HEALTH CARE CHATBOT USING AI

Ms.S.S.Shanthi M.C.A., M.Phil, Assistant Professor, P.G Department of Computer Science, NGM College, Pollachi - 642001
Mr. B. Suresh, Student, PG Department of Computer Science, NGM College, Pollachi - 642001

ABSTRACT:

Machine learning is one of the main subfields of artificial intelligence. It takes in data, looks for patterns in it, uses the data to better itself, and then shows the results. Healthcare plays a critical role in maintaining a healthy lifestyle. In certain isolated places, it can be difficult to simply locate a doctor for health-related consultations. The major goal is to create a natural language processing (NLP)-based artificial intelligence (AI) healthcare chatbot that can identify an illness and deliver the necessary information before a patient consults or sees a doctor. Reduces the healthcare costs and improve accessibility to this medical chat bot. Some chatbots function as medical reference books, educating patients about their conditions and promoting better health. The true value of a chatbot to the user can only be realized when it is able to diagnose any illness and deliver relevant information. A text-to-text A chatbot converses online with patients about their medical issues and offers a personalized diagnosis based on the symptoms they have reported. These chatbots establish a connection with prospective patients who visit the website, assisting them in finding specialists, scheduling appointments, and gaining access to appropriate care. This chatbot processes, analyzes, and outputs data in an acceptable manner using natural language processing techniques. It raises the question of whether the aforementioned duty should be delegated to human personnel. Patients will have access to round-the-clock online healthcare support from this chatbot system. Lead generation is aided by it, and sales receive lead information automatically. The patient is helped by having a clearer understanding of what questions to ask by having the questions asked in a series.

Keywords: Machine Learning, NLP, Artificial Intelligence, Chatbot, Symptoms, Healthcare.

I. INTRODUCTION

The state of artificial intelligence today is such that programs can successfully learn from humans and simplify human communications, which is crucial. These days, the use of chatbots has expanded from user support to risky situations involving life and death. With their ability to tackle health issues, chatbots are making their way into the healthcare sector. Chatbots for fitness and health have started to become more and more common. Facebook began enabling the healthcare sector to develop Messenger chatbots last year, which would then interact with users. Web application development is the suggested approach for system development. First, a chatbot that can assist users in identifying their disease's symptoms was developed. Next, we'll include a chatbot link on the relevant hospital website, enabling others to get medical report information. The system's database aids in storing user records.

In order for the chatbot to understand the user's purpose, the system administrator has to teach it to recognize specific keyword kinds using the Chatter Bot Library. The backend will then receive this information. Without consulting the backend, the chatbot can be educated to respond and reason logically. The healthcare application is the focus of the suggested system development methodology. It goes into more detail on the suggested system's business features. First, a chatbot that can assist users in identifying their disease's symptoms was developed. The hospital website is then incorporated, assisting others in obtaining information about the facility and its personnel. The system's database aids in storing user records. The chatbot's input was analyzed and turned into an action that would be recorded in the database.

The two entities who can access the proposed system are the Admin and the User. Admin access to the healthcare online application requires first logging in using their login credentials. Natural language processing is used to separate the text-based user requests. From the input data, the resolution engine assists in decision-making and passes the data to a bespoke data source. The last message is sent back to the localhost server and shown on the healthcare chatbot's interface. The

admin can access and modify the database containing the conversation records by adding or deleting data.

The user will provide personal information, like name, age, birthdate, and phone number. The user will be asked about their symptoms by the chatbot, which will then utilize natural language processing to identify the illness and provide appropriate medication. It will then prompt you to schedule an appointment with the hospital. Finally, the health care bot will provide the user the details of their appointment and enable them to close the chat window and leave the portal.

Objectives:

- To provide medical assistance to patients with some common diseases such as colds, flu, typhoid, malaria, jaundice, etc. without the need of physically visiting the health centers.
- The system is developed to connect the people and spread awareness and make the application easily reachable to every person in the village. In rural areas of geographical location, people don't have access to health services, the system filling this gap by connecting them with nearby doctors as well as doctors in urban areas via this application.

II. 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.

Technology development has a significant impact on the healthcare industry. Technology has benefited patients as well as clinicians, giving them a firsthand testing environment.

