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INFORMATION AND MENTAL SUPPORT WEB APPLICATION WITH SPEECH BOT USING NLP

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ABSTRACT

Voice Bots are emerging as a promising platform for accessing and delivering healthcare services. The evidence is in the growing number of publicly available chatbots aiming at taking an active role in the provision of prevention, diagnosis, and treatment services. Today the focus is on convenience, the less time and effort, the better. By using Bots as their service of choice, consumers outsource their decisions to algorithms, hence give little attention to traditional consumer decision making models and brand emphasis. The use of voicebots evolved rapidly in numerous fields in recent years, including Marketing, Supporting Systems, Education, Health Care, Cultural Heritage, and Entertainment. Next, we discuss the motivations that drive the use of voicebots. Moreover, the impact of social stereotypes on voicebots design, after clarifying necessary technological concepts Furthermore, we present the general architecture of modern voicebot. Voicebots seem to hold tremendous promise for providing users with quick and convenient support responding specifically to their questions. The most frequent motivation for voicebot users is considered to be productivity, while other motives are entertainment, social factors, and contact with novelty. A voice-bot is a software application used to conduct an online chat conversation via text or text-to speech, instead of providing direct contact with a live human agent. Designed to convincingly simulate the way a human would behave as a conversational partner. In the proposed system, we presented a voicebot that generates a dynamic response

for online client's queries.

KEYWORDS: Voicebot, natural language processing, python, HTML and CSS.

I. INTRODUCTION

A chatbot (conversational interface, AI agent) is a computer program that can understand human language and converse with a user via a website or a messaging app. Chat bots can handle various tasks online from answering simple questions and scheduling calls to gathering customer feedback. Brands use bots to automate their business processes, speed up customer service, and lower support costs. Chatbots use artificial intelligence (AI) and natural language processing (NLP) to help users interact with web services or apps through text, graphics, or speech. Chat bots can understand natural human language, simulate human conversation, and run simple, automated tasks. Chat bots are used in a variety of channels, such as messaging apps, mobile apps, websites, phone lines, and voice-enabled apps. There are two main types of chat bots that a business can use: transactional chat bots and conversational chat bots. Their main difference is in their overall levels of complexity.

Transactional chatbots

A transactional chatbot, also called a task-oriented or declarative chatbot, is a single-purpose chatbot that's focused on performing or automating one task or function. It's designed to provide a fixed set of options for a user to choose from, depending on what the user wants to do or what problem they want to solve. After the user makes their choice, the chatbot guides them through the process by continuing to provide available options until the user's question has been answered or the problem has been solved, or until the user is transferred to a live agent.

Transactional chatbots use natural language processing to understand the intent of the user's inquiry and generate automated responses that are designed to be conversational. Interactions with transactional chatbots are trained on structured data, which makes them very helpful for businesses that know in advance what common actions or problems that customers may need help with. For example, restaurants, delivery companies, and banks use transactional chatbots to handle common questions, such as questions about business hours, or to help customers with simple transactions. There's a wide range of transactional chatbot examples, because transactional chatbots are the most commonly used type.

Conversational chatbots

A conversational chatbot is a more sophisticated and interactive type of chatbot that uses natural language processing to deliver more personalized interactions. These conversational bots use conversational AI, natural language processing, and access to knowledge databases and other information to detect nuances in a user's questions and responses, and give dynamic, relevant answers the same way a human would.

Conversational chatbots, which are often called virtual assistants or digital assistants, also use predictive intelligence and analytics for personalization based on each user's profile and previous behaviour. Over time, this type of chatbot can learn a user's preferences and use this learning to provide recommendations and anticipate needs. Conversational chatbots are used by e-commerce companies, online services, and social platforms, businesses with advanced software as a service tools, and business-to-business (B2B) companies that provide enterprise solutions.

