



Artificial Intelligence based HealthCare Chatbot system with voice assist using Python

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ABSTRACT

The smart computer era has arrived. Artificial intelligence, machine learning, and deep learning have enabled machines to imitate human behaviour. Chatbots are conversational software agents that use natural language processing to communicate, and they are an ideal example of such a system. A chatbot is a programme that allows a user to initiate a conversation with a computer. This is an artificial intelligence (AI) platform that can be used to create messaging apps, online apps, and smartphone apps. A chatbot is a machine that uses Natural Language Processing to answer queries (NLP). Developing natural language responses to the queries Chatbots make a difference in the nursing sector by making it easier to deal with people from professional organisations. Health chatbots can conduct one-on-one discussions with patients and answer particular questions. This programme will look into the current e-healthcare structure, which involves a complex interaction with human robots, and suggest an alternative: a chat interface that is designed and programmed to act and interact with patients like a human...

Keywords :- Artificial Intelligence, Chatbot, NLP - Natural Language Processing, natural language, neural machine translation, Healthcare

1. INTRODUCTION

Artificial intelligence, in particular computer systems, is technology that simulates human intelligence processes. Understanding (acquiring information and directions for applying it), reasoning (using laws to arrive at possible or decisive assumptions), and self-correction are examples of these procedures. Because artificial intelligence is at its peak right now, chatbots are just one example of how their applications will advance. The program's main goal is to bridge the linguistic gap between consumers and health-care providers by providing direct responses to customer questions.

Chatbots, often known as chatter robots, are software agents that use text or audio communications to simulate human conversation. One of Chatbot's first and most important goals was to imitate an intelligent human and make it difficult for others to discover their true nature. Chatbot usage has exploded as more Chatbots of varied architectures and capabilities have been developed. These conversational agents can deceive users into believing they are speaking

with a human, but they are limited in their ability to improve their knowledge base in real time. The chatbot employs artificial intelligence and deep learning techniques to comprehend user input and respond appropriately. Furthermore, they engage with humans using natural language in a variety of Chat-bot applications such as medical chatbots, call centres, and so on. Doctors, nurses, patients, and their families could all benefit from a chatbot. Better patient information organisation, prescription management, assisting in emergencies or first aid, and providing a solution for minor medical difficulties are all scenarios where chatbots could help relieve the burden on medical staff.

1.1 MOTIVATION

As human-computer interfaces, chatbots are essential. It's a piece of software that pretends to be a written discussion, with the goal of fooling the user into thinking they're conversing with another person. Chatbots are conversational agents that employ Natural Language Processing to converse with any user in a specified field. Stress is the leading cause of mental illness

worldwide, according to the World Health Organization (WHO), threatening over 300 million people each year. The bot aspires to establish a less automated and more conversational environment in response to the increasing rise in the demand for more help. To help people cope with stress, the chatbot uses cognitive behavioural therapy to deliver insights and positive replies.

2. RELATED WORKS

User intention identification and information extraction are the most common study issues in natural language processing (NLP). Researchers have given numerous models in the past. Artificial intelligence, particularly deep learning and deep neural network models, has recently aided in the creation of self-learning chatbots. However, using deep learning principles such as deep neural networks (DNN), recurrent neural networks (RNN), and convolutional neural networks, numerous attempts have been made to solve the seq2seq model difficulties (CNN).

Divya Madhu [1] Artificial Intelligence, according to Divya Madhu, may be used to anticipate any ailment and present a list of probable therapies based on provided symptoms. Furthermore, if a person's body is analysed on a regular basis, AI can assist detect disease before it manifests itself. The costs of research and development, as well as government backing for the appropriate implementation of all drugs, are key issues for this study, which are not discussed in this research article..

Hameed-Ullah Kazi [2] suggested the creation of a medical chatbot for medical students. The Chatter bean is an open-source AIML-based chatbot. This AIML-based chatbot can turn genuine human language requests into SQL queries with accuracy. Ninety-seven example questions were gathered and then sorted into distinct categories based on their kinds. The generated groupings were ordered according to the total number of problems present in each group. According to the inquiries, 47 percent of the questions are asked questions, while the remaining categories contain fewer than 7% questions. This technology was not designed to reply to student questions or to facilitate natural conversation in chatbots.

3. LITERATURE REVIEW

1) Endurance: A Companion for Dementia Patients : One of the most dramatic examples of how UReport has had an impact is the manner it conducted a poll in Liberia, where 86 percent of pupils stated their professors were pressuring them into sexual practises in return for better marks. This startling statistic led UNICEF and the country's education minister to work together to put an end to the practise.

