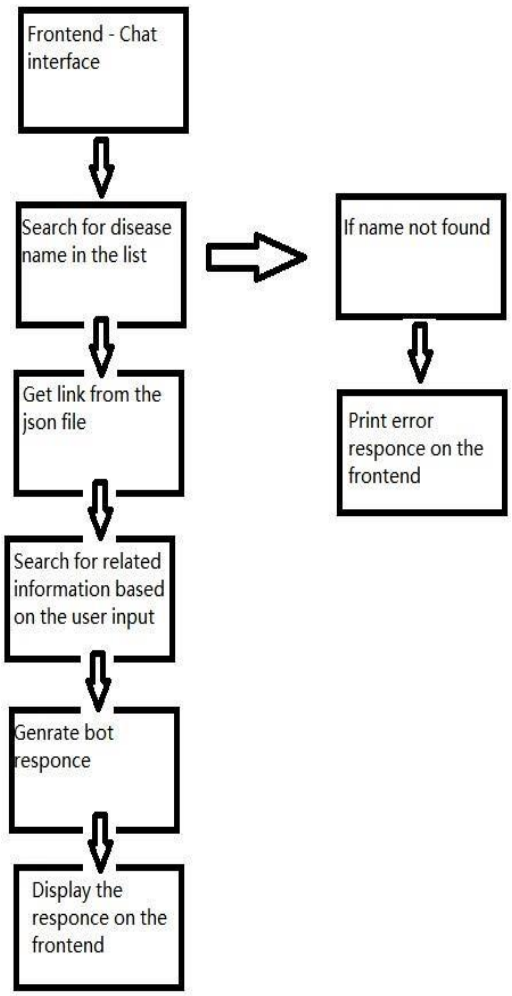

Fig 1 – Flow chart

5.2 STAGES OF USER INTERACTION:

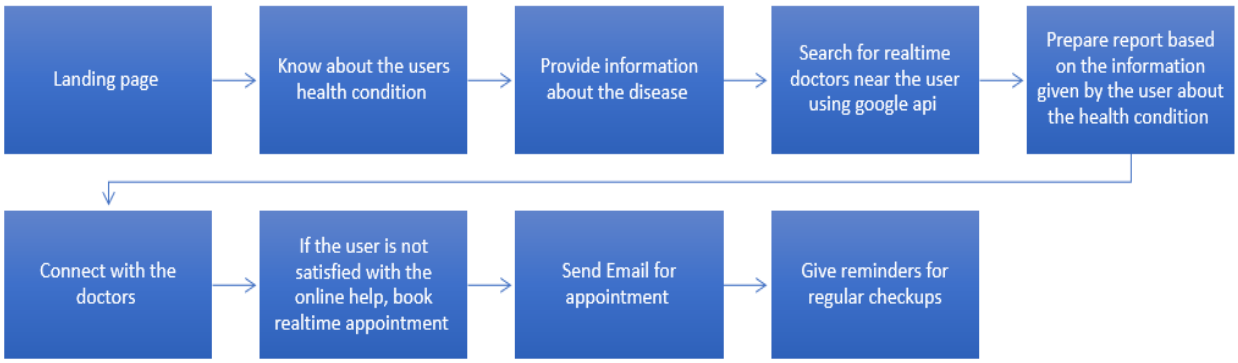

Fig 2 – Stages of user interaction

5.3 ARCHITECTURE DESIGN

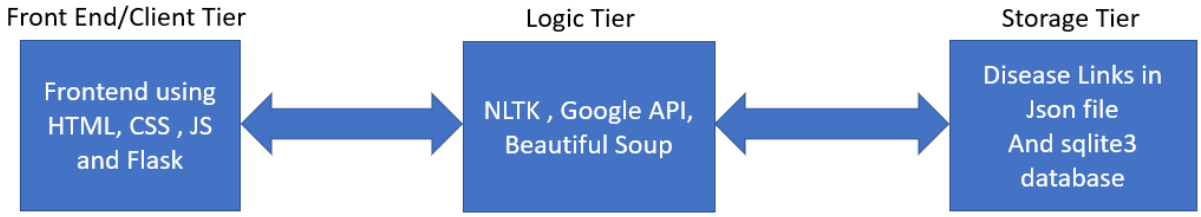

Fig 3. 3 Tier Architecture

5.4 Web Scraping:

Web scraping is the process of collecting structured web data in an automated fashion. It's also called web data extraction. Some of the main use cases of web scraping include price monitoring, price intelligence, news monitoring, lead generation and market research among many others.

