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Maverick-Bot Implemented Via Natural Language Processing

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Abstract

The Project's main motivation Reduce the pressure on primary care providers and assist people in learning to take responsibility for their health. The goal of a healthcare bot is to give patients with individualized health and useful information. Patients with products and services, as well as diagnostics and treatment recommendations. According to the patient's symptoms This healthcare bot technology will assist hospitals in providing better patient care. Healthcare help is available online 24 hours a day, 7 days a week, and it addresses both specific and general queries. By asking the questions in order, patients are guided as to what they are getting into.

This, in turn, aids the doctor in gathering information about the patient prior to any physical engagement.

Why is this Bot now required?
Bots are automated services that individuals communicate with via a messaging app. Instead of conversing with another human, the user converses with a bot driven by either simple rules or machine learning. Every bot has a purpose, and health bots are developed to assist with medical difficulties. More exact diagnosis and treatment recommendations based on patients' symptoms. Design to assist with health-related concerns Improved user interface. The Project's main motivation. Reduce the pressure on primary care providers and assist people in learning to take responsibility for their health. This initiative has the potential to make a significant contribution to the healthcare industry.

It can make doctors' jobs easier by minimizing the number of patients by giving general information about them from its database. It can assist people in learning to appropriately manage their health. People will be able to self-treat from the comfort of their own homes. This is a valuable tool that healthcare providers may utilize to save time and focus on providing excellent care. Patients and clients of healthcare firms can use them to acquire information, ideas, and help to better their health at any time. Essentially, bots help to improve the whole healthcare experience.
Keywords: Natural Language Processing and Artificial Intelligence, Bots

I. INTRODUCTION

Maverick offers a simple and color-coded way for calculating your mental health. You may either enter how you are feeling at a given period time or fill out the pre-filled form to assess your work-life balance. When your results are evaluated to a green hue, it signifies that you have well balanced mental health and are not experiencing any mental health problems. The yellow colour result suggests that your mental health could be better and that you should start paying attention to it before it deteriorates and puts you in danger. A red result suggests that you require professional assistance and may be suffering from a mental illness. The bot architecture is made up of various components that function together. All included a Natural Language Understanding (NLU) toolkit, a Conversation Handling system, a fact retrieval system, and a document search module. When a bot gets a question, it analyses the text and pulls relevant and necessary information. This is feasible with the help of an NLU toolbox that includes an intent classifier and an entity extractor. It then reacts to the user. The dialogue management module allows the bot to converse with the user and assist them with a certain job. The bot uses naïve Bayesian classification techniques to assess if an input statement fulfils a certain set of criteria that warrants a response from the logic adaptor.

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II. SYSTEM ANALYSIS

A. *Minimum Software Requirements*

- nltk==3.6.5,
- numpy==1.20.3
- pandas==1.3.4
- scikit_learn==1.0.2
- streamlit==1.8.1
- tensorflow==2.8.0
- tensorflow_hub==0.12.0
- xgboost

