MEDICAL CHATBOT

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Abstract: Medical Chatbot is a project that looks into what artificial intelligence agents can do in today's society. Alan Turing (1912-1954), known as the "Father of Modern Computing," created artificial intelligence. By breaking the Enigma code used by the Germans during WWII, which was long thought to be unbreakable, he set the groundwork for the creation of computer science. He also investigated what was possible with electronic computers and artificial intelligence. In his 1950 work on Computing Machinery and Intelligence, he asks, "Can computers think?" He invented the Turing test, which evaluates a machine's ability to demonstrate intelligent behaviour that is equivalent to, or indistinguishable from, that of a human. Throughout the paper, he delves deeper into this topic, and I came across an amazing quotation. "I believe that in about fifty years, it will be able to teach computers with a storage capacity of approximately 109 to play the imitation game so well that an ordinary interrogator will have less than a 70% chance of getting the correct identification after five minutes of questioning," Turing said.

Keywords-*Machine Learning, Pre-processing, Feature Extraction, Speech recognition using NLP.*

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I INTRODUCTION

Customer support activities, as well as company, institution, and organisation websites, are automated using the chat bot system. The user receives a prompt response to frequently asked questions. We presented a patient-facing chatbot system. Patients are nearly certain to get a barrage of enquiries about their disease, treatment options, and other services. Rather than approaching a random individual, users can utilise this chat bot system to receive a prompt response. A chatbot is an artificial intelligence creature capable of conversing with a human. The majority of them feature a chatbot interface that accepts user input and produces chatbot output. The chatbot interprets the user's input and responds appropriately. It might be a greeting, a discussion point, or even a snapshot. The majority of chatbots reply to user input by matching it against a predetermined collection of previous chats. When a user says "Thank you," the chatbot responds with "You're Welcome." A prepared series of exchanges can be used to imitate a conventional two-person argument. When a user says something the chatbot does not understand, complications can occur. For instance, if a user want to say "Thank you," but instead says "Thanks a lot," the chatbot will be bewildered, as it is searching for "Thank you" input to match with "Welcome." Attempting to define each possible combination of a user saying "Thank you" takes time. Modern chatbots are more sophisticated and respond to human input via natural language processing. They can use APIs to acquire data from consumers such as news, weather, and time. Additionally, they can take orders and schedule appointments via a chatbot interface. Chatbots are perfect for mobile devices since they are built around communication. Since SMS texts became popular in the 2000s, messaging has gone a long way, and it is currently on the slide. Between 2011 and 2015, SMS usage in Ireland decreased by 44%. In 2011, there were 3 billion messages, down from 1.7 billion in 2015. Chatboot is an Entity which imitate human discussion in its particular accepted set up together with a text or vocal language with techniques such as Natural language processing(NLP). The aim of this system is to replicate a person's discussion. The development of chatboot applications can be done with making a user interface to sent input and recive response. It is a system that interact with user user by keeping the track of the state of interaction and recollecting the preceding commands to give functionality. The medical chatbots can be developed by using artificial algorithm that scrutinize user's queries and recognise it and give reply to related query. A big disease can start from small problem such as headache which feel normal but it may beginning of big disease such as brain tumour. It is an interaction system solve users query regarding medicine. So they can get correct guidance for treatment through android app by using Google API.

II. PROBLEM DEFINATION

The system concentrates on the messages that the user sends upon starting the chat. The goal is to discover any early warning signs or problems that the user may be having. After the Chatbot has gathered enough keywords from the initial messages, it begins leading the conversation by asking the user questions and attempting to narrow down a few ailments that the user may be experiencing. After the Chatbot has narrowed down the probable conditions that the user could be suffering from, it now assigns a ranking to those disorders. When the list of possible diseases, the Chatbot starts interrogating the user about how the user is feeling. Once it has gathered enough information, it determines the most likely disease that the user is suffering from. After the

Chatbot has identified the sickness that the user is experiencing, it assesses the severity of the condition and takes appropriate action, such as offering treatments and medicines or connecting the user to a doctor if the measure exceeds a specified threshold value.