Chatbots have already gained traction in retail, news media, social media, banking, and customer service. Many people engage with chatbots every day on their smartphones without even knowing. From catching up on sports news to navigating bank applications to playing conversation-based games on Facebook Messenger, chatbots are revolutionizing the way we live. Healthcare payers, providers, including medical assistants, are also beginning to leverage these AI-enabled tools to simplify patient care and cut unnecessary costs. Whenever a patient strikes up a conversation with a medical representative who may sound human but underneath is an intelligent conversational machine we see a healthcare chatbot in the medical field in action. So, here we are building a conversational chatbots that helps the people to share their thoughts and doubts during their health problems.
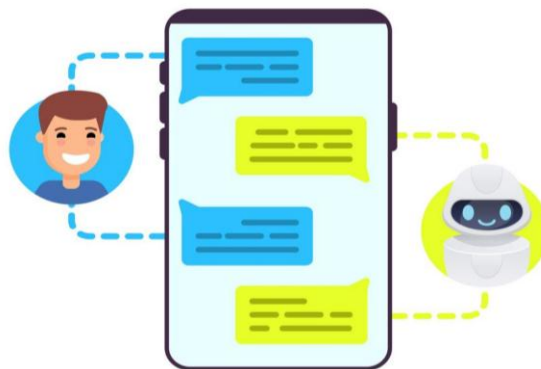

Fig 1: Chatbot.

II. LITERATURE REVIEW

[1] Aishwarya Gupta, Divya Hathwar- This is the survey on introduction to AI chat bots. Chat bots are software programs that use natural language understanding. In this paper, we will provide an insight into what a chatbot is and the types of chatbots. They also propose a classification based on the current market trends, ease of usability and requirements. Chat bots like Alice and Eliza have created an impact in the world of technology. Lately, with the concepts of Artificial Intelligence, Machine Learning, Natural Processing Language and recent advancements in machine learning techniques like Deep Learning, it has been made possible to develop humanoid chat bots. Samsung Technology and Advanced Research Labs (STAR) have developed a technology, Neon, a chat bot that has been designed to behave like a human with emotional ability and intelligence.

[2] Sardar Jaf, Kenneth McGarry- This is the survey on recent advances in chat bots. The increased benefits of chat bots led to their wide adoption by many industries in order to provide virtual assistance to customers. Chat bots utilize methods and algorithms from two Artificial Intelligence domains: Natural Language Processing and Machine Learning. However, there are many challenges and limitations in their application. In this survey we review recent advances on chat bots, where Artificial Intelligence and Natural Language processing are used. Despite the fact that the first chat bots were created sixty years ago, the area has continued to grow and provide new and exciting problems. To bridge these gaps, smaller, flexible, less domain dependent models would be beneficial. Improved, scalable, and flexible language models for industry specific applications, more human-like model architectures, and improved evaluation frameworks would surely represent great steps forward in the field.

[3] Nithuna.S and Laseena C.A- This is the survey on implementation techniques of chat bots. Chat bots are an intelligent system being developed using artificial intelligence (AI) and natural language processing (NLP) algorithms. There are numerous chat bot advancement systems accessible in the market both code-based and interface based**.** This paper provides a critical review of chat bots and the current strategies are exhaustively explored and talked discussed. Recently in the conversational agent system, there has been much development and experimentation. The chat bots are created by utilizing rule-based strategies, or straightforward machine learning calculations, many progressed chat bots are utilizing propelled NLP methods and Deep Learning Techniques like Deep Neural Network (DNN)

and Deep Reinforcement Learning (DRL).

[4] Tushar Sharma-This is the survey on prediction and management of stress.The application allows user to share their stress related issues. Here, we use neural network and machine learning technique like decision tree to train the data and guess the most accurate stress level that could be associated with patient's details and according to that it will show the measures to take place. This application can be used to identifying the stress level and its management.

[5] Ruyi Wang, Jinyu Wang-This is the survey on supervised machine learning for parental mental health care. Perinatal mental health (PMH) problems are types of mood disorders which arise during pregnancy and within 24 months after the birth of a child. The author proposes a chat bot to monitor and assess the mental state of perinatal women. This article uses supervised machine learning to analyse the 31 characteristics of 223 samples, and trains a model to determine the anxiety, depression and hypomania index of perinatal women. Meanwhile, psychological test scales are used to assist in evaluation and make treatment suggestions to help users improve their mental health.

