



A NOVEL APPROACH FOR A TEXT-TO-TEXT DIAGNOSIS HEALTH CARE CHAT BOT USING ML

G. THIRUVANTH, ANISHA KUMARI SINGH, D.VAB SATYANARAYANA RAJU, Student,
Department of CSE, Raghu Engineering College, Visakhapatnam, A.P., India.

M.JANAKI RAMUDU (Ph.D) , Assistant Professor, Department of CSE, Raghu Engineering
College, Visakhapatnam, A.P., India.

ABSTRACT: The development of a medical chatbot using artificial intelligence (AI) technology. The chatbot would have the capability to diagnose diseases and provide basic information about them before patients consult with a doctor. This would not only help to reduce healthcare costs, but it would also increase accessibility to medical knowledge. In addition to serving as a diagnostic tool, some chatbots function as reference books, offering patients the opportunity to learn more about illnesses and improve their overall health. The chatbot's ability to diagnose a variety of diseases and provide necessary information makes it an essential tool for patients. A text-to-text diagnosis bot allows patients to communicate their medical issues, enabling the chatbot to give a customized diagnosis based on their symptoms. Ultimately, the medical chatbot has the potential to provide people with a better understanding of their health and the necessary steps they should take to protect themselves. This innovative technology is poised to revolutionize the healthcare industry and improve the lives of countless individuals.

Keywords: Natural language processing (NLP) algorithm, Similarity Ranking Method, Machine Learning, Keyword Matching Module, Lemmatization and Stemming.

INTRODUCTION

Self-health care chatbots that use machine learning (ML) and artificial intelligence (AI) are revolutionizing the healthcare industry. These chatbots are designed to interact with patients, provide healthcare advice, and monitor their progress. They can help individuals take control of their health by providing personalized healthcare advice and support, 24/7. Self-healthcare chatbots powered by ML and AI can also help healthcare providers by freeing up time for more complex cases and reducing the workload on healthcare systems. Using natural language processing (NLP) and deep learning algorithms, self-health care chatbots can understand and respond to patients' queries in a human-like manner. They can provide accurate information on symptoms, treatment options, and preventative measures based on an individual's medical history and preferences. Self-health care chatbots can also track progress and provide reminders for medication and appointments, improving adherence to treatment plans. The convenience and accessibility of self-health care chatbots make them a popular option for people who prefer to manage their health independently. With the increasing adoption of ML and AI in healthcare, self-health care chatbots are set to become an essential tool for empowering individuals to take an active role in their own well-being.

LITERATURE REVIEW

Self health care chatbots have emerged as a promising tool to address the challenges faced by the healthcare industry, such as increasing patient demand, shortage of healthcare professionals, and rising costs. The use of artificial intelligence (AI) and machine learning (ML) algorithms has made it possible for chatbots to provide personalized healthcare advice and support to patients, 24/7. In this literature review, we will explore the key features and benefits of self health care chatbots and examine the evidence on their effectiveness. Features and Benefits of Self Healthcare Chatbots Self health care chatbots are designed to mimic human interaction, using natural language processing



(NLP) and deep learning algorithms to understand and respond to patients' queries. They can provide accurate information on symptoms, treatment options, and preventative measures based on an individual's medical history and preferences. Self health care chatbots can also track progress and provide reminders for medication and appointments, improving adherence to treatment plans.

EXISTING SYSTEM

The existing approach for the self diagnosing chatbot is to give reply to the user based on the queries. And the dataset which is used in the existing system gives the best search results for the user queries. Only a limited number of users are used at a time. In this, the keyword matching process accurately searches for the response answer in the database and reply to the user. Ada Health: Ada Health is a popular chatbot that uses machine learning algorithms to help users selfdiagnose their symptoms. The chatbot asks a series of questions to narrow down possible diagnoses and provide users with relevant information.

DATASET AND FEATURES

The project is aimed at building a chatbot that can help users with their health symptoms by providing relevant information and precautions. The dataset used in this project is divided into different health categories such as headache, fracture, stomach ache, fever, allergies, blood pressure, cough and cold, general health symptoms, and personal profile. Each dataset contains unique values and questions related to the corresponding health category.