III. LITERATURE SURVEY

Chien-Hao Kao,Chih-Chieh Chen, "Model of Multi-turn Dialogue in Emotional Chatbot"[1],As presented, The ability to recognise intent and understand natural language in multi-turn interaction is critical to the commercialization of chatbots. Chatbots are mostly employed to do certain activities, such as introducing products to clients or resolving associated issues, and so save human resources. Text sentiment detection allows a chatbot to detect a user's emotional state and determine the most appropriate response, which is crucial in medical treatment. We merged the multiturn dialogue model and the sentiment detection model in this study to create a chatbot that is meant to be used in everyday chats rather than for specific tasks. As a result, the chatbot can provide feedback on the robot's emotions while conversing with a user. Furthermore, depending on the substance of the user's conversation, it might display a variety of emotional reactions. The dataset is unbalanced, and it is generated by a TV show in which the performers may express intense emotional ups and downs in order to convey the story's tension. We'll fix this problem by introducing tags that quantify emotion. Give a larger value than typical for continuous good or negative feelings to make the emotional transition appear smoother rather than abrupt. Although the generative model differs from those for specific tasks, most of the training datasets for existing chatbots are question–answer chats, and the replies are dull and unclear in regular conversation. Many elements continue to influence the substance of a conversation. The generative model chatbot uses Seq2Seq from the translation model as a generator, despite the fact that there is no standard answer in a chat. As a result, alterations were made in this study to elicit numerous sorts of responses in the presence of a variety of circumstances.

Mubashra Akhtar,Julia Neidhardt., The Potential of Chatbots: Analysis of Chatbot Conversations"[2]. As present The concept of using computers to answer questions has been around from the beginning of these systems. The first algorithms aimed at achieving this goal were developed in the early 1960s. Chatbots have exploded in popularity in a variety of fields in recent years. They are regarded as useful tools for developing customer connections in the context of business applications. Customers' chat discussions with a telecoms company's chatbot are examined in this research to see if these interactions can be utilised to assess a) users' topics of interest and b)user happiness. Chat discussions are understood as sequences of events, and user inputs are analysed using text mining techniques to achieve this purpose. The study demonstrates that valuable insights into users' interests and happiness can be gleaned from their written conversational contributions. If the chatbot is unable to provide the appropriate answer straight away, the majority of users will abandon the conversation after a short period of time. Furthermore, a large proportion of discussion revolve around the same issues. Our findings suggest that organisations who provide chatbots should properly analyse the data they acquire in order to obtain a better understanding of their clients' demands. They may boost customer happiness by providing individualised service and applying real- time feedback, according to our research.

Naz Albayrak, Aydeniz Ozdemir and Engin Zeydan. "Yapay Zeka Tabanlı Rehber Robotlara Genel Bir Bakı¸s ve Ornek ¨ Bir Rehber Robot Uygulaması An Overview of Artificial Intelligence Based Chat□ bots and An Example Chatbot Applicatio"[3].As present ChatBot is a piece of software that uses artificial intelligence to converse with humans. These programmes are used to do duties such as replying swiftly to consumers, informing them, assisting in the acquisition of products, and delivering better customer support. The overall working principle and basic principles of artificial intelligence-based chatbots and related concepts, as well as their applications in diverse areas such as telecommunications, finance, health, customer call centres, and e-commerce, are presented in this article. Additionally, the proposed architecture is used to showcase the results of an example chabbot for donation service designed for a telecommunication service provider.