Conversational abilities of patients with dementia frequently deteriorate as they improve. This does not, however, preclude them from communicating with their relatives. Endurance designed a chatbot to assist these people interact with their loved ones, alleviating some of the stress and embarrassment they are experiencing.

Many persons with Alzheimer's disease have trouble recalling information quickly due to the disease's prevalence. The chatbot seeks to recognise the many forms of faults in their conversational branches to assist persons with this problem.

Family members and clinicians may also analyse the chatbot's dialogue logs to look for symptoms of the patient's condition worsening. Patients with Alzheimer's disease and other cognitive problems can benefit from this cloud-based service.

The chatbot is open-source, which means that anybody may contribute to its development. It is now in its early phases of development. This effort might contribute to a better understanding of Alzheimer's disease and other cognitive diseases. The bot already has a Russian version, with an English version coming later this year.

2) Casper: Helping Insomniacs Get through the Night:

If you have insomnia, you know that one of the hardest aspects of not being able to sleep is the sensation of nearly stifling loneliness - the realisation that everyone else in the world is sleeping sweetly while your own mind is filled with anxieties and questions. Enter Casper's Immunoblot 3000, a conversational agent designed to provide insomniacs with someone to talk to while the rest of the world sleeps. Insomnobot 3000 is a little primitive right now. The agent's replies aren't entirely accurate. But, while I'm not sure if speaking with a bot would help me sleep, it would certainly keep me from scrolling through my Twitter feed at 4 a.m.

3) UNICEF: Helping Marginalized Communities Be Heard :

So far, we've only looked at a handful chatbots, and the ones we like are primarily Littlemore. UNICEF, on the other hand, is deploying a chatbot to assist individuals in poor countries in speaking up about their communities' most pressing needs.

The U-Report bot is tasked with gathering information on a variety of societal topics. It conducts surveys on a regular basis, and users may contribute their thoughts to assist UNICEF make policy recommendations. The program's purpose is to gather a vast quantity of data and then utilise that information to make future suggestions.

In one case, UReport asked Liberian users if their instructors forced pupils to have sex in return for better marks. Almost all of the children who

replied indicated that their instructors did this. As a result of the survey's findings, UNICEF and the country's education minister collaborated to put a halt to the practise.

4) Med What:

Making Medical Diagnoses Faster : If you like bookmarking WebMD, MedWhat could be worth your time. This chatbot promises to improve medical diagnosis for patients and clinicians faster, simpler, and more transparent. Consider it a more intelligent version of WebMD that you can converse with. MedWhat has a sophisticated machine learning system that offers progressively accurate responses to user inquiries based on "learning" behaviours from human interaction. In addition to the ever-expanding spectrum of medical queries covered by MedWhat, Bot draws on a large body of medical research and peer-reviewed academic articles to supplement its already substantial medical knowledge. MedWhat is more like a virtual assistant (like Google Now) than a conversational agent in many areas. It's also an intriguing field of chatbot development that blends clever natural language processing systems with machine learning technology to give users with a precise and responsive experience.

ALICE: Thousands of bots have been launched... Additional Bot: ALICE, one of the earliest chatbots to go online, must be included in any list of creative chatbots. Adopted more than two decades ago. ALICE—an abbreviation for Artificial Linguistic Internet Computer Entity, which may have been inspired by an episode of *The Files*—was devised and launched in the early 1995 dark days of the Internet by its inventor, Dr. Richard Wallace. (As you can see from the image above, the website is in English.)

A chatbot is a computer programme that interacts with customers using natural language. Humans can be replaced by chatbots for repetitive tasks such as answering questions and providing quick replies.

Chatbots are used to learn new things. It may be used on our mobile phones and personal computers, and it has internet access. Chatbots connect with clients in any domain by including their enquiry into common conversational phrases.

The history, technology, and existing work of chatbots are presented in this literature review.

Chatbots have strong conversational skills; they can mimic a human discussion well, and they learn by gaining knowledge.

Natural language processing (NLP) is the process of creating computing algorithms that analyse and represent human language automatically. The assessment on Neural Networks in Speech Recognition in this document is based on a

research paper released in 2019 on speech recognition using deep neural networks.