[6] Shobana A J, Blessy Babu- This is the survey on a graph based chat bot for cancer patients. This paper introduces a potential solution to provide them with what they are seeking for a chat bot. The proposed chat bot is a cancer chat bot designed only for people dealing with cancer. People can ask about anything and everything about cancer- symptoms, treatments, survival and so on. The bot is trained by information collected from various cancer forums which have a wide range of information about cancer. Sentiment analysis is used to identify the mood of the users so that the bot can give a human-like behaviour and comfort them**.**

[7] **Prakhar Srivastava, Nishant Singh**- This is the survey on automatized medical chat bot. Automatized medical chat bots are conversationally built with technology in mind with having the potential to reduce efforts to healthcare costs and improve access to medical services and knowledge. We built a diagnosis bot that engages patients in the conversation for their medical query and problems to provide an individualized diagnosis based on their diagnosed manifestation and profile. This bot utilizes an external, closed-source recognition engine, so in order to upgrade the functionality of the diagnosis, it may be obligatory to develop an engine from scrape or find discover another asset that holdup expansion that can

be useful in the long run.

[8] Marcos Baez- This is the survey on the chat bots as conversational health care services. This article takes a closer look at how these emerging chat bots address design aspects relevant to healthcare service provision, emphasizing the Human-AI interaction aspects and the transparency in AI automation and decision making. We report on a systematic analysis of 158 publicly available healthcare chat bot. This paper identifies salient service provision archetypes that characterize the emerging roles, function and provides implications for theory and practice that highlight existing gaps.

[9] Vedika Patil, Sonali Kolpe- This is the survey on the college enquiry chat bot. This will work as a College Oriented Intelligence machine. This virtual machine will respond the queries of students on college related issues. A chatbot has information stored in its database to identify the sentences and making a decision itself as response to answer a given question. The college enquiry chat bot will be built using algorithm that analyses queries and understand user's message.

[10] Himanshu Gadge, Vaibhav Tode- The aim of the Project is to design a Conversational AI Powered Chatbot for Medical Diagnostics using Deep Learning which mainly focuses on rural parts as well as poor and needy people of our country. Our System has the capability to understand the symptoms of the patient and communicates with Patient (End-user) through web- UI. NLTK (Natural Language Toolkit) is a module/ program in python which can able to perform symbolic and statistical Natural Language Processing for English written in Programming.

[11] Vijayarani, M., Balamurugan, G-The reviews show that Chatbots are widely used to manage anxiety, depression, stress and also to provide psychoeducation. However, it has its own limitation such as, it cannot think like a human with wisdom and empathy; and also the confidentiality of the data is very much serious concern. At the same time, these Chatbots will become an integral part of our lives in the coming years. And we need Chatbots that match our culture. In order, to benefit from this technological advancement, we should have a regulatory and assessment process in place.

[12] Mohamad Hafiz Che Hamid- This is the review on chatbot design techinques. The design and development of chatbots involves variety of techniques. Therefore, in this paper,

they present the review of techniques used to design Chatbots. A few examples of chatbots design is also discussed to give an understanding on how chatbots works and what are the type of approaches available for chatbots development. With rapid development in Chatbots technology, it is hoped that it could complement human constraints and optimize the productivity.

[13] Zaki, W.M.A.W., Shakhih, M.F.M-This system is developed along with the in cooperation of contactless monitoring device using a vision-based real-time monitoring of vital signs which allow patients to monitor their oxygen level, heart rate and respiration rate. This system is also automatically calibrated across patients, allowing precise measurement using highest probability method and natural language processing. Results obtained from the comparative analysis show a promising result with an error of 1.16 for pulse sensor and 2.917 for ECG which are below the threshold error. This allows user to accurately measure vital signs in a non-obtrusive way, and to provide them with the data required to determine to the right timing for any intervention procedure needed. The developed system would also help to bridge the gap of interoperability between client and medical provider.

[14] Wang.w- He chatbots need to be consistent in their recommendations and suggestions. To facilitate trust, the chatbot's "black box" must be opened up. In other words, users need to understand how the recommendations were derived and what information contributed to the recommendations. In addition, the chatbots' algorithms rely heavily on data. The integrity, accuracy, privacy, and security of the data are essential. Otherwise, users will not provide sensitive healthcare information to use the health chatbots. Governance and ethical standards are still in the budding stage for artificial intelligence as a whole (Wang and Siau 2018) and these fields need to be further developed to facilitate the development of trust and adoption of health chatbots.

III. PROPOSED SYSTEM

Algorithm:

step1: start

step2: open the website.

Step3: now the web page is opened which shows the four types of chat bots that we have mentioned.