Chatbot for Disease Prediction and Treatment Recommendation using Machine Learning - Published in 2019 3rd International Conference on Trends in Electronics and Informatics (ICOEI): The proposed system is to create an alternative to this conventional method of visiting a hospital and making an appointment with a doctor to get a diagnosis. People can interact with the Chatbot just like they do with another human and through a series of queries with the chatbot. The chatbot will identify the symptoms of the user and thereby, predicts the disease and recommends treatment.

Medbot: Conversational Artificial Intelligence Powered Chatbot for Delivering Tele-Health after COVID-19-Published in 2020 5th International Conference on Communication and Electronics Systems (ICCES): Telemedicine can be used by medical practitioners to connect with their patients

during the recent Corona virus outbreak, whilst attempting to reduce COVID-19 transmission among patients and clinicians. Amidst the pandemic, Telemedicine has the potential to help by permitting patients to receive supportive care without having to physically visit a hospital by using a conversational artificial intelligence-based application for their treatment. Thus, tele health will rapidly and radically transform in person care to remote consultation of patients. Because of this, it developed a Multilingual Conversational Bot based on Natural Language Processing (NLP) to provide free primary healthcare education, information, and advice to chronic patients. The study introduces a novel computer application acting as a personal virtual doctor that has been opportunely designed and extensively trained to interact with patients like human beings. This application is based upon a server-less architecture and it aggregates the services of a doctor by providing preventive measures, home remedies, interactive counseling sessions, healthcare tips, and symptoms covering the most prevalent diseases in rural India. The paper proposes a conversational bot “Aapka Chikitsak" on Google Cloud Platform (GCP) for delivering telehealth in India to increase the patient's access to healthcare knowledge and leverage the potentials of artificial intelligence to bridge the gap of demand and supply of human healthcare providers. This conversational application has resulted in reducing the barriers for access to healthcare facilities and procures intelligent consultations remotely to allow timely care and quality treatment, thereby effectively assisting the society.

A Medical ChatBot-Published in June 2018 International Journal of Computer Trends and Technology: Normally Users are not aware about all the treatment or symptoms regarding the particular disease. For small problems users have to go personally to the hospital for check-up which is more time consuming. Also handling the telephonic calls for the complaints is quite hectic. Such a problem can be solved by using medical ChatBot by giving proper guidance regarding healthy living. The functioning of medical chatbots depends on Natural language processing that helps users to submit their problems about their health. The User can ask any personal query related to health care through the chatbot without physically being available to the hospital. By Using Google API for voice-text and text voice conversion. Query is sent to ChatBot and gets a related answer and displays the answer on the android app. The System’s major concern behind developing this web based platform is analysing customer’s sentiments.

In recent times, healthcare is becoming more accessible to a wider group of people through the medium of technology. The concepts of artificial intelligence, machine learning and neural networks have provided substantial assistance in the field of healthcare. In today’s fast-paced world, people tend to neglect their health which may result in a critical problem. Such a problem can be avoided by using the symptoms driven disease prediction application. Our project focuses on providing the users immediate and accurate prediction of the diseases based on their symptoms along with a detailed analysis of their pathology reports. The disease prediction chatbot is developed using natural language processing and machine learning algorithms. For the prediction of diseases, we have used two classification algorithms namely, Decision tree and KNN (k-nearest neighbors). The performance of these techniques are compared and based on their accuracy, the best model is selected. As per our results, the accuracy of Decision Tree and KNN are 92.6% and 95.74% respectively. This project also looks forward to providing medical consultation on the predicted disease. The pathology report analysis is performed using the concept of Optical Character Recognition (OCR). Tesseract is an open-source recognition engine to perform OCR. The text extracted from the report is used for interpreting the results in an easier way and to provide a graphical analysis of the test results.

III. PROPOSED METHODOLOGY

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 reports. Database of the system helps to store the records of the users.

In this proposed system the user can interact with the chatbot through text and chat bot will interact using voice and text manner. With respect to the users queries, the bot identifies the disease if user chatting with the chatbot. According to the diseases of the user, bot gives suggestions for the disease and also prescribe specialist doctors. This system can be used by multiple users at a time without any lagging. Also, the proposed application helps to connects people from geographically dispersed areas with doctors where they are unreachable.