4. PURPOSED SYSTEM

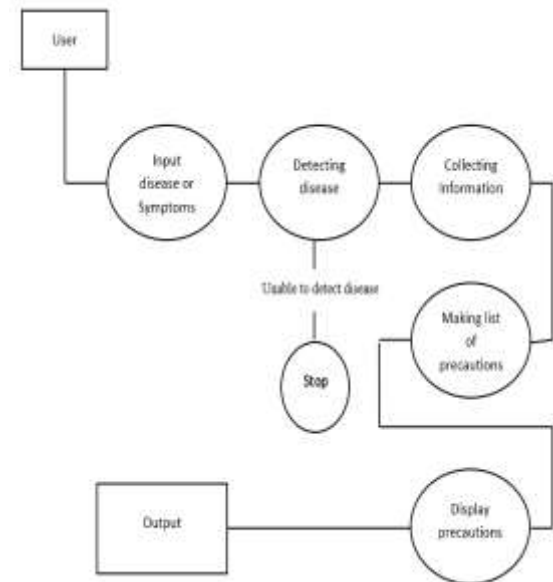
Conversational virtual assistants, or chatbots, automate conversations with users. Artificial intelligence powers chatbots, which use machine learning techniques to interpret natural language. The paper's primary goal is to provide consumers with modest health information. When a person initially visits the website, they must first register before they may ask the bot questions. If the answer isn't in the database, the system employs an expert system to respond to the queries. Domain experts should also register here by providing different details. The data from the chatbot is saved in a database as a pattern-template

5. SYSTEM ARCHITECTURE

The customer types the inquiry into the user interface as text. The user inquiry is received by the UI, which then passes it to the chatbot programme. The literary experiences pre-processing procedures in the chatbot application include tokenization, where the words are tokenized, stop words are eliminated, and feature extraction is based on ngram, TF-IDF, and cosine likeness. To obtain the answer, the question answers are saved in the knowledge database. Tokenization: For better processing, the words or phrases were separated word by word. When it encounters one of the rundowns of designated characters, it splits the text into words. The punctuation is removed and the words are separated from sentences. The next steps are implied by this. Stop removing words.

It's usually used to get rid of things like words that come in sentences too frequently. It's also used to eliminate nouns like an, a, and the that aren't necessary or have no special meaning. The purpose of this step is to reduce processing time and complexity. Feature extraction using N-grams TFIDF: A document's characteristic reduction approach is feature extraction, which ranks the attributes according to the document. The document's speed and correctness will increase as a result of this phase. It is used to extract a list of keywords from a document, as well as their frequency. TF-IDF: Term frequency and Inverse document frequency is used to compute the

weight of each phrase in the sentence.

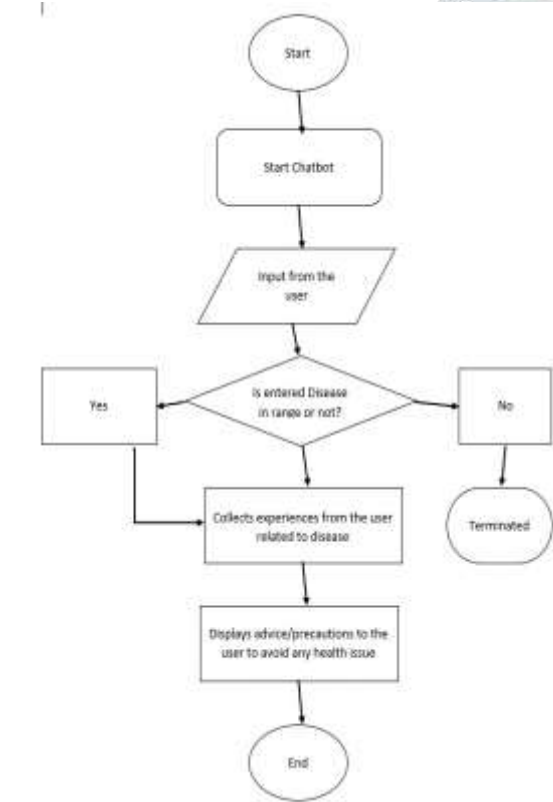


Artificial Intelligence, they are offering a new method for companies to engage with the world and, most importantly, with their consumers (AI). Chatbots have proven their usefulness in the realm of customer service, and they may now be used to assist people psychologically as a friend. One such technique is Happy Soul, our chatbot. It allows adolescent users to open out about their mental health issues without feeling embarrassed. It shows to be of enormous use to society, as mental health is a major problem, particularly among youth.

A Chatbot is an excellent conversational tool. The software is designed to offer high-quality responses in a short amount of time. It relieves the answer provider of the load by sending the response to the user via an expert system. The project was created to save the user time when it comes to consulting doctors or specialists for healthcare solutions.

7. REFERENCES

[1]<https://www.wordstream.com/blog/ws/2017/10/04/chatbots>
 [2]<https://www.irjet.net/archives/V6/i4/IRJET-V6I4383>
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6. CONCLUSION

Chatbots have been on the rise for a few years and have already gained widespread acceptance. With the growth of developing technologies and

