

Application Of the Naive Bayes Algorithm to Healthcare Chatbots

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Abstract: There will be automated chatbot production. The automated chatbot can handle consumer enquiries without any human intervention. These chatbots will be trained using a variety of questions. When a user writes in a query, Tensor flow will choose the most relevant answer from a bank of questions that have already been learned. The chatbot provides responses to questions concerning medical problems. A patient who messaged the bot with a query received a chat reply from the bot. If a patient has a query about their health, the bot will provide them the answer through text message. Currently, everything is done by hand. If a patient has a question, they may enter it into the chat window. They may take as much time as they need to get back to the user. This means that a better remedy cannot be provided to the victims. The patient deserves a comprehensive response to his or her inquiry. Patients need to check in at the facility themselves to get answers to their inquiries. This procedure is costly and time-consuming since the consumer must go to the hospital, which may be located distance from their home. A health bot that can analyze user questions and read user messages is being developed using the Naive Bayes method. The web-based service in question provides answers to inquiries from patients. Chatbots in healthcare use AI and machine learning to simulate human conversations. In addition to interacting with others, they carry out tasks such as providing guidance, sending emails, marketing, creating leads, and analyzing the outcomes of their efforts. Informative chatbots provide users with valuable information in the form of pop-ups, alerts, and breaking news. Customer service and automated information are two common uses for informative bots..

Keywords: Healthcare, Chatbot, Naïve Bayes (NB)



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1.INTRODUCTION

The creation of a chatbot is automated. The automated chatbot can handle consumer enquiries without any human intervention. These chatbots will be trained using a variety of questions. When a user writes in a query, Tensorflow will choose the most relevant answer from a bank of questions that have already been learned. The chatbot provides responses to questions concerning medical problems. If a patient asked a question, the bot would reply in real time through chat.

The bot may respond to kids' health-related inquiries through text message. The only thing a patient has to do is use the chatbot to ask questions. There is no prescribed framework for conversations, so doctors and patients may express themselves freely. In-built TensorFlow processes the request and returns a response. The answers given are appropriate to the questions asked. The User may make inquiries regarding their health in general using the system. The patient is not responsible for making their own hospital appointment. The system gives a reply to the user after analyzing the question. When asked a question, the computer provides a response that sounds human. With the help of Tensorflow, the system provides answers to the patients' questions.

Using a convincing graphical user interface, the system reacts to the user as if it were a live person. The system's ability to interact with the user is enhanced by a responsive graphical user interface. At this point, the project's feasibility is evaluated, and a business proposal is presented with a basic outline of the work to be done and an estimate of associated costs. In order for a system to be viable, it must be analyzed using a system

2. LITERATURE SURVEY

The idea and construction of a chatbot with sophisticated speech recognition are addressed in [1]. The research paper presents a technology demonstration to try out the proposed infrastructure for such a bot (a web service). The web service regulates the communication structure to and from the web service, allowing clients of any kind and on any platform to talk to the server. The service is made accessible through an API that streamlines XML processing, and its lifetime is enhanced by its ability to be customized. With the help of an artificial brain, the web-based bot can generate unique user replies associated with the selected persona. When the bot is unable to answer a question, it is sent to a separate expert system (an online intelligent research assistant) for analysis and the results are stored to improve the AI's ability to generate replies in the future.

In[2], user interfaces for software applications may be presented in a variety of forms, from command line to graphical to web application to voice. Even while GUIs and web-based UIs are the norm, there are situations that call for something else. Whether due to multi-threaded complexity, concurrent connection, or service implementation details, a chat bot-based interface may be acceptable.

Chat bots have text-based user interfaces where users may enter instructions and get answers in text and text to voice. In order to carry out their functions, chatbots are often stateful computers that remember previous orders (and perhaps whole conversations). When chat bot technology is integrated with popular online services, it becomes accessible to a much wider audience. A CHATBOT is a computer-generated humanoid that can have natural-sounding conversations with humans. This interaction may take place vocally, in written form, or be nonverbal in nature.