Step4: The User can select his specific chatbot that is required.

Step5: now the User can start speaking with the chatbot that he selected.

Step6: Automatic Speech Recognition that listens to the request made by the user as soon as he speaks.

Step7: Natural Language Understanding that comprehends the speaker's request and starts searching in conversation module.

Step8: Conversations Module establishes the correct response or produces the dynamic response to the user request/help.

Step9: After establishing the correct response the text-to-speech system responds to the user request/help in the form of text on the web chatbot.

Step10: if user chat or ask any queries by speaking jump to step 6 and continue until the user stops conversation.
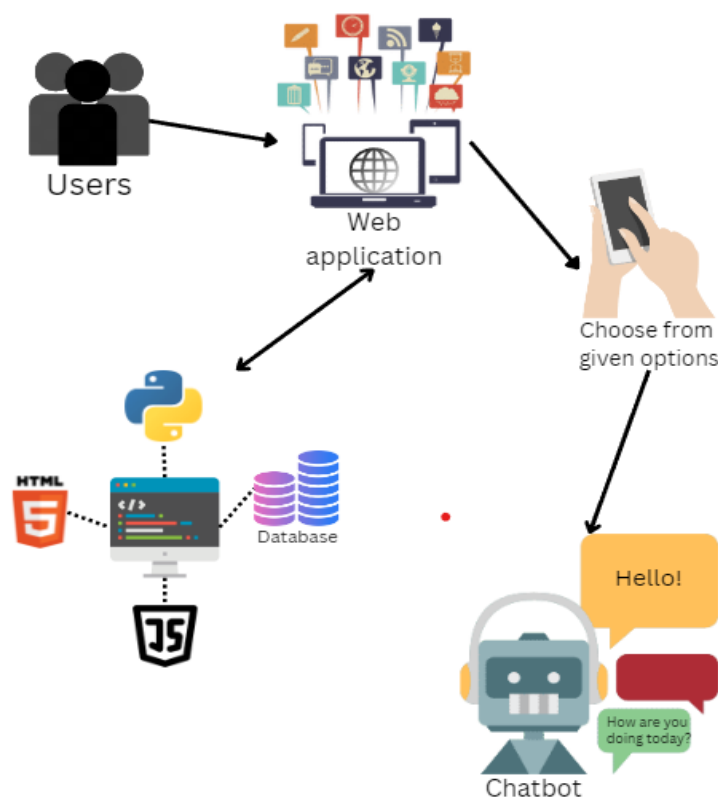
Step11: stop

System architecture

Fig 2: Block Diagram of Proposed System.

Our web application contains 4 different options from which the user can choose his/her relevant option. The options are