- In general, web data extraction is used by people and businesses who want to make use of the vast amount of publicly available web data to make smarter decisions.

- If you've ever copy and pasted information from a website, you've performed the same function as any web scraper, only on a microscopic, manual scale. Unlike the mundane, mind-numbing process of manually extracting data, web scraping uses intelligent automation to retrieve hundreds, millions, or even billions of data points from the internet's seemingly endless frontier.

5.5 Tokenization:

Tokenization is a common task in Natural Language Processing (NLP). It's a fundamental step in both traditional NLP methods like Count Vectorizer and Advanced Deep Learning-based architectures like Transformers.

Tokenization is a way of separating a piece of text into smaller units called tokens. Here,tokens can be either words, characters.

Tokenization is the process of turning a meaningful piece of data, such as an account number, into a random string of characters called a token that has no meaningful value if breached. Tokens serve as reference to the original data, but cannot be used to guess those values

5.6 Similarity Algorithm :

This is a small algorithm that we will develop using the cosine similarity function available in python, Similarity is a machine learning method that uses a nearest neighbor approach to identify the similarity of two or more objects to each other based on algorithmic distance functions. In orderfor similarity to operate at the speed and scale of machine learning standards, two critical capabilities are required – high-speed indexing and metric and non-metric distance functions.

6. SOFTWARE AND HARDWARE REQUIRED

6.1Software Requirements:

- Python 3
- Python Ide (Pycharm)
- Chrome
- Flask
- Library and Modules of Python

6.2 Hardware Requirements:

- Windows 8 or above
- RAM 4GB

6.3 Functional Requirements:

- Search for a real time doctors.
- Get information of about the diseases.
- Generate report to help doctors.
- Book appointment with real doctors.
- Educate the user about this disease.

6.4 Non functional Requirements:

- Run on various browsers
- User friendly interface design
- Scalability
- Accuracy
- Dependability on the suggestions from the bot
- Performance – Provide quick and reliable information