The chatbot uses a keyword matching module to search for the user's symptoms in the dataset and provide responses accordingly.

```

- I am not feeling well.
- Okay, can you tell me what's wrong? what are your symptoms?
- My body temperature has raised.
- This is a symptom of fever, you should take a tablet of crocin after you have your meal.
- Oh, I will take the crocin.
- let me know if you are feeling better after having crocin.
- I took crocin.
- Good, now take some rest and then let me know if you are feeling better after having crocin.
- Can u suggest medicine for fever.
- take doxalamin or ace tablet.
- No, I am still not feeling better after having crocin.
- Oh, its not just a normal fever, you should consult a doctor.
- Can u book an appointment for me.
- you please state time and doctor's name in the following format: 'Patient Name: Date: Doctor: Hospital: City: pls me.'

- I am shivering.
- This is a symptom of fever, you should take a tablet of crocin after you have your meal.
- Oh, I will take the crocin.
- let me know if you are feeling better after having crocin.
- I took crocin.
- Good, now take some rest and then let me know if you are feeling better after having crocin.
- No, I am still not feeling better after having crocin.
- Oh, its not just a normal fever, you should consult a doctor.
- Can u book an appointment for me.

```

Fever DataSet

```

- high bp
- take a pill of ramipril 2.5mg after a meal, and use a stress ball for relaxation
- low bp
- use midodrine to raise the bp level and maintain regular diet.
- diabetes sugar
- 1.high level 2.low level
- high
- after consulting a doctor take insulin injection and maintain proper sugar free diet.
- low
- use glibin xl-forte with proper sugar free diet.

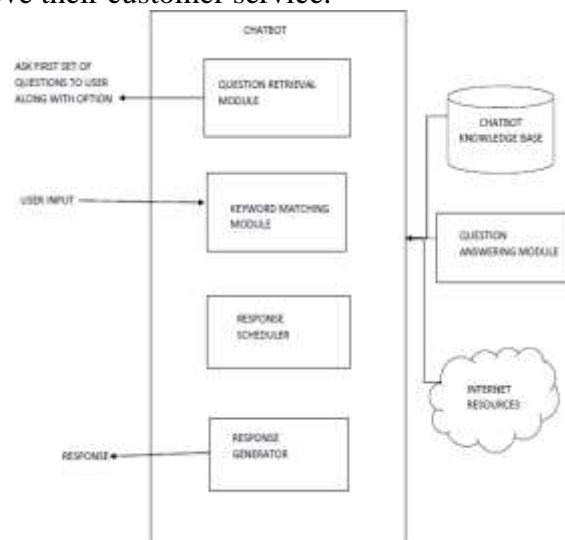
```

PROPOSED SYSTEM

The emergence of automated chatbots has revolutionized the way organizations interact with their customers. Natural language processing (NLP) techniques were initially used to design chatbots, but their accuracy in giving correct answers was limited. With the advent of deep learning algorithms,

the accuracy of chatbots in providing correct responses has increased. As a result, a Python-based deep learning project is being developed to build a chatbot that can answer users' frequently asked questions. To implement this project, deep learning models are first trained with a large dataset of all possible questions and answers. Whenever a user asks a question, the chatbot applies the test question to the trained model to predict the exact answer for the given question. This approach has enabled companies to provide quick and accurate responses to user queries without the need for human intervention. There are many well-known voice-based chatbots currently available in the market, including Google Assistant, Alexa, and Siri. Chatbots are also being adopted at a high rate on computer chat platforms. The use of chatbots has many advantages, including reduced response time, cost savings, and improved customer engagement.

To implement this project, deep learning neural networks and the Natural Language Processing Toolkit (NLTK) are used to process and train text data. The NLTK is an open-source library that provides tools to work with human language data, including tokenization, stemming, and lemmatization. Deep learning neural networks are a class of artificial neural networks that use multiple layers to learn and represent complex relationships between data. These techniques enable the chatbot to provide accurate and relevant responses to user queries, making it a valuable asset for businesses looking to improve their customer service.



IMPLEMENTATION

The objective of this paper is to develop a chatbot that can assist users in self-diagnosing their health based on their symptoms. The chatbot requires the user to provide personal information and input their symptoms. All the disease details are present in the dataset, which is trained using the Natural Language Processing (NLP) algorithm in machine learning. The values in the dataset are trained according to the algorithm.

When a user inputs a symptom in the chatbot, the keyword matching module searches the word entered by the user in the dataset bag of words.

AI-Healthcare Chatbot

Please try typing full sentences as I am still learning!

I am a chatbot. You can begin conversation by typing in a message and pressing enter.

Hi There! What is your name?



Algorithms For Chatbot

NLP (Natural language processing) and Machine Learning are both fields in computer science related to AI (Artificial Intelligence). Machine learning can be applied in many different fields. NLP takes care of “understanding” the natural language of the human that the program (e.g. chatbot) is trying to communicate with. This understanding enables the program (e.g. chatbot) to both interpret input and produce output in the form of human language. Neural networks are one of the learning algorithms used within machine learning. They consist of different layers for analyzing and learning data.