Ramya Ravi, "Intelligent Chatbot for Easy Web-Analytics Insights"[4].As present In today's fast-paced, data-driven environment, it's critical that we derive accurate insights in order to make the best judgments possible at the right moment. There are numerous web analytics solutions that provide performance information for online websites. However, mastering the technologies, let alone gaining insights to grasp the business implications, is arduous and time-consuming. In this study, I compare the ease of use of two frequently used analytics programmes. In light of this, I propose a chatbot powered by Artificial Intelligence Machine Learning (AIML) and fueled by raw analytics data, which will allow bot users to gain business insights by just typing in a query. In this work, I propose a chatbot that allows botusers to simply write in a web analytics question and receive a quick result. This is to avoid having to learn how to use a web analytics programme, which can take a long time. The data set for the proposed chatbot is raw analytics data, which was created using AIML. Experiments were carried out to better understand the tool's performance. The tool was evaluated based on answer quality, and it performed admirably. The bot-user must follow a pattern in order to fill in the inquiry because the chatbot is built using AIML. I'd like to expand on my work by fine-tuning the chatbot and making it more intelligent, so that the bot-user doesn't have to submit the query in a predetermined form.

ura$uvhqlmhyl ,dulmd-ryl, "Artificial intelligence marketing: Chatbots"[5].As present Artificial Intelligence (AI) is a tool that allows marketers to develop highly personalised client experiences, improve organisation response, and handle customer issues. In this study, the chatbot is examined as an artificial intelligence tool in marketing, as well as its current application and future potential in the sector. In total, 60 survey respondents were polled on their behaviours, habits, and expectations when utilising various communication channels, with a focus on chatbots and their advantages and disadvantages in comparison to traditional communication channels. The findings revealed that the greatest benefit of employing chatbots in marketing services was when providing simple, quickly accessed information, but they also revealed respondents' worry of chatbots providing them with incorrect information. Chatbots should be considered by businesses, especially if they face communication issues with clients, but also if they want to stay up with the changing lifestyles of their customers.

IV.PROPOSED SYSTEM

This chapter begins with an overview of chatbots and how we use them to provide health management via the NLP morphology notion. Python was used to develop the chatbot. Python is a platform with an intuitive user interface that simplifies the process of linking. Python was used to develop the chatbot. Python is a platform with an intuitive user interface that simplifies the process of linking. It comes with built-in dictionaries and lists for quickly constructing runtime data structures. By entering their enquiry, the user can obtain critical information. All input data is supplied, including height, weight, and other demographic information. To begin, the user's height and weight must be entered. The chatbot will then provide the user with the BMI (Body Mass Index) formula, which will enable them to identify if they are overweight or underweight. The purchaser can next inquire about the nutrition plan and the necessary activity to maintain one's fitness level. The chatbot will present the user with the same information, resolving their concerns. This technique was created to alleviate people's fears, as sharing something with a computer is the superior option to sharing something with a human being. The data flow diagram and architectural diagram included in the project helps in the overall comprehension of the notion of morphology. NLP consists of three stages: lexical analysis, syntactic analysis, and semantic analysis, with this study emphasising morphological analysis. By subdividing it, it addresses the major issue of ambiguity in understanding language and providing the appropriate response to the user.