7. RESULT

1. Front page

Fig 4 – Front Page of Web App

2. Chatbot interface – Providing information for the user about the disease.

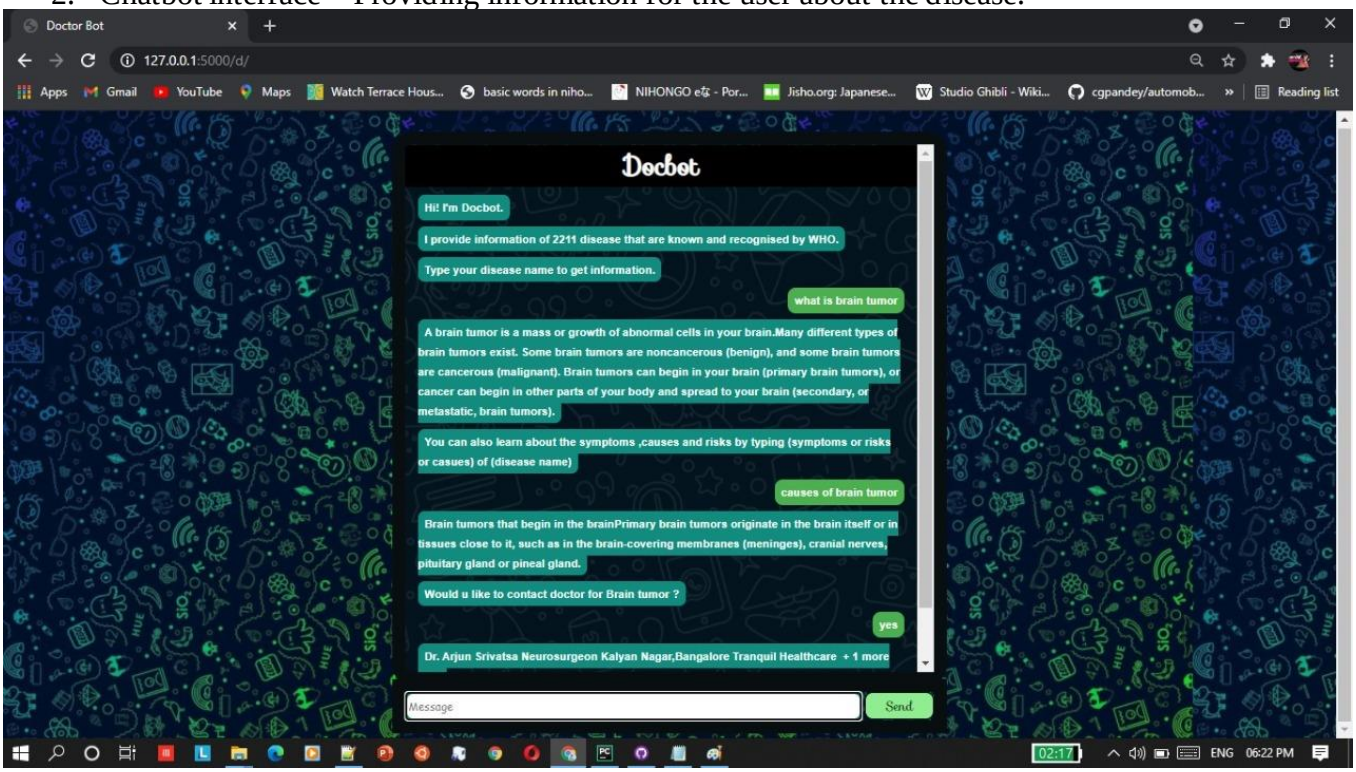

Fig 5 – chatbot interface

3. Suggesting doctors for the user

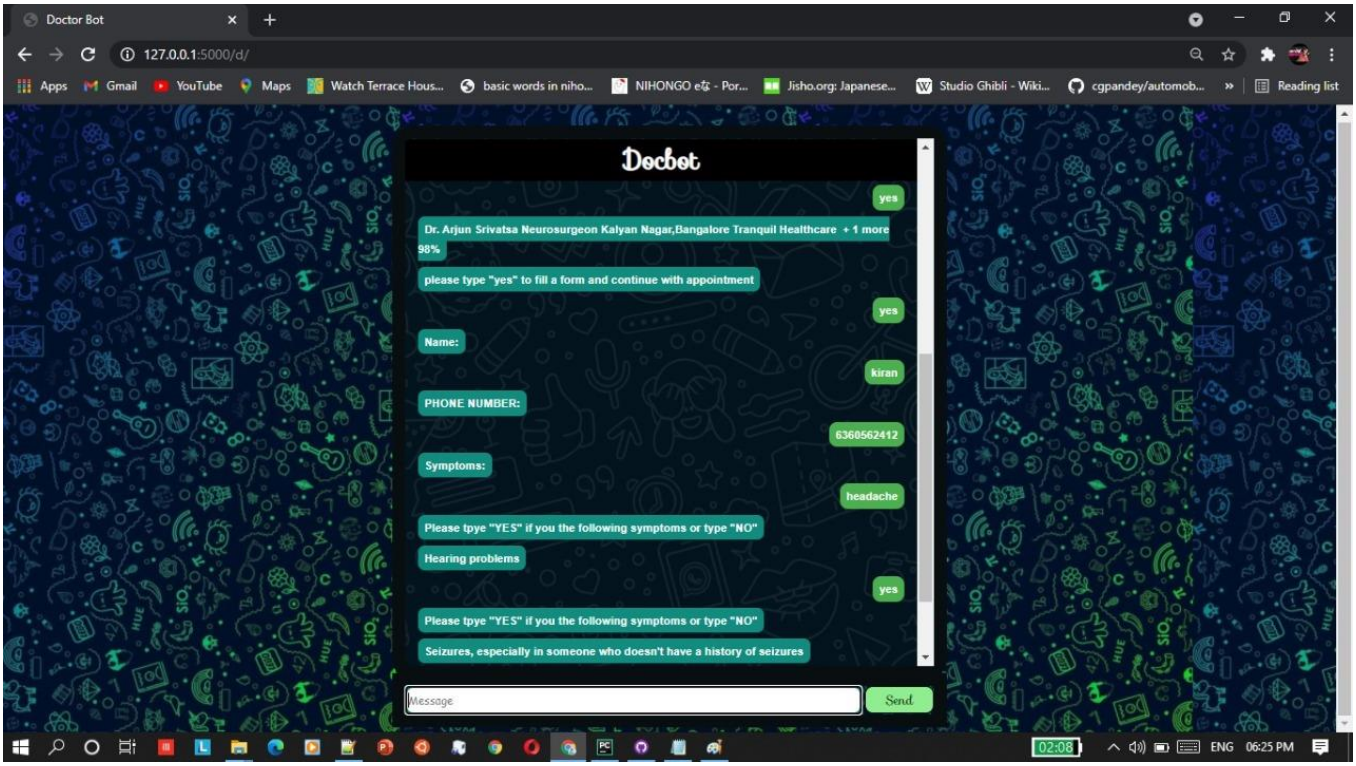

Fig 6 – Doctors suggestion

4. Interaction with user about the symptoms