B. *Minimum Hardware Requirements*

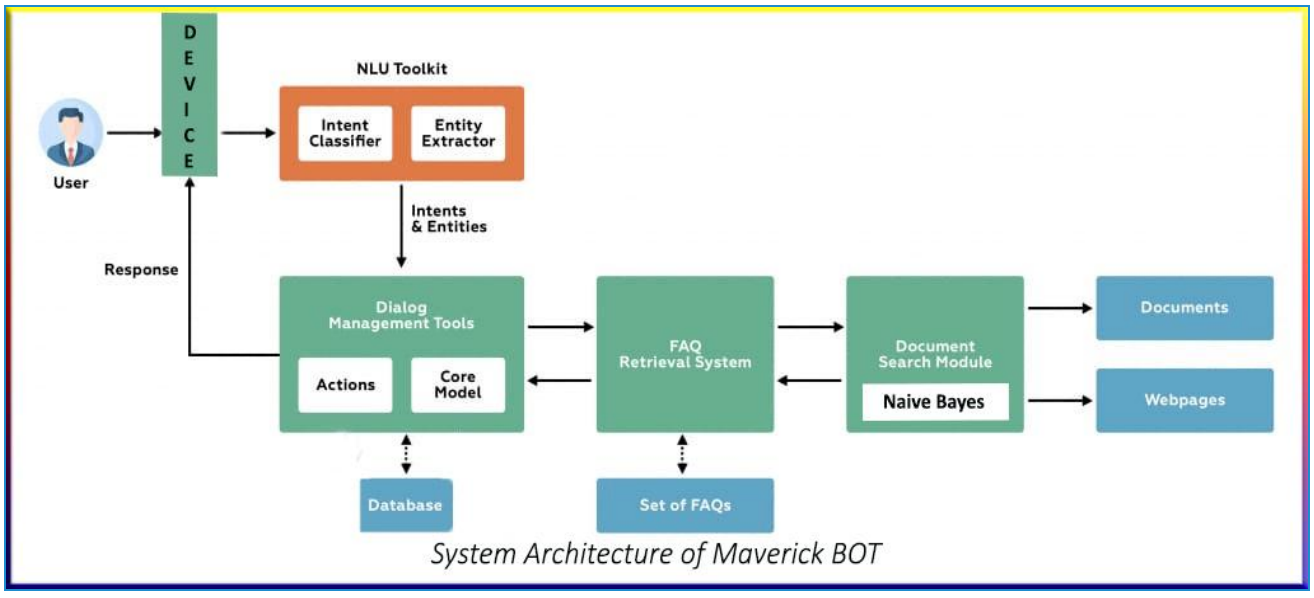
- RAM 2 GB
- Storage 1024 MB

C. *Technologies Used*

a]. Database: SQLite
b]. UI-Streamlit
c]. Code editor used - VSCode.