4A.SYSTEM ARCHITECTURE
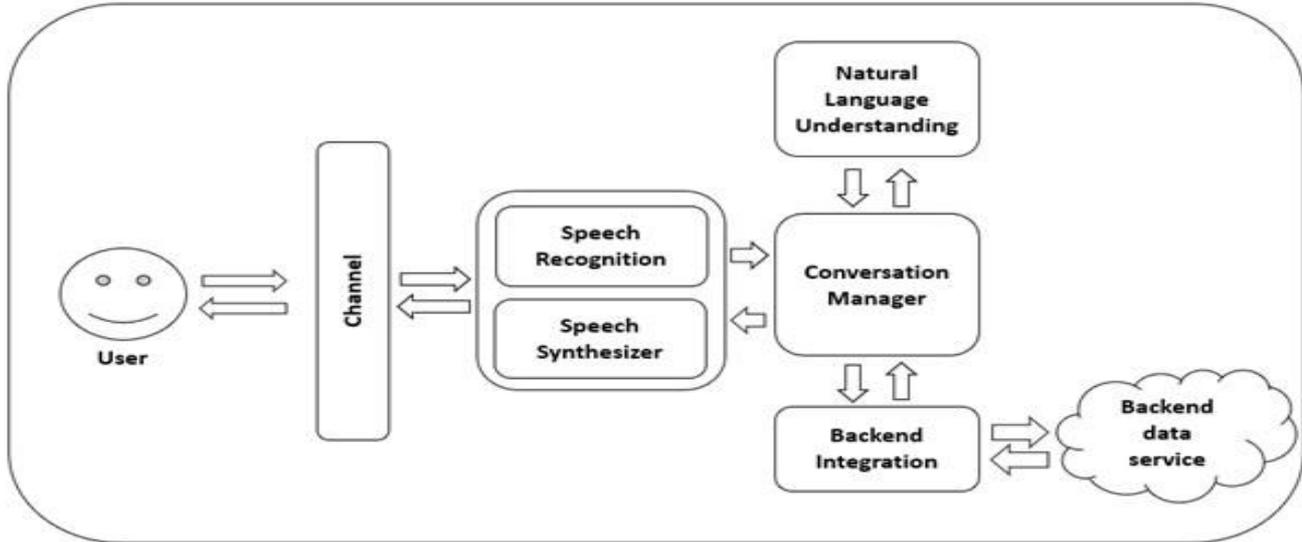
Fig1.System Architecture

Explaination Of System Architecture:

Firstly, click the button for voice input.The input would be totally dependent upon the users comfort as system has voice as well text input option.After that , we need to give our question or query to the system .Then the System will recognize the speech through speech recognition function.Speech recognition will catch up the voice as it will convert the sound vibrations which are nothing but inform of waves which gets converted digitally further.As the voice is detected the sounds gets transfered into machine level that is nothing but binary language which is understood by the system.Further,converts to text using text Conversion functionality. Then, Translate the query using translator. Next, Matches the query in database (Use NLP). NLP is nothinv but stands for Natural Language Processing.

It is a process where the machine interacts with the human language.Interaction takes place in form of text or voice.

NLP makes it possible for computers to read text, hear speech, interpret it, measure sentiment and determine which parts are important.

Finally, response is send to the query through translating the data.Data is being stored in database and hence according to the users input the data is being analysed and appropriate doctors list with their details is being displayed to the users screen.

Speech recognition:

It is also known as automatic speech recognition (ASR), computer speech recognition or speech to text is a capability which enables a program to process human speech into a written format.

While Its commonly confused with voice recognition, speech recognition focuses on the translation of speech from a verbal format to a text one whereas voice recognition just seeks to Identify an individual users voice.

Speech synthesis:

It is the artificial production of human speech. A computer system used for this purpose is called a speech computer or speech Synthesizer, and can be implemented in software or hardware product. Synthesized speech can be created by concatenating piece of recorded speech that are stored in a database. System differs in the size of the stored speech units; a system that Stores phones or diphones provide the largest output range, but may lack clarity. For specific usage domains, the storage of entire words or sentenses allow for high quality output.

Natural language understanding:

In real life, NLP is used for text summarization, sentiment analysis, topic extraction, named entity recognition, parts of speech tagging, Relationship extraction, stemming, text mining, machine translation, and automated question answering, ontology population, language modeling and all language-related tasks.

The field of NLU is an important and challenging subset of natural language Processing (NLP).

Conversation Manager:

Conversation manager is used to obtain information. Make decisions and perform common tasks.

Backend Integration:

Backend integration is nothing but which is used to obtain the complete required data entered by the users as an input.

Details such as for example login id , password etc.Which are further stored in the database. Backend integration is not invisible to our users.