- Covid

- Pregnancy

- Cancer

- Stress/anxiety

After an option is chosen, a voicebot appears to which the user can communicate using speech. For the frontend of the application, HTML and CSS web technologies are used. The backend of the voicebot is python.
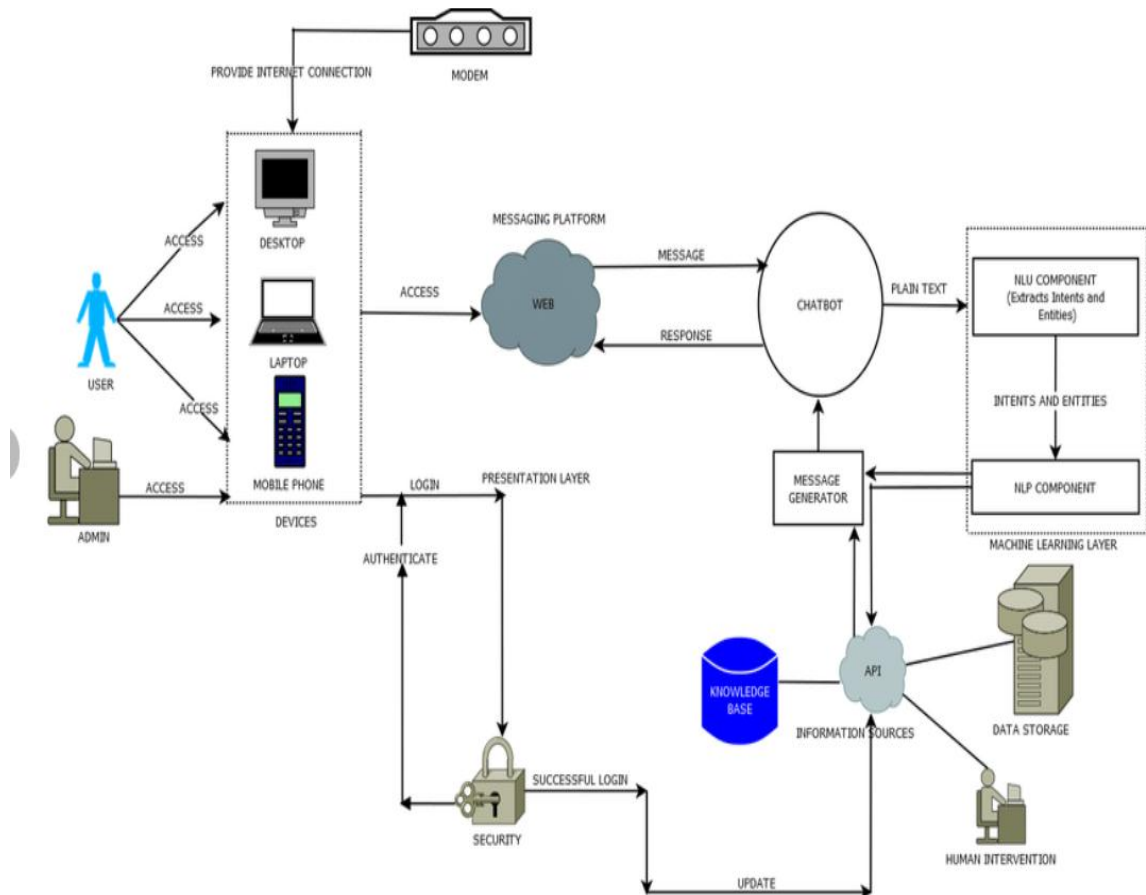

Fig 3: Architecture Of Proposed System.

PROPOSED IDEA

As we have seen the importance of the chatbot in the health care we are proposing a chatbot which includes HTML and CSS, python and implementation of voice bot. Let us discuss the brief about the technologies used.

HTML is an acronym which stands for Hyper Text Markup Language which is used for creating web pages and web applications. Let's see what is meant by Hypertext Markup Language, and Web page. Hyper Text simply means "Text within Text." A text has a link within it, is a hypertext. Whenever you click on a link which brings you to a new webpage,

you have clicked on a hypertext. Hyper Text is a way to link two or more web pages (HTML documents) with each other.

Cascading Style Sheets, fondly referred to as CSS, is a simple design language intended to simplify the process of making web pages presentable. CSS handles the look and feel part of a web page. Using CSS, you can control the colour of the text, the style of fonts, the spacing between paragraphs, how columns are sized and laid out, what background images or colours are used, layout designs, and variations in display for different devices and screen sizes as well as a variety of other effects.

Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance. Python supports modules and packages, which encourages program modularity and code reuse. The Python interpreter and the extensive standard library are available in source or binary form without charge for all major platforms, and can be freely distributed.

Natural language processing (NLP) refers to the branch of computer science—and more specifically, the branch of AI concerned with giving computers the ability to understand text and spoken words in much the same way human beings can.

Here we are going to create a website which acts as an interface between the user and the bot. In the website we provide four types of bots they are cancer, stress/anxiety, covid and pregnancy bots. The user will select his required bot according to his need. Now the chatbot that is selected by the user is opened. Here the chatbot receives the input in the form of voice (that is speech). The speech which is given as an input is processed and the natural language processing is used to find the appropriate reply for the input. After we use speech to text converter to display the reply in the chatbot. This is the way how our proposed system works.

IV. CONCLUSION

Research regarding chatbots in mental health is nascent. There are numerous chatbots that are used for various mental disorders and purposes. These chatbots are playing an important role for future generations which replaces a human to share their personal feelings. Our web

application provides the information regarding their mental health and also interacts with the user according to their feelings. Our application helps the user to overcome their stress during the isolation conditions. We believe our application provides support for the users during health issues like carona, stress/anxiety and cancer and also helps pregnancy women to overcome their emotions. Hence chatbots play important role not only in health sector but also in the sales & marketing, customer support, social media, industries etc.

V. REFERENCES

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