In[3], Most people use chat bots on the web, but they are also available for use on desktop computers and mobile phones. The common conception of a chatbot is that it is a fun, interactive piece of software. Potentially engaging, inspiring, and interesting. It's accessible on both ancient HTML pages and cutting-edge social media platforms, on both antiquated desktop computers and cutting-edge mobile phones. Chatbots can communicate in almost all of the world's languages. Their abilities with language (Natural Language Processing) vary from completely lacking to brilliant, useful, and hilarious. The same holds true for their visual aesthetic, which might seem like something from a kids' cartoon at times. However, there are also 3D animated figures that seem so lifelike that viewers can mistake them for real humans. The collective term for these programs is "chat bots."

Using text-based user interfaces, users may issue instructions to chat bots and get text or text-to-speech answers. Chatbots need stateful services that remember user input in order to operate properly. Connecting

chatbots to established online platforms increases the number of individuals who can use them without worry. The college-related chatbot will be programmed using artificial algorithms to read and analyze user input. This solution will take the form of a web app that provides a thorough answer to the student's inquiry. The chatbot can answer any question a student may have. Using AI algorithms, the system will respond appropriately to the user's inquiries.

A mechanism to flag the answer as erroneous may be implemented if it turns out to be wrong. The administrator may modify or remove these wrong selections. No campus visit is required on the part of the student. The chatbot may be used by students to have their queries addressed. Using this online technique, students may ask questions whenever they choose. This approach might help students learn about events on campus.

The rapid development of information and communication technology has resulted in a wide variety of people's educational experiences, learning styles, and approaches to expanding their horizons ([5]). This article details a process for converting papers into knowledge for a chatbot system, enabling users to get more out of it via question-and-answer sessions facilitated by electronic documents and a simulated system. It's an all-encompassing strategy for bettering the substance of commonly-used file types like Portable Document Format (PDF) and digital images. The process flow of this system consists of three stages: (1) text extraction from files using optical character recognition (OCR), (2) question generation using a ranking algorithm and over-generating transformations, and (3) a response from the Chatbot to the user's question if it matches the String pattern.

In [6], In this work, we detail the development of a chatbot designed to assist college freshmen at the help desk and answer frequently asked questions (FAQs) from undergraduates. In response to user inquiries made in natural language, the chatbot accesses relevant student data from the Information Repository and provides it in natural language responses. In this investigation, we use a connected graph to symbolize the database, with nodes standing for individual pieces of data and links between them. The conversation robot's design semantics incorporate the language of AIML (Artificial Intelligence Mark up Language) standard, which helps to partition the information repository from the natural language interface component. Three experimental systems were developed; one was a purely conversation-based system with knowledge entries based on natural language; another was a domain knowledge system created with information content; and the third was a hybrid system that combined dialogue and domain knowledge. Since the coding structure doesn't need to be rewritten, the knowledge base may be easily adapted and focused on a certain topic. Discourse sessions that combine topic-specific discussion with conversational expertise yield more successful outcomes than general conversational chat, according to experimental criteria and results.

