



IJIRCCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 5, May 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.488

 9940 572 462

 6381 907 438

 ijircce@gmail.com

 www.ijircce.com

Personal Assistant Chatbot Using Deep Learning

Jay Mahajan¹, Atharva Nanche², Soham Mhatre³, Dr. R N Mendhe⁴

Student, Dept. of Computer Engineering, Datta Meghe College of Engineering, Navi Mumbai, India¹

Student, Dept. of Computer Engineering, Datta Meghe College of Engineering, Navi Mumbai, India²

Student, Dept. of Computer Engineering, Datta Meghe College of Engineering, Navi Mumbai, India³

Professor, Dept. of Computer Engineering, Datta Meghe College of Engineering, Navi Mumbai, India⁴

ABSTRACT: In this modern world, every person is extremely busy and this causes two side effects, namely loneliness and an urge to do any given task quickly and with minimal effort. It is very important to address the problems mentioned above to give normal people a chance to cope-up with this rapidly moving modern society. This project is therefore being developed to counteract these issues, the chatbot not only serves as a companion to have normal day-to-day conversations with but also as a personal assistant who can perform everyday tasks with minimal effort. This program can be used by any person, anywhere, anytime which makes it very flexible, The UI of the program is very simplistic and does not require any technical knowledge on the user's behalf.

KEYWORDS: Chatbot, Deep Learning

I. INTRODUCTION

Over the years, technology has evolved rapidly, and we are going on a trajectory that is constantly getting steep, which means that more and more things are invented and discovered every-day. This creates concerns in the minds of normal population as to how are they going to catch up. The only solution is to keep updating oneself about new things. But this is difficult to achieve due to the extremely busy schedule of everyone living in an urban city.

In this era of technology, new gadgets, systems, discoveries are made every day, this gives people a fear of getting left behind the rest of the world, the only way to counteract this is to keep on learning new things as they are discovered or invented, but every adult person on this planet has a lot of responsibilities and work daily and it is quite difficult to find time in their already busy schedule. This Personal Assistant not only gives individuals living in isolation a companion to talk to but also helps them in doing daily minor tasks so that they more time to explore new technologies and catch up to the rest of the World.

This project will have a simple interface, which does not require any technical skills from the user's end. The chatbot will respond to each and every query the user provides it with, the chatbot will be made by using Deep learning models and NLP (Natural Language processing), we will be using Python Libraries such as Keras and NLTK to accomplish the Functions in the above mentioned Domains.

II. LITERATURE REVIEW

We have studied several papers on how to make chatbots, there are various approaches to making a chatbot. M Dahiya stated "A chatbot is a program designed to counterfeit a smart communication on a text or spoken ground" [1]. In their proposed system, they have used a simple pattern matching algorithm to match the input-output pairs stored in the database.

Weizenbaum J shows psychological issues related to the ELIZA [2]. Thomas T [3] provided the way by which the chatbot is planned in a manner that for single template, it gives irregular responses. LSA based inquiries are giving right reactions for random responses.

In the paper[4] by John Cahn, the chatbot is much more complex, the author states that the responses of a chatbot must be based upon the context and the knowledge base provided to the chatbot, the author talks about such a system that will respond to the user even if it lacks knowledge about a particular input.

Rashmi S and Kannan Balakrishnan [5] has provided the execution of a curious chatbot, which finds the missing information in inquiry and tests the queries to clients to gather information that are required to answer the question. Identification of missing data and querying same to provide accurate response.