Features:

- Bridge among peoples and healthcare professionals.
- Provides clear suggestion as similarly as human being.
- It fulfills the absences of real human who gives healthcare information.
- Many number of users can use at a time, It works without lagging.
- It overcomes geographical limitations.

Module Description

Information flow representation provides the detailed description of the project flow. The application tool includes the modules such as,

Admin Module:

The role of admin is to add all the updates to the map with nearby medicals and laboratories, also add information regarding free campaigns and schemes released by government and also look up for the maintenance of the application. The main function of the admin is to monitor the doctors on daily basis and analyze experience and feedback provided by the patients.

Registration Module:

The patient will register on the application or login if already registered then they are allowed to communicate with the proposed AI system.

Patient Module:

Patients can convey their problem to a chatbot for common day to day healthcare issues and get instant remedy from the HealthBot. It can suggest common medicines for normal health problems like normal fever, cold, headache, etc. Patients can also seek help from doctors via the application with a text message with the doctor.

Artificial Intelligence – Chatbot:

The term artificial intelligence is used to indicate development of algorithms that should execute tasks that are typically performed by human beings and are, therefore, associated with intelligent behavior. Colloquially, the term is applied to a machine that mimics cognitive functions, such as learning and problem solving. In our application as of now we are using AI for making chatbot.

IV. IMPLEMENTATION

The healthcare chatbot is designed by using PHP with MYSQL backend and user interface design by HTML, CSS and JavaScript. For conversation between user and system the natural processing library is used named chatter bot application runs in localhost ser appropriate details according to the user queries. In training phase, the training data file is used to populate training set. All the database files are in format which are trained in the initial stage of the application model frontend interface of the healthcare assistant is displayed on the localhost server and ready to solve the patient symptoms on basis of a specific disease.

At initial, the health assistant will take some personal details of the user which will be stored in the database. The diseases like headache, cough, cold, etc are some diseases where user queries are inserted. For a doctor's appointment, a different data file is created. The training will help the bot to increase the accuracy of the responses.

Information flow representation provides the detailed description of the project flow. The work flow of the system is as follows,

- Insert user query in the chatbot window.
- The details will be extracted from the user chat.
- Decision Tree classifier algorithm is used to process the query.

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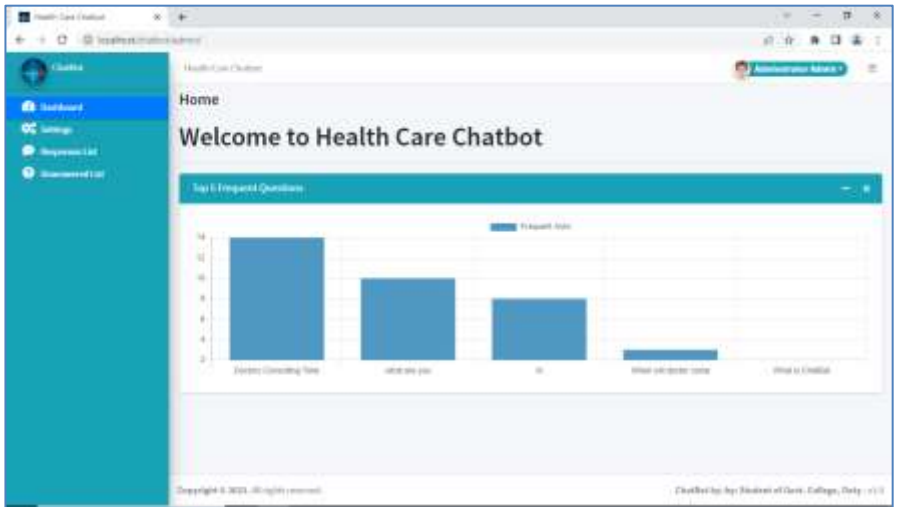
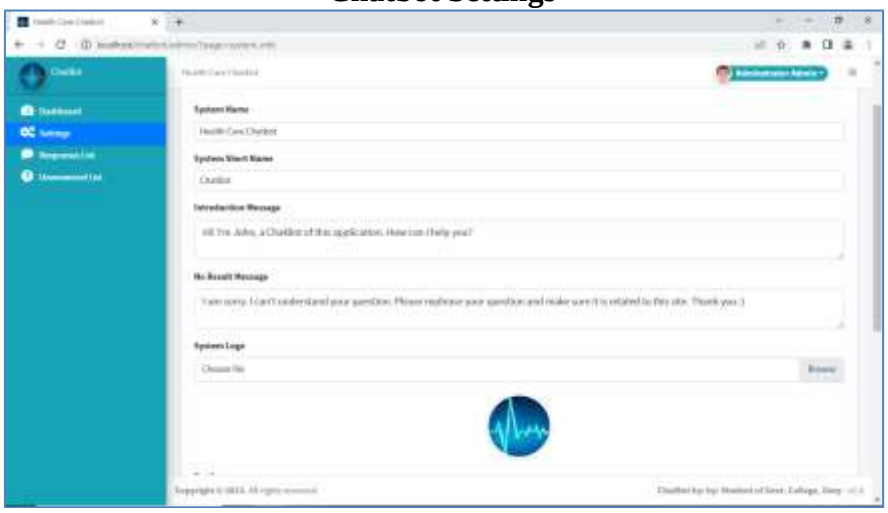
- The response is fetched from the chatbot like Disease Prediction and Disease Precaution and output to the user.
- Exit.