Here are the main steps involved in the working of an NLP algorithm in machine learning:

NLP Algorithm:

Data preprocessing: The first step in any NLP project is to preprocess the data by cleaning it and converting it into a format that is suitable for analysis. This may involve tasks such as tokenization, stemming, and removing stop words.

Feature extraction: NLP algorithms use various techniques to extract features from the preprocessed data, such as bag-of-words, TF-IDF, and word embeddings. These features represent the important characteristics of the text data that the algorithm will use to make predictions.

Model training: Once the features have been extracted, the NLP algorithm will use them to train a machine learning model. This model can be a supervised, unsupervised, or semi-supervised algorithm, depending on the specific task.

Model evaluation: After the model has been trained, it must be evaluated to determine its accuracy and performance. This is typically done by using a separate test dataset that the model has not seen before.

Overall, NLP algorithms are powerful tools that enable machines to understand and analyze human language, making it possible to automate a wide range of tasks that would otherwise require human intervention.

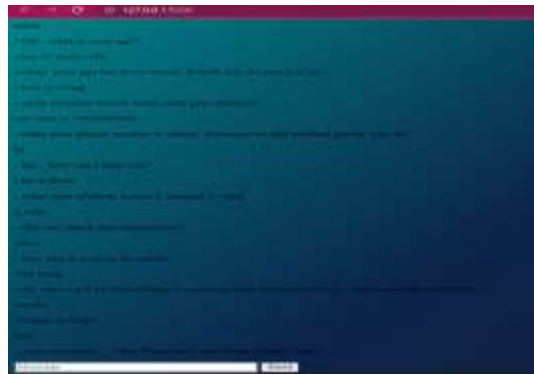
Similarity Ranking Method:

Similarity ranking methods compare a given string to a set of strings and rank those strings in order of similarity. To produce a ranking, we need a way of saying that one match is better than another. This is done by returning a numeric measure of similarity as the result of each comparison. Alternatively, you can think of the distance between two strings, instead of their similarity. Strings with a large distance between them have low similarity, and vice versa.

SAMPLE RESULTS

To run this project we need to install python and MYSQL and then display application on python flask server. After setting up application we need to run on browser to get below screen





In above screen user can enter questions related to their health and chat bot replies to that questions with necessary precautions.





In above screen we can see I asked so many questions and chat bot answer them correctly. Similarly we can ask any question and chat bot can answers those questions as long as those question answers are available inside training model of deep learning object.

CONCLUSION

The potential applications of chatbots, their limitations, and the implementation of a chatbot with various design aspects are also discussed. While the goal of this work is to provide an overview of what chatbots are, their use cases, and how to create them, there are still many aspects of chatbot development that could not be covered. Nonetheless, this knowledge should help developers explore new possibilities for chatbot usage and improve human-machine interaction. As the interest in chatbots continues to grow, this work serves as a foundation for future research and development in the field.

FUTURE SCOPE

We would further like to integrate the Chatbot system with Google Maps. This will assist the user to navigate to the various desired project locations. The Chatbot system can also be integrated with different websites to serve queries about different projects by different builders. Integrating it with leading real estate websites provides more options for the user, enabling him to choose the best suitable option from a wide range of projects.

REFERENCES

- H. P. Levy, "Gartner Predicts a Virtual World of Exponential Change." <https://www.gartner.com/smarterwithgartner/gartner-predicts-a-virtual-world-of-exponential-change/>, 2018. [Online; 9-Subat.-2018'de eri,sildi.].
- A. M. Turing, "Computing machinery and intelligence," in *Parsing the Turing Test*, pp. 23–65, Springer, 2009.
- L. Bradeško and D. Mladenic, "A survey of chatbot systems through a 'loebner prize competition," in *Proceedings of Slovenian Language Technologies Society Eighth Conference of Language Technologies*, pp. 34– 37, 2012.
- M. v. Eeuwen, "Mobile conversational commerce: messenger chatbots as the next interface between businesses and consumers," Master's thesis, University of Twente, 2017.
- AT&T, "Meet Atticus: The Entertainment Chatbot from AT&T." http://about.att.com/newsroom/meet_atticus.html, 2018. [Online; 13-Subat.- 2018'de eri,sildi.].
- T-Mobile, "Tinka: T-Mobile." <https://www.t-mobile.at/tinka/>, 2018. [Online; 13-Subat.-2018'de eri,sildi.].
- E. D. Liddy, "Natural language processing," In *Encyclopedia of Library and Information Science*, 2001. 2nd Ed. NY. Marcel Decker, Inc.
8. "Facebook for Developers." <https://developers.facebook.com>, 2018. [Online; 13-Subat.-2018'de eri,sildi.].