III. PROPOSED SYSTEM

In this section the architecture of the chatbot is being discussed

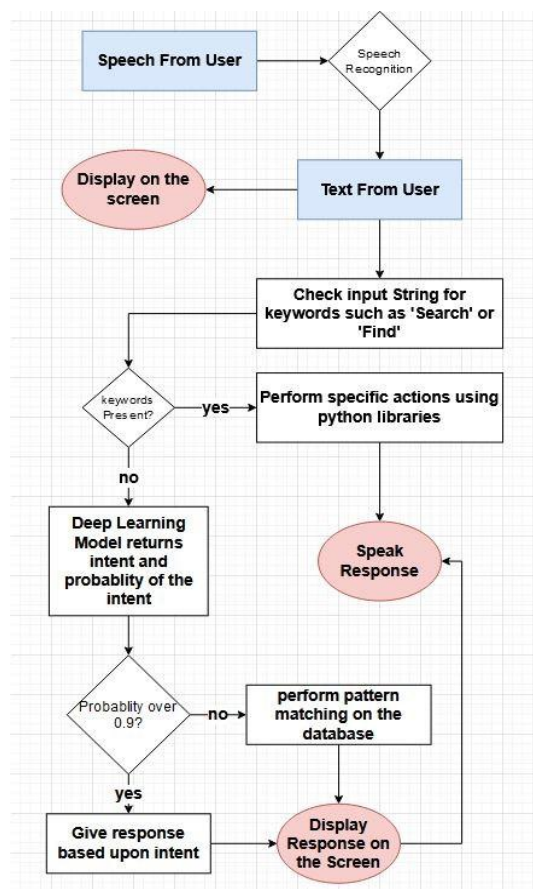


Fig-1: Proposed system architecture

3.1 Input from the user:

The input from the user can come in two different forms:

1. Speech
2. Text

In the case of Text, the input text will be displayed on the screen as a form of validation of the displayed string being used as an input.

In the case of speech, the voice data will be converted to text using Google Speech recognition and then the text will be displayed on the screen.

3.2 Processing of the input

In the proposed system, input from the user is first checked for keywords such as “Search” or “Locate”, if the input contains such keywords, then it is known that the user wants to perform certain actions. In the above cases, firstly the user wants to search for something and in the next one the user wants to locate a place, with this knowledge, we can implement functions to carry out these tasks of searching and locating.

If the input does not match with any of the keywords, then we have to pass the input to a Deep Learning Model which is trained such a way that it returns the intent of the given string(eg: ‘greeting’) and the probability of the input being of that intent. Then according to that intent, we can select a particular response to return.

3.3 Deep Learning Model

The Model we will be using in this project is a perceptron, a multi-layered perceptron is a model which has multiple inputs but outputs that are equal to the number of intents, this allows us to input multiple words and get an output in the form of an intent, from which we can respond to the user. This model has multiple layers which are trained using a training data set, this training allows the model to adjust the weight of each node accordingly.

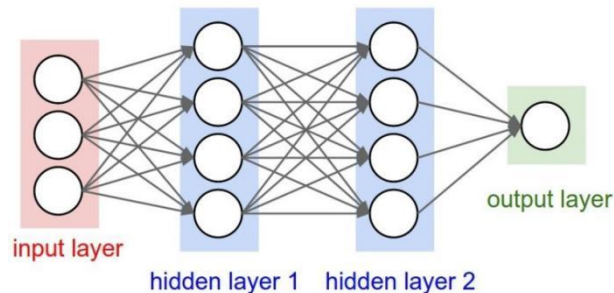


Fig-2: Representation of the deep learning model

The dataset used in the Training of the model has a ‘tag’ (intent) associated with the strings that are involved with that particular intent.

As the above model only returns the intents of the input, we need to have a set of responses for that particular intent, we use the strings associated with that intent from the dataset to choose a suitable response.

3.4 Database pattern matching

In the case of Deep learning model returning intent with a probability of less than some pre-decided value(say 0.9), the input string will be matched against key-value pairs in the database, the input will be used as the key and based on which key it matches, the response of that key will be returned. The string matching will be performed based upon a technique known as levenshtein distance.

3.5 The UI

One of the very important part of a chatbot is the user experience, without a positive experience the user is highly unlikely to come back and use the same application again. The UI of the project helps in setting the standard for the Chatbot, the UI should not be too complex as to confuse the user but also it must contain all the necessary functionality required to satisfy the user’s needs.