V. EXPERIMENTAL RESULTS

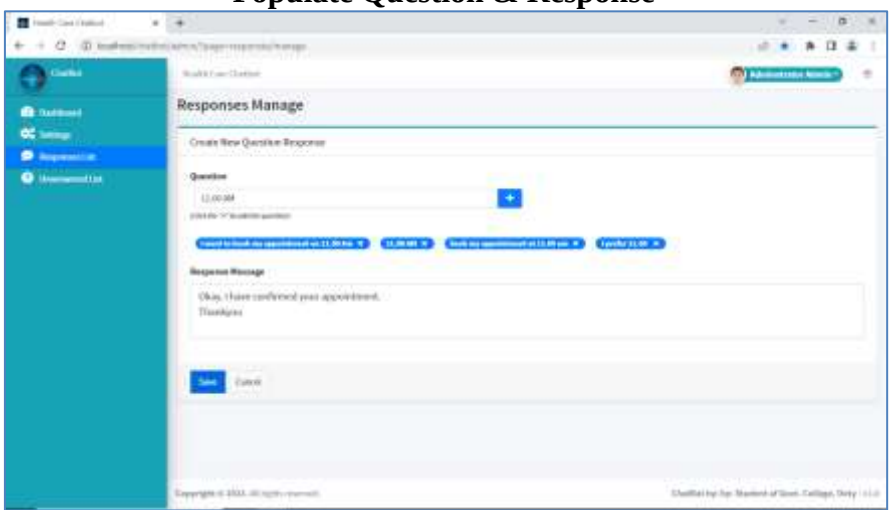
Admin Dashboard



Chatbot Settings



Populate Question & Response



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Chatbot Page (User Page)

Chatbot Interaction

Chatbot Interaction

VI. CONCLUSION

In this age of science and technology, people are becoming easier and convenient ways to unravel their everyday problems. Health care is additionally getting the eye of engineers and researchers, and that they are developing a helpful system to save lots of lives and look afterlife. The proposed system is an efficient, cheap, easy and a quick way to help patients to have a one to one

conversation with the Chatbot that helps and assists them to take care of their health effectively. With the chat bot help of Chat bot users can post their symptoms and get the solutions from the bot.

The system can be accessed from anywhere and at anytime conveniently. The chat bot is available 24/7. Our medical discussion provides medical assistance to patients with some common diseases such as colds, flu, typhoid, malaria, jaundice, etc. We are developing a system due to the need for population growth country. The use of chatbot is a medical field indeed otherwise our thoughts. Using this application, user will find many conveniences which will change the way people react in emergencies rather than being panic, people may find a fast and effective thanks to solving with the assistance of this system.

VII. SCOPE FOR FUTURE ENHANCEMENTS

Chat-bots are installed with the motive to speed-up the response and improve customer interaction. However, due to fix data availability and time required for self updating, this process appears more time taking and costly. Therefore, in place to manage several customers at a time, chatbots appear unclear about how to communicate with individuals.

Future scope of the project could be AI Based Healthcare chatbot system using NLP can also include a 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 in future.

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