V.ALGORITHM OF PROPOSED SYSTEM

KNN algorithm:

K-Nearest Neighbour is one of the simplest Machine Learning algorithms based on Supervised Learning technique.K-NN algorithm assumes the similarity between the new case/data and available cases and put the new case into the category that is most similar to the available categories.K-NN algorithm stores all the available data and classifies a new data point based on the similarity. This means when new data appears then it can be easily classified into a well suite category by using K- NN algorithm.K-NN algorithm can be used for Regression as well as for Classification but mostly it is used for the Classification problems.K-NN is a non-parametric algorithm, which means it does not make any assumption on underlying data.It is also called a lazy learner algorithm because it does not learn from the training set immediately instead it stores the dataset and at the time of classification, it performs an action on the dataset..KNN algorithm at the training phase just stores the dataset and when it gets new data, then it classifies that data into a category that is much similar to the new data.

Natural language processing (NLP) is a subject of linguistics, computer science, and artificial intelligence that studies how   computers interact with human language, more precisely, how to create computers capable of processing and analysing massive amounts of natural language data. As a result, a computer is capable of "understanding" the contents of documents, even the complexity of the language being utilised. Following that, the system is capable of extracting correct data and insights from the documents, as well as categorising and organising them. Speech recognition, natural language interpretation, and natural language production all confront shared challenges in natural language processing.

Processing of text and speech:

Optical Character Recognition-

Extract the matched text from an image of printed text using optical character recognition (OCR). Speech recognition is a service that enables you to recognise the sounds made by other people. Determine the textual representation of a talk given a sound recording of a person or individuals speaking.

Text-To-Speech:

This is the reversal of text-to-speech and is one of the exceedingly difficult topics that the general public refers to as "AI-complete" (see above).

Speech Segmentation:

Speech segmentation is a critical subtask of speech recognition, as natural speech rarely has pauses between words (see below). Because the sounds that represent successive letters in the majority of spoken languages combine in a process known as coarticulation, it can be challenging to convert analogue input to

discrete symbols. Additionally, because the same language is spoken by persons with varying accents, speech recognition software must be capable of classifying a wide variety of input as textually related. Segmentation of speech Divide a spoken word clip from a person or group of people into words. Typically bundled with voice recognition as a subtask.

Text-To-Speech:

Text-to-speech (TTS) technology converts written text to spoken language. Transform the units in a text to create a spoken representation. The visually challenged can benefit from text-to-speech technology.

Word Segmentation:

(nineteenth century) Split a continuous text string into discrete words using word segmentation (tokenization). This is quite straightforward in a language like English, where words are frequently separated by spaces. However, other written languages, like Chinese, Japanese, and Thai, do not define word boundaries in this way, making text segmentation a difficult operation that requires a thorough examination of the language's lexicon and morphology. This method is also utilised in instances involving data mining, such as when producing a bag of words (BOW).