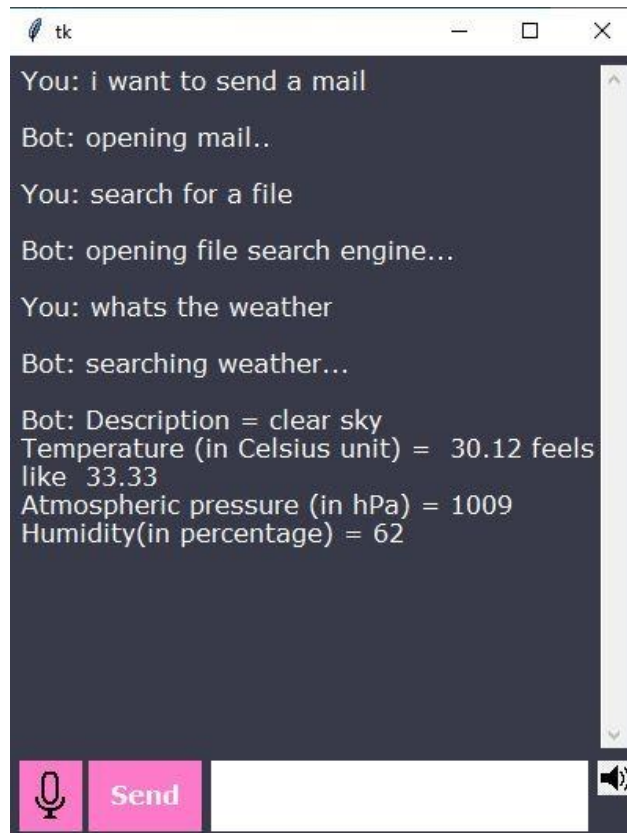


Fig-3: UI of the proposed system

The above UI is used for this particular application, the ui is simplistic and does not require technical knowledge on the behalf of the user, we have 3 buttons, all have different functions,

1. Mic button recognizes sound coming from the device microphone for the time for which it is pressed.
2. Send button sends the text inside the adjacent textbox to the main system for processing.
3. Sound button triggers whether the assistant speaks the response or not. (when it is off, the system won't convert output to speech)

Additionally, this project has separate Ui's for sending an email and searching for files

1. For Mail



Fig-4: UI for sending mails

2. For Searching Files

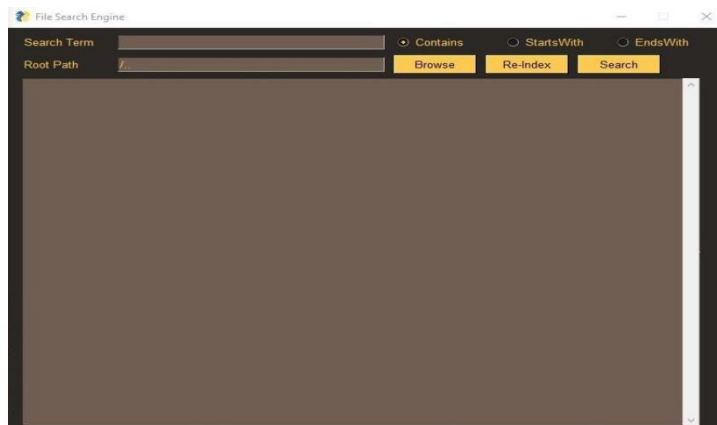


Fig-5: UI for finding files

IV.RESULTS

The results of the proposed system are satisfactory to the needs of the user, the deep learning model gives excellent results when trained with the specified dataset.

```
Epoch 198/200
14/14 [=====] - 0s 846us/step - loss: 0.0828 - accuracy: 0.9358
Epoch 199/200
14/14 [=====] - 0s 846us/step - loss: 0.0197 - accuracy: 1.0000
Epoch 200/200
14/14 [=====] - 0s 923us/step - loss: 0.0573 - accuracy: 0.9504
model created

Process finished with exit code 0
```

Fig-6: Accuracy Of Model

The accuracy of the model that we created more the 0.95 which is high enough. The proposed system has high functionality being able to perform various tasks. Some of them are