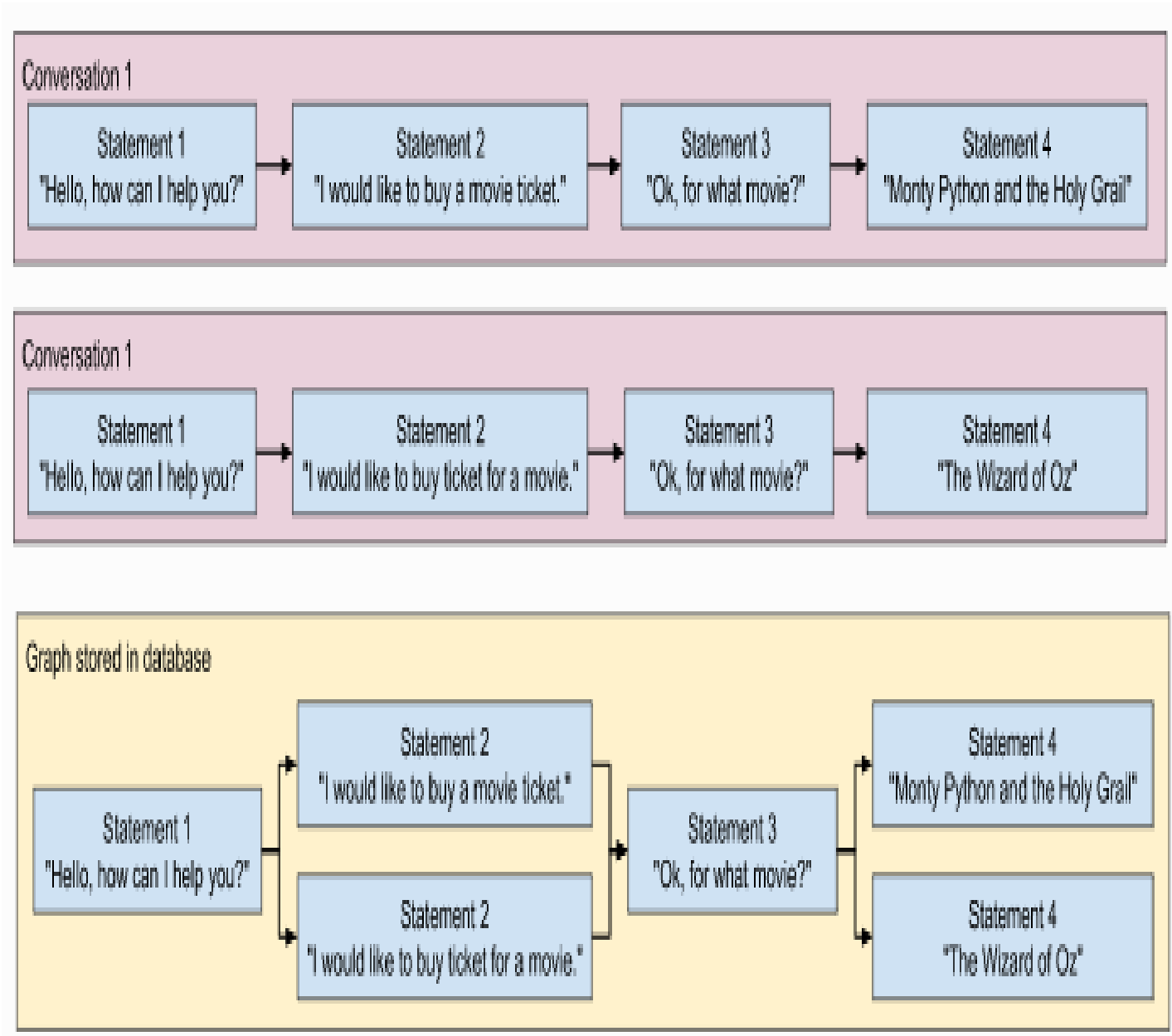
D. *System Architecture*

- In natural language processing, human language is separated into fragments so that the grammatical structure of sentences and the meaning of words can be analyzed and understood in context. fundamental NLP pre-processing tasks data scientists need to perform before NLP tools can make sense of human language:
- Tokenization: breaks down text into smaller semantic units or single clauses.
- Part-of-speech-tagging: marking up words as nouns, verbs, adjectives, adverbs, pronouns, etc.
- Stemming and lemmatization: standardizing words by reducing them to their root forms.
- Stop word removal: filtering out common words that add little or no unique information, for example, prepositions and articles (at, to, a, the).



System Architecture of Maverick BOT

Chatbot uses naive Bayesian classification algorithms to determine if an input statement meets a particular set of criteria that warrant a response to be generated from that logic adapter.



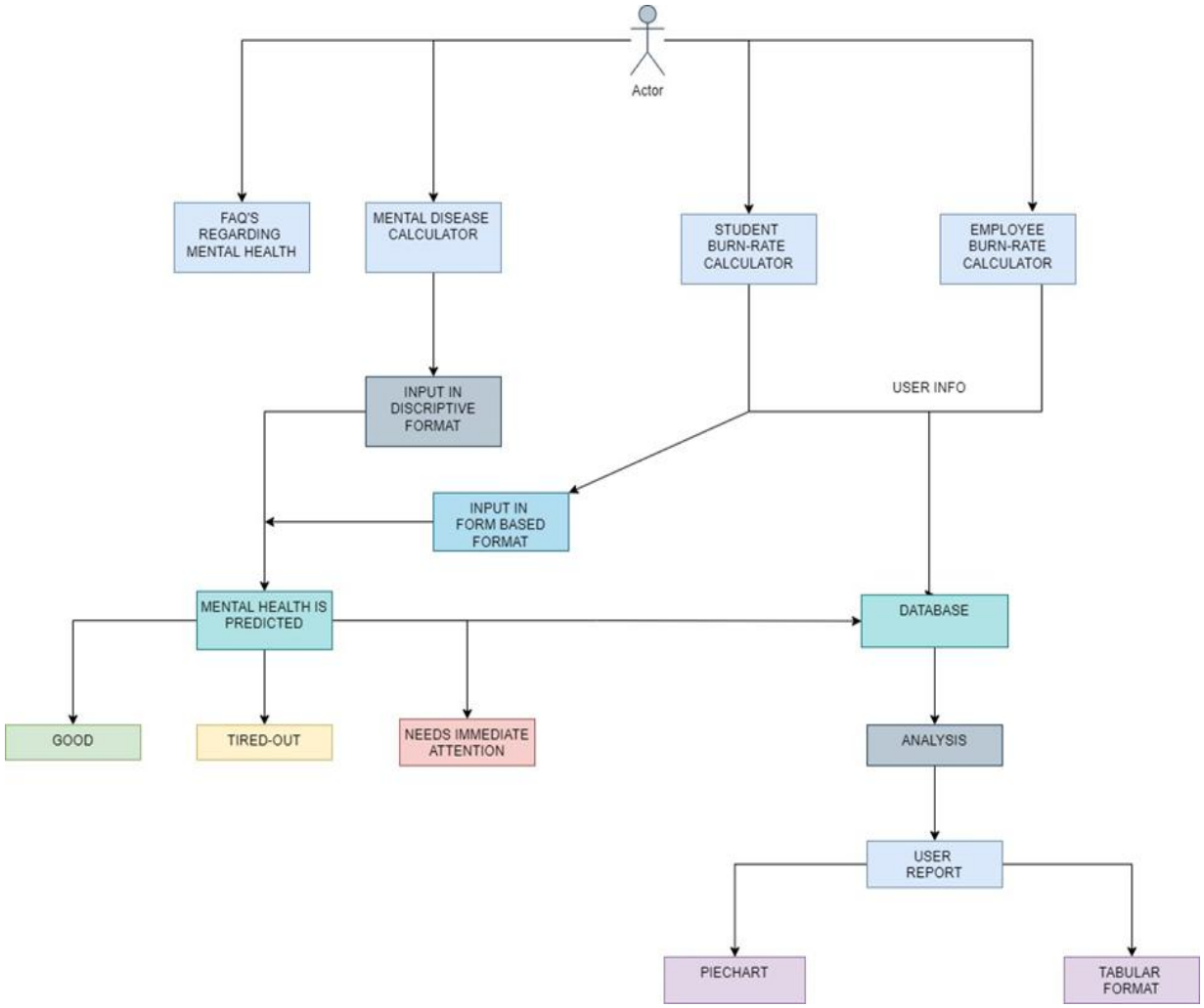
E. SDLC Model

Iterative SDLC model - To ensure that a functioning arrangement was both appropriate and developed on time, we used an extremely iterative development approach when constructing the application.

When we decided to implement some type of continuously on-screen utilization data, we began by attempting to execute a 'proof of concept' application that did this at a very basic level - at first drawing a strong, constant red framework around the edge of the screen on top of any remaining applications. The final proposal for how the edge sparkle should appear came a long time later, so I had already built the frameworks for obtaining the critical use information that the glow would need.

III. HELPFUL POINTS

A. *Figures*



Flow diagram of Maverick

B. *Literature Survey*

- **Automatized Educational Chat-bot using Deep Neural Network**

Chat-bots built using a rule-based method have a restricted capacity to provide reliable responses due to the knowledge set offered. When the data set is rather enormous, these chat-bots struggle to keep up.
The following are the key steps in developing an online chat system:
(i)Segmentation of Words Because the computer does not comprehend user input, it must be processed. NLP aids in the processing of input. The user's statement is split down into individual words, which are referred to as tokens. Tokenization is the name given to this procedure.
Deep Neural Network
(ii) The human brain is replicated by an Artificial Neural Network (ANN). It consists of a large number of linked nodes that can be compared to neurons. Deep neural networks are composed of numerous layers of ANN.
(iii) Chat-bot Chat-bots, according to Rashid Khan [2] and Sofie Ross [3], are computer or smartphone dialogue program. The chat-bot contact is referred to as a dialogue, which can be text-based or voice-based. This Chabot is generally used by three types of users: students, instructors, and administrators.
Students can navigate via several menus such as subjects, assignments, and calendars. Teachers can delegate tasks. The administrator is in charge of the knowledge database.

- **Design of Integrated Messenger Anti-Virus System using Chat-bot Service**

Nowadays, everyone uses a texting app.

As the number of users grows, so do malware attacks to steal consumers' data. These assaults often take the form of URL-based program or download links. An Integrated Harmful Antivirus System was presented in this study to identify any malicious activity. Most messaging program employ Webhook, and it provides a chat-bot, i.e., a service based on Webhook. The redirecting URL is sent by the server to the Messengers Server, and the end user subsequently sends a message to the Webhook server. It receives the message, processes it, and then sends it back to the messenger's server, i.e., Webhook. Finally, the client receives the message.

- **Fuzzy Prediction Model to Measure Chatbot Quality of Service**

The end-user's breakdown points when utilizing chatbots were determined using a fuzzy prediction model in this article. Breakdown occurs when a chatbot fails to grasp the user's objectives and gives erroneous results. Human thinking can be regarded as fuzzy logic. Human thought is not a binary process; it considers ambiguity. As a result, fuzzy logic is capable of dealing with ambiguity and linguistic barriers. Task-oriented and non-task-oriented conversation systems are the two types of dialogue systems. Non-task focused chatbots are gaining popularity since they assist in engaging the end-user in an open domain dialogue. The quality of service offered by a chatbot is measured using fuzzy logic in this case.

- **Implementation Chat-bot WhatsApp using Python Programming for Broadcast and Reply Message Automatically**

This research focuses on the WhatsApp system and Python Chatbot development. Because the Raspberry Pi can't connect to the WhatsApp website. The study's purpose was to avoid utilizing a Raspberry Pi for the conversation simulation. The data retrieval procedure begins with the user receiving a broadcast message explaining the possible answer options.

When a specific user answers, the program sends the appropriate response in accordance with the customer's request. Only fifteen contacts may be handled at a time by the proposed chatbot system.

The speed with which text messages are transmitted and received is influenced by the Chatbot server's connection acceleration. The chatbot simulation program will be unable to read messages that contain peel-off stickers, emoticons, or gifs.