VI. APPLICATIONS

1 Chatbot use cases in healthcare

1.1 Provide medical information

1.2. Schedule medical appointments

1.3. Collect patient data

1.4. Handle insurance inquiries

1.5. Provide mental health assistance

1.6. Request prescription refills 2.Healthcare chatbots market and future 3.For more on chatbots

VII. UML DIAGRAM
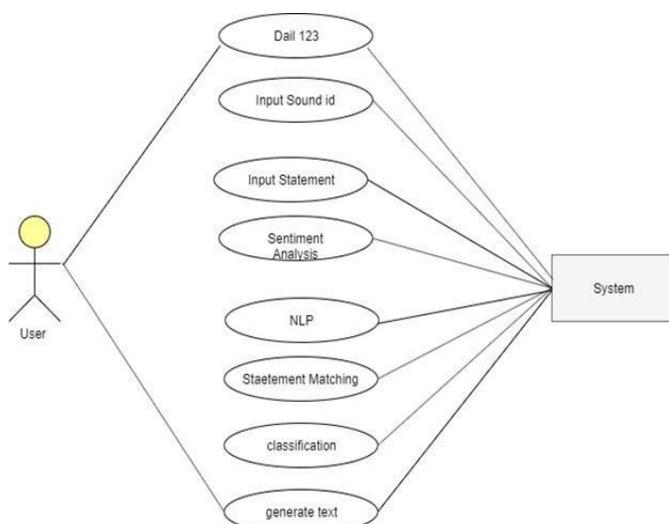
Fig 2. Usecase Diagram

VIII. RESULT
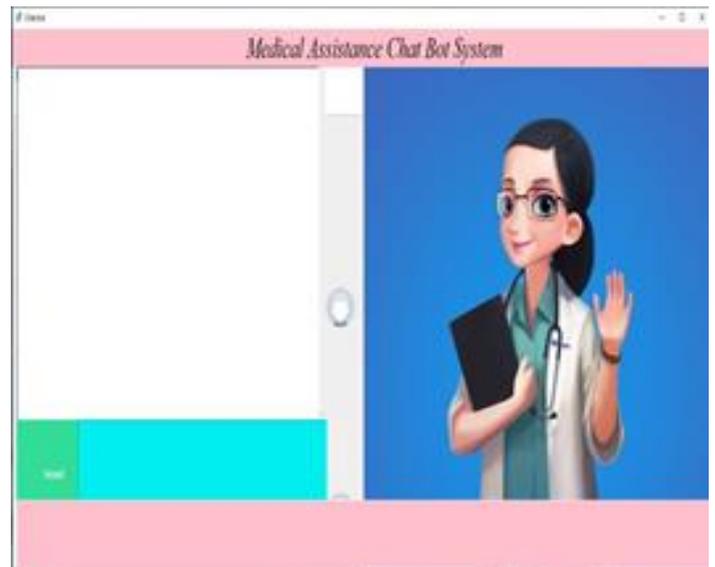
Fig 3. Result 1

Fig 4. Result 2
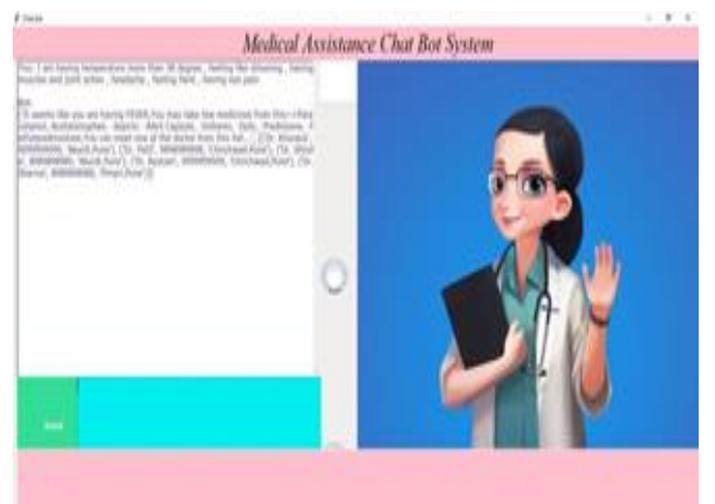
Fig 5. Result 3

Fig 5. Result 4

VII.CONCLUSION

The structure we create in order to make client benefits as clear as possible. As it is, we're working hard to make the framework simple to connect. There will be no compelling reason to press the catch in order to select the option, just as there will be no compelling reason to wait for the answer. In this application, we use the Speech Recognition, Speech to Content Change, and Language Interpreter modules. Chat bot service providers act as customer service agents for a wide range of organisations, institutions, and sectors, as well as as a personal assistant for everyone on the planet. Bots built on our site can also help you remember a range of things. It may also help a variety of businesses recruit customers from around the country. It can also be used to entertain people who are bored by sending them jokes, facts, and quotes. When constructing our project to service millions of clients at the same time, performance is the most crucial thing to consider. The recommended technique was judged to be successful based on the best of the testing findings and responses from the constructed system.

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