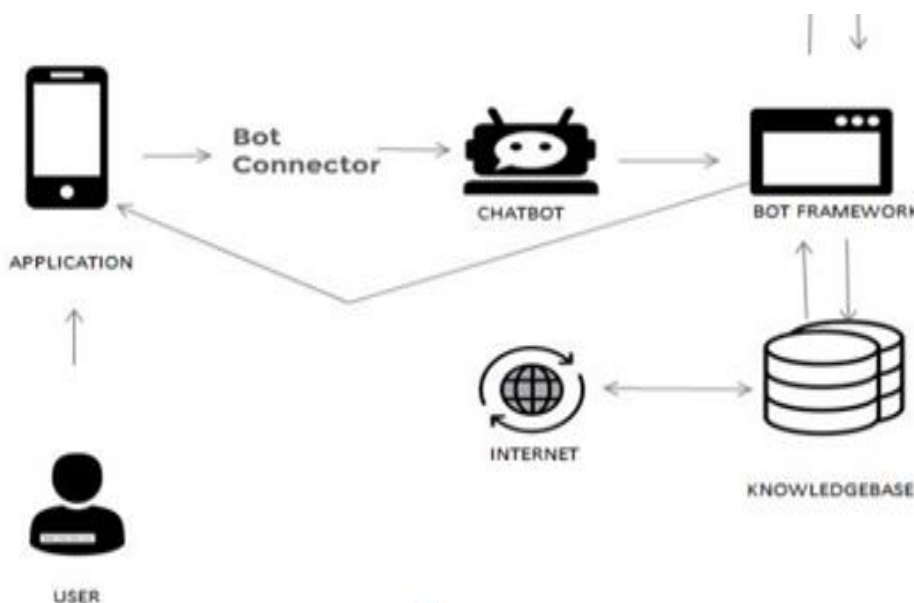
3. METHODOLOGY

- The Naive Bayes method is implemented in a health bot project for question analysis and message comprehension. This system provides an answer to the student's query in the form of a web application. The patient needs just use voice and chatbot to ask an inquiry.
- There is no prescribed framework for conversations, so doctors and patients may express themselves freely. The system's built-in Naive Bayes algorithm processes the query and returns a result. The answers given are appropriate to the questions asked.
- The User may make inquiries regarding their health in general using the system. The client is not required to show up at the clinic or hospital to get answers. The user submits a query, and the system analyzes it and returns a result. When asked a question, the computer provides a response that sounds human. Naive Bayes is used by the system to provide an answer to the patient's inquiry.
- A conversational bot, often known as a virtual assistant. The chatbot's interface is simple enough for patients to use. The objective is to improve the bot's intelligence to the point where it can understand

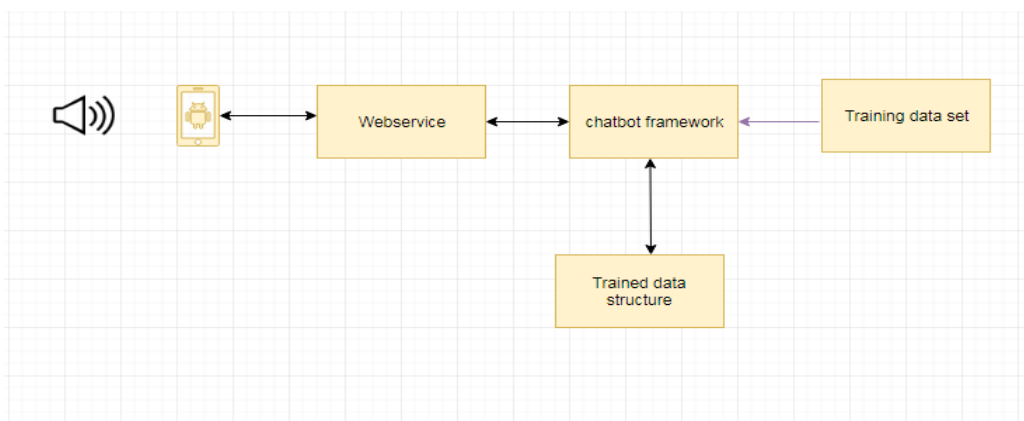
sentences with inadequate grammatical definitions. The queries asked by users are analyzed by the bot utilizing natural language processing technology. This robot employs a pair of methods, retrieval and generation.

- It can obtain the results from the database if the query is already defined there, or it can retrieve the results from the bot if the query is defined there. In order to offer analytical replies and make the results simpler to comprehend, the responses are processed analytically.

System Working



4.SYSTEM ARCHITECTURE



5. CONCLUSION

Many lives may be spared and health conditions would get more attention if personalized treatment were widely used. To reiterate, the future belongs to messaging apps since that's where people will be spending the majority of their time.

As a result, the potential for chatbots in healthcare is huge. Distance doesn't matter when it comes to medical conversations between humans. A computer or smartphone with internet access would be sufficient. Increasing the medical chatbot's efficiency by adding more word combinations and using a larger database will allow it to handle all forms of illnesses. In order to make the system more user-friendly, it may even allow for voice communication.

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