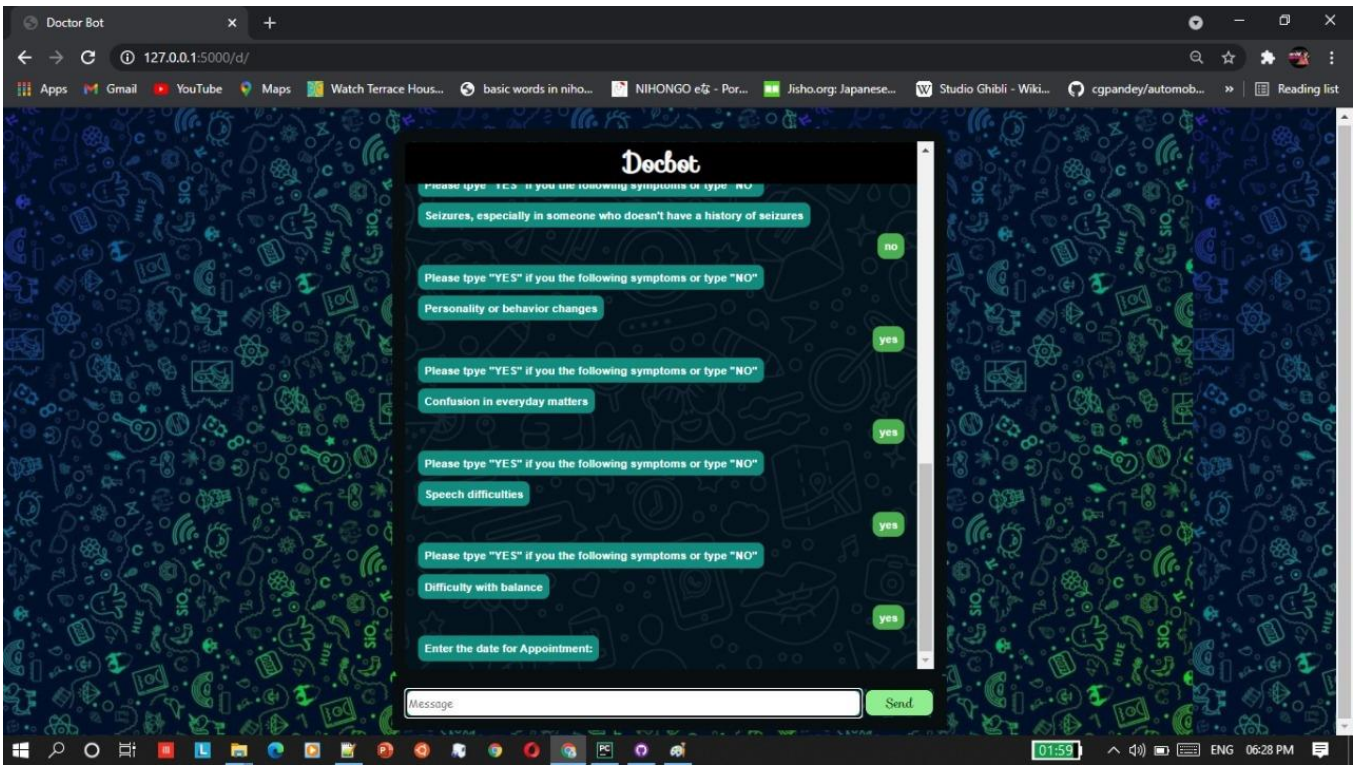

Fig 7 – Report generation

5. Booking an appointment

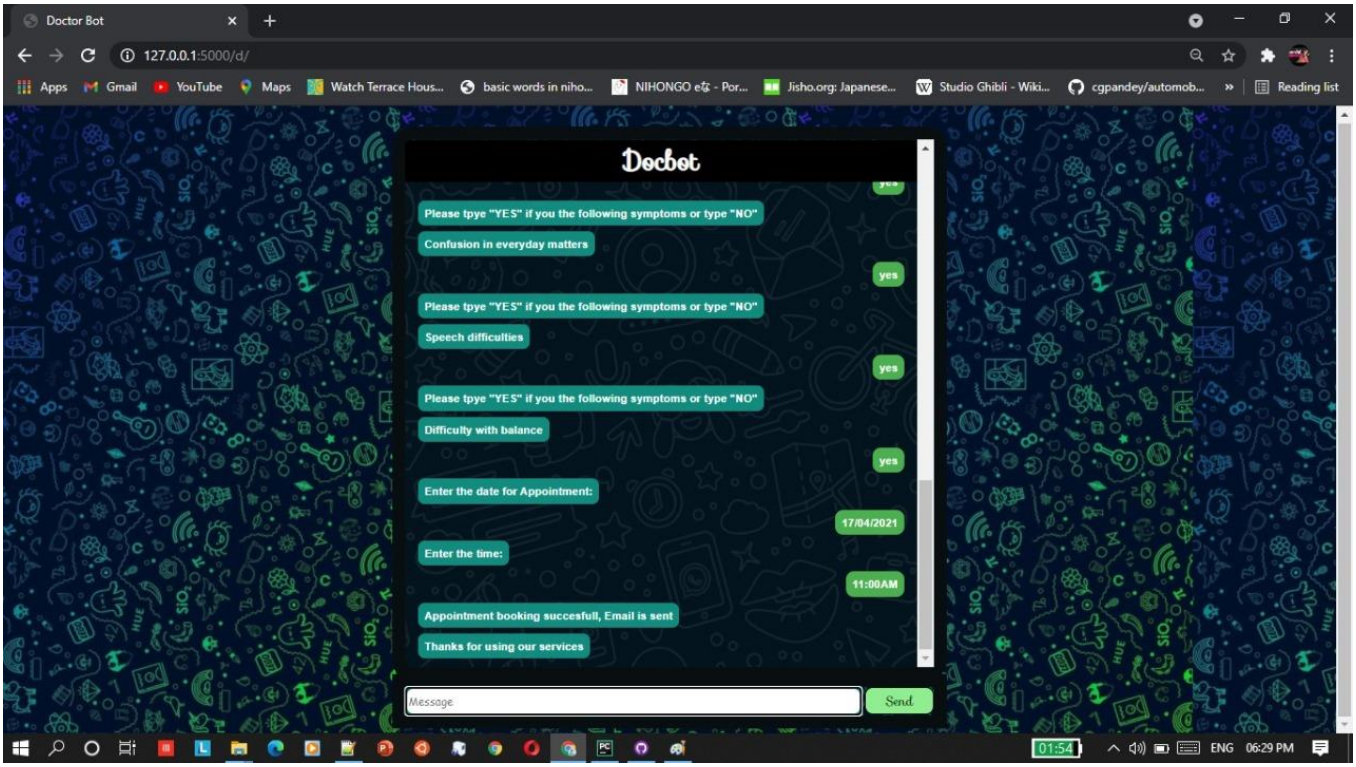

Fig 8 – Appointment

6. Email generated

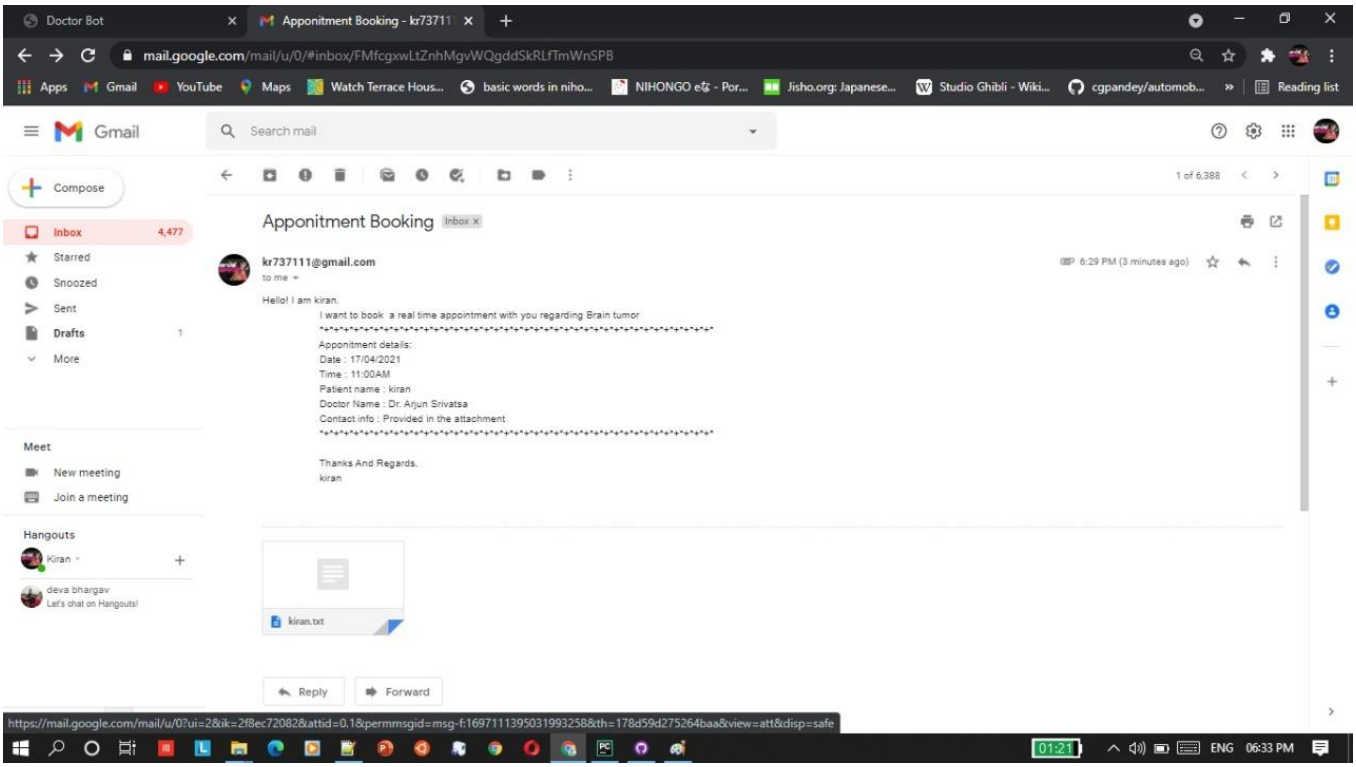

Fig 9. Email

7. Report Generated

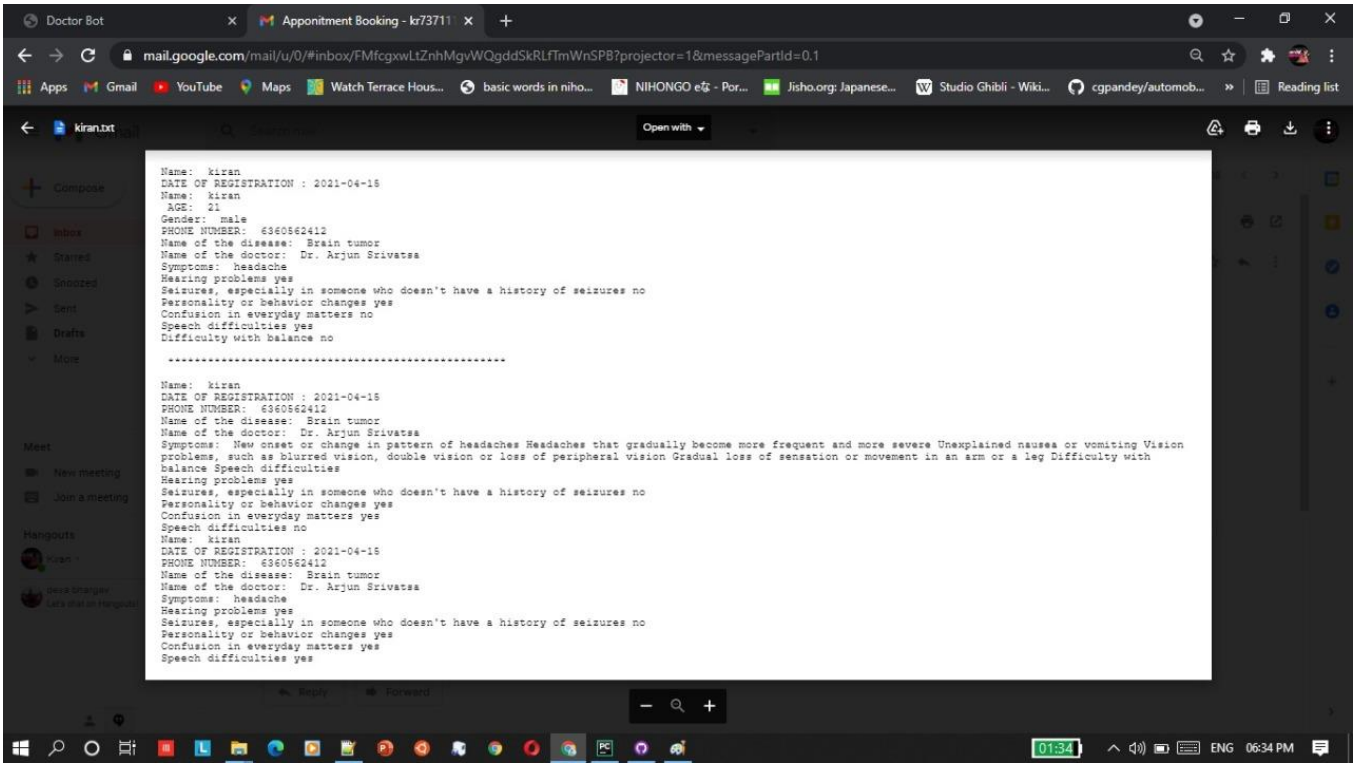

Fig 10. Report to be sent to doctor

8. Log file

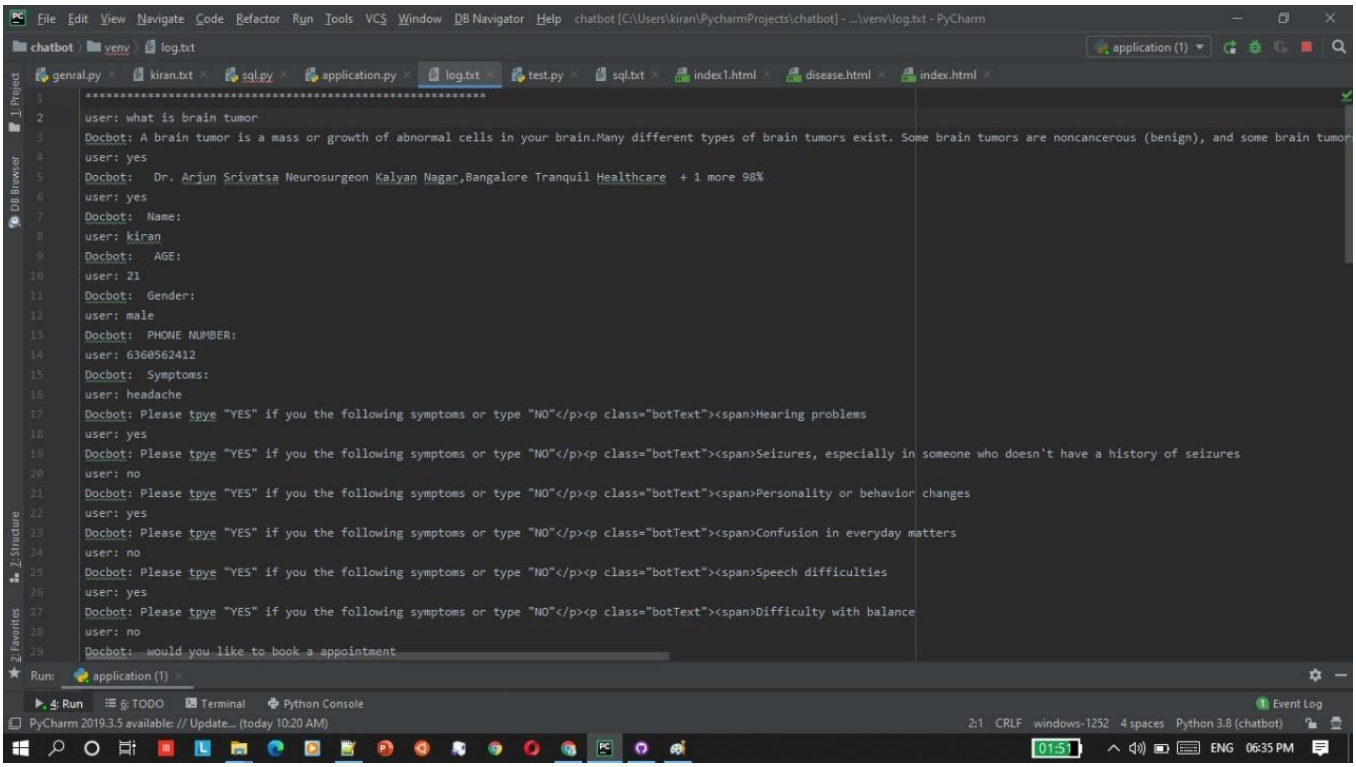

Fig 11. Log file

8. CONCLUSION AND FUTURE WORK

8.1 Conclusion

A Chatbot is a great tool for conversation. Here the application is developed to provide quality of answers in a short period of time. It removes the burden from the answer provider by directly delivering the answer to the user using an expert system. The project is developed for the user to save the user their time in consulting the doctors or experts for the healthcare solution. Herewe also developed an application to check nearby hospital and doctors for specific disease. Each keyword is weighed down to obtain the proper answer for the query. The Web interface is developed for the users, to the input query

We were able to book an appointment with the doctor and generate a report based on the user symptoms and send it to the doctor through mail, so that doctor can understand the patient even better.

8.2 Future Work

Our chatbot has many future application and features that can be added to improve the capability and include additional features like

1. Add a camera option using which the bot will be able to scan the X-ray or ECG report and explain it the user
2. Add video calling feature and connect doctors online
3. Convert the web app to an android compactable application for easy access.

REFERENCES

1. Front end reference : https://www.edureka.co/blog/how-to-make-a-chatbot-in-python/

2. Disease information : https://www.mayoclinic.org/diseases-conditions