- **Infini – A Keyword Recognition Chat-bot**

This study focuses on the creation and implementation of a keyword identification chatbot that evaluates the user's query and delivers the best and most relevant response from its data source. The created chatbot's purpose is to gradually increase the amount of time the user spends looking for the proper information.

The time and effort spent investigating has been reduced to a blip on the radar. The conversation between your user 4 and the chatbot is quite useful. It enables users to text in natural language and receive relevant replies.

You're on your way out the door with only one touch. In general, there are several chat-bots accessible that are built using a range of technologies to achieve a variety of goals. This chatbot can help with research and software requirements. You can identify information gaps between your institution and the people it serves. They have currently built a chat-bot for the University in which the client, or learners here, may ask relevant inquiries on the College-related mental domains that are visible through the chat-bot. The bot can help people save time and get information more efficiently.

The chatbot's biggest restriction is the organization's ever-growing data, which must be hardcoded and updated in the chatbot's knowledge on a regular basis.

- **The Software Challenges of Building Smart Chat-bots**

The practical implementation is divided into two sections: predefined exercises and bots created by the community.

Predefined activities entail creating a series of bots, each of which examines a different aspect of bot construction. The first exercise broadens Chabot's essential elements, addressing topics such as interaction platform, communication medium, user intent, and input errors. Following the creation of the bot's core structure, we move on to entity extraction and

customizing our bot with privatized messages. Using powerful NLP engines like DialogFlow5 and NLP.js6, this exercise entails generating training sentences for best/optimal results. It demonstrates how various entities are utilized to extract information such as town names, dates and times, and custom domain-specific information.

- **Chat-bot integration in few patterns**

There are numerous approaches to improve chatbots in today's world; the patterns vary depending on the type of business and the developer's ability to provide value to his users. In this regard, there are typically two types of chat-bots: work-focused bots, which are designed to perform specific tasks on a specific domain, such as weather chat-bots, and chitchat bots, which are generally used for specific service-based purposes but aim to hold open domain discussions with users. Modern task-based chatbots are constructed on a framework-based structure based on domain ontology (organized by frame, spaces, and values). Domain ontology describes the type of user intentions that the system may perceive and respond to.

- **A Chat-bot for Changing Lifestyle in Education**

This study focuses on the development of an educational chatbot, which employs a deep learning approach. As the number of e-learners increases, the framework might be used to get immediate replies instead of waiting for someone to respond. When a student has a query concerning the lab manual, the bot can provide an appropriate response.

The user's problems and inquiries may be addressed in this way without the need for human interaction. This chatbot will improve the practical performance of an e-learner. The technology employs NLP and machine learning to create a chatbot for academic purposes that may be used by a range of educational institutions. Audio mode and text mode are the two modalities that are employed. Instead of waiting on the enquiry desk's waiting list, users may interact with the bot. To ensure accuracy, the same inquiry is utilized. The goal is to build a user interface that is interactive.
Also, a chatbot based on purpose classification and natural language processing is being developed.

- **Language Chat-bot–The Design and Implementation of English Language Transfer Learning Agent Apps**

Customer service and as a personal assistant for end users are common uses for the Language Chatbot. User-interactive discussions in certain domains, such is question-and-answer systems based on facts, A chatbot for real-time English learning has been developed. Transfer is a technique that was used to create this product. Learning. As a result of these discoveries, the chatbot with three levels of transfer learning modules of many levels of learning in reality, there are a slew of them. There is an unlimited amount of English learning programs available. Chatbots are automated systems that can be used for a variety of purposes. end-user, with the majority claiming that the chatbot is helpful. Artificial intelligence is used. As a result of this, they have knowledge of these industrial systems. enhanced integration of English learning systematically on three levels (i) phonetic, (ii) phonological, (iii) semantic, syntactic, and syntactic levels in Natural Language Processing, as well as in identifying how to learn in the chat-bot and AI ecosystem.

IV. CONCLUSION

Nowadays, Bots are extremely beneficial for almost every company or individual. When used correctly, they can execute repetitive jobs with ease, saving a significant amount of time and money. They cannot, however, be expected to work on their own. The AI-powered bot employs dynamic learning and self-updates in response to consumer contact. This project evaluates mental health based on which it provides primary assistance to the client.

Even though artificial intelligence has come a long way in the previous several decades, it still needs human intervention to function properly.

ACKNOWLEDGMENT

It gives us tremendous pleasure to embark on this job. We are really inspired to work on the project "Maverick Bot Implemented Via Natural Language Processing ".

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