

AI CHAT BOT USING SHAN ALGORITHM

1. Mrs. S. Nandini (Ph.D)¹, A.Nawas Hussain², B.S. Haran Pranav³, A. L. Abdul Vahith⁴, J. Samuel George⁵

¹ Professor of Department of Information Technology, Meenakshi College of Engineering, Chennai, Tamil Nadu, India

^{2,3,4,5} Student of Department of Information Technology, Meenakshi College of Engineering, Chennai, Tamil Nadu, India

Abstract-

Letters dominated previous communication. Then, when telephones and, later, mobile phones became more widespread, voice chats took over as the major mode of communication. In many cases, a chatbot can be useful in providing services. These services range from weather forecasts to the option to purchase a new laptop, smartphone, or anything in between. They also provide life-saving health alarms. Numerous big firms, like Google (Google Assistant), Amazon (Alexa), Microsoft (Cortana), and Oracle, are investing substantial time and resources in the research of personal assistants. The development of a chat-bot would cover the following topics: Image recognition with Custom Vision services is utilised with Azure Bot Architecture. We present a SHAN algorithm that combines NLP, RNN, and LSTM.

Keywords—azure bot, NLP, RNN, SHAN ALGO

1.INTRODUCTION:

In our daily interactions with friends, family, and co workers, we learn about the context of the topic being discussed. When someone states they are reading a book, you might inquire about the author or whether they enjoy the book rather than asking if they have read any other books. You give the greatest response you can at the time. A chatbot is a piece of software that mimics human communication through text or voice exchanges. It is intended to automate processes and give people information.

Various platforms, including websites, messaging services, and mobile applications, can incorporate chatbots. An AI chatbot is a computer programme that simulates human-like discussions with people using text-based or voice-based interfaces. These chatbots can be used for a wide range of applications, including customer service, virtual assistants, and even entertainment. To interpret and respond to user inputs, AI chatbots employ natural language processing (NLP) and machine learning algorithms. They are trained on massive volumes of data and are able to learn from user interactions, allowing them to improve their responses over time. Chatbots can be

connected into a variety of platforms, such as websites, messaging applications, and social networking platforms, allowing users to interact with businesses or services in a seamless and convenient manner. They can also handle many chats at the same time, decreasing human agents' workload.

1.1 Existing System

The purpose of a chatbot system is to provide a seamless and efficient means of communication between humans and computers. The system is designed to simulate a human conversation, where the user can input their query or request in natural language, and the chatbot responds with relevant information or assistance [1].

To achieve this goal, the chatbot system's architecture integrates a language model and computational algorithm, which work together to process and interpret the user's input. The language model allows the chatbot to understand and generate natural language responses, while the computational algorithm enables the chatbot to access and retrieve information from various sources to provide accurate and relevant responses to the user.

One of the key benefits of using a chatbot system is its accessibility. Anyone, from employees to the general public, can freely upload their queries and receive immediate responses. This makes the chatbot system a useful tool for businesses and organizations that want to provide efficient customer service or streamline their internal communication processes. Additionally, the use of chatbots can also reduce the workload of human customer service representatives, allowing them to focus on more complex tasks that require human intervention.

1.2 Proposed System

The AIML-based bots have been popularly used in the past, other algorithms can also be implemented in chatbot systems to provide improved functionality and performance. For instance, advanced machine learning algorithms such as deep learning models can be used to improve the accuracy of the chatbot's responses.

In addition, chatbot systems can also be designed to accept text-based queries from users. This means that users can input their queries in the form of text, and the chatbot system will provide a text-based output in response. This can be useful for users who may have difficulty with speech-based interactions or for situations where privacy concerns make it difficult to use speech-based inputs.

Once a chatbot system has been successfully executed in one domain, such as a college domain, it can be extended to other domains such as medical, forensic, sports, and many others. This can be highly beneficial as it enables users to access relevant information quickly and easily without spending much time sorting through irrelevant data.

For example, in the medical domain, a chatbot system can be designed to provide users with information on medical conditions, symptoms, and treatments. Similarly, in the forensic domain, a chatbot system can be designed to provide users with information on crime scene investigations, evidence collection, and analysis. In the sports domain, a chatbot system can be designed to provide users with information on team statistics, player performance, and game schedules.

Overall, chatbot systems can be highly beneficial in a variety of domains as they provide users with quick and easy access to relevant information. By implementing different algorithms and text-based queries, chatbot systems can be designed to meet the specific needs of users in different domains.

2. ALGORITHM USED

The nlp, rnn, lstm are three well-known algorithms capable of handling sequential structural data. The combination of the above three is Shan algorithm This algo is used to resolve the query of the user.

2.1. Natural Language Processing

The term "Natural Language Processing" (NLP) refers to the area of artificial intelligence that studies how computers and human language communicate. It entails the creation of computational models and algorithms that let machines decipher, comprehend, and produce natural language. Language translation, sentiment analysis, voice recognition, and chatbots are just a few of the many uses for NLP. Enabling computers to comprehend the nuances of human language, including grammar, syntax, semantics, and context, is the main problem in NLP. Several methods, including machine learning, deep learning, and natural language comprehension, are used in NLP. Deep learning models employ neural networks to comprehend the

content, while machine learning algorithms are used to train models that can recognise patterns in language data.

It is designed to understand natural language inputs and generate human-like responses

2.2. Recurrent neural network

Chatbot learns the statistical relationships and patterns between words and phrases in natural language by using a significant quantity of training data. Massive amounts of text from the internet and other sources make up the training data, which is used to build the model using unsupervised learning methods. Once trained, the model can create text by anticipating the following word in a sequence based on the words that came before.

When a user enters a message, the chatbot uses its linguistic expertise to produce an answer that is most likely to be logical and relevant to the message. A probabilistic sampling process is used to produce the response, where the model generates multiple potential responses and chooses the one that is most likely to occur based on a probability distribution

2.3. LSTM

The LSTM algorithm is a type of recurrent neural network (RNN) that is designed to address the vanishing gradient problem and enable effective processing of sequential data.

The LSTM network consists of memory cells and three gating mechanisms: input gate, output gate, and forget gate. The memory cell is a long-term memory that can store information over long periods of time. The input gate regulates how much new information should be added to the memory cell, while the forget gate determines which information should be removed from the cell. The output gate controls how much information should be output from the cell to the next layer of the network. The LSTM algorithm processes data in a sequence, with each element in the sequence being processed by the network one at a time. For each element, the input gate determines how much new information should be added to the memory cell, based on the current input and the previous state of the memory cell.

The forget gate decides which information should be removed from the memory cell, based on the current input and the previous state of the memory cell. Finally, the output gate controls how much information should be output from the memory cell, based on the current input and the current state of the memory cell. The LSTM algorithm has been used in a variety of applications, including speech recognition, natural language processing, and image captioning. It has also been used to generate new sequences of data, such as music and text, by training

the network on existing sequences and then using it to generate new sequences based on the learned patterns. Overall, the LSTM algorithm has proven to be highly effective in processing sequential data and has opened up new possibilities for the analysis and generation of complex data sequences.

SHAN ALGORITHM

Natural language processing (NLP) combines computational linguistics, machine learning, and deep learning models to process human language. Computational linguistics. Computational linguistics is the science of understanding and constructing human language models with computers and software tools.

STEP~: AUTHENTICATE TEXT MESSAGE

Step 2: search in global server

Step 3: send text message

LSTM used in chatbot

In the domain of chatbots for time series conversations, LSTM is shown to perform well and maintain the context for longer durations. LSTM network.

STEP 1: Message view

STEP 2: The adaptive message transmission

STEP 3: Request sever for shortes form and summary of client query

RNN

The RNN is a stateful neural network, which means that it not only retains information from the previous layer but also from the previous pass. Thus, this neuron is said to have connections between passes, and through time.

STEP1:relate to answer for previous query information

STEP2: adapt the previous message transfer

STEP3:answer related to previous search and adapt the message query

2.4. MLP

MLP stands for Multilayer Perceptron, which is a type of neural network architecture used in machine learning for supervised learning tasks, such as classification and regression. The MLP network consists of an input layer, one or more hidden layers, and an output layer. Each layer consists of a number of artificial neurons or nodes, which are connected to the nodes in the previous and next layers by weighted connections. In the MLP architecture, the input layer receives the input data, which is then passed through the hidden layers. The hidden layers perform computations on the input data using non-linear activation functions, and the output of each hidden

layer is passed to the next hidden layer until the output layer is reached. The output layer produces the final - classifications.

The training of an MLP network involves adjusting the weights of the connections between the nodes to minimize the error between the predicted output and the actual output. This is typically done using backpropagation, which involves calculating the gradient of the error with respect to the weights and using this gradient to update the weights.

MLP networks have been used in a variety of applications, including image and speech recognition, natural language processing, and financial forecasting. They are particularly effective for classification tasks where the input data has non-linear relationships between the features.

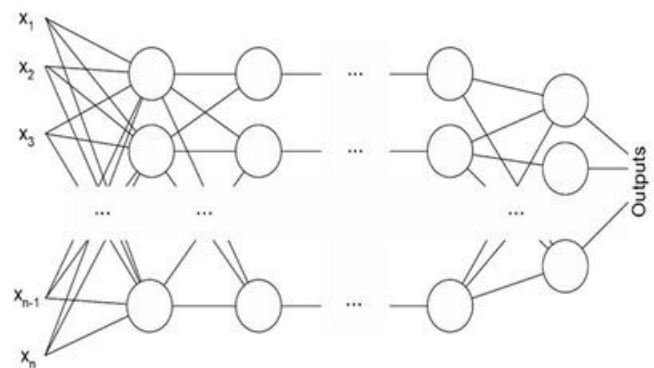


Fig.1: Multilevel Perception

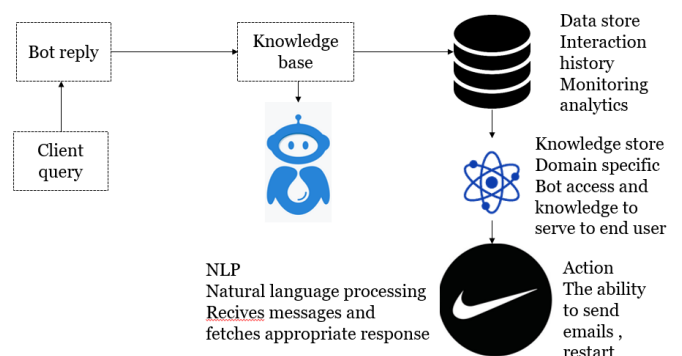


Fig.2: Architecture for Proposed System

Client query: client can request question through the text via message box it will be resolve for query

Bot reply: bot can reply for a query and it can be search for the query by the related answer

Knowledge base : Create a knowledge management strategy.

Choose your infrastructure.

Determine and collect the data your AI needs.

Make the data simple and accessible for AI.

Adjust the language to fit your chatbot's persona.

Get started with self-learning AI from User like.

Data store: data are collected in a data base and solve for a related query

Knowledge store: it can Knowledge store is a data sink created by a Cognitive Search enrichment pipeline that stores AI-enriched content in tables and blob containers in Azure Storage for independent analysis or downstream processing in non-search scenarios like knowledge mining.

Action: it can be accessed for a message what a chat bot replies for client query

Modules:

1. Python library Authentication

Intents. json: intents classification or recognition it is a type of getting a spoken or written text and

then classifying it based on what the user wants to achieve.

Trainer.py: Defines the Chatbot overall file structure and contains the intent, actions, slots, stories, domain, config and endpoint details. The code will train an NLU and dialogue model to retrieve weather from the Yahoo weather API. Model folder contains the trained models. It will also start the server with actions and also runs the chatbot on the command line. Execute only this code as it will trigger the actions and run.py.

Run.py: triggered by trainer.py. contains the modules to run the chatbot module in the command line.

2. RNN (seq2seq model)

A Seq2Seq model is a model that takes a sequence of items (words, letters, time series, etc) and outputs another sequence of items.

In the case of Neural Machine Translation, the input is a series of words, and the output is the translated series of words.

Sequence to Sequence (often abbreviated to seq2seq) models is a special class of Recurrent Neural Network

architectures that we typically use (but not restricted) to solve complex Language problems like Machine Translation, Question Answering, creating Chatbots, Text Summarization, etc.

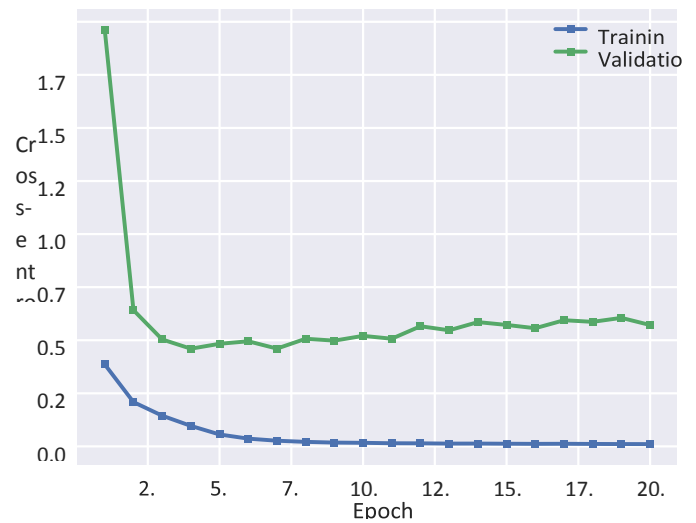
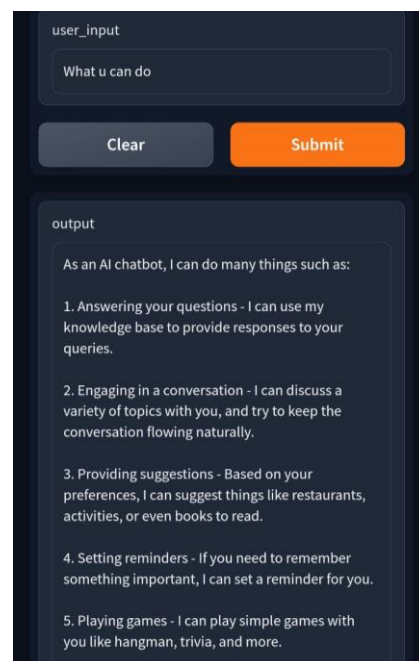


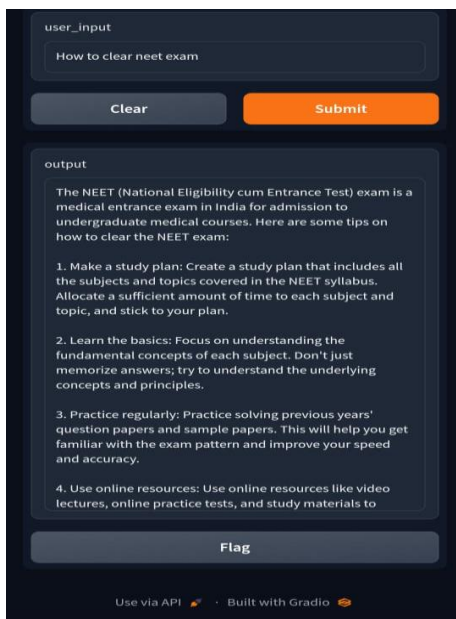
Fig.3: Performance Metrics

OLD ALGORITHMS LIKE NLP&LSTM&RNN CAN BE DEFINED IN BLUE LINE

SHAN ALGORITHMS CAN BE DEFINED IN GREEN LINE IT HAVE A HIGHER INFORMATION VALUES

SCREEN SHOTS





3. CONCLUSION

A chatbot is a piece of software that mimics human communication through text or voice exchanges. It is intended to automate processes and give people information. Various platforms, including websites, messaging services, and mobile applications, can incorporate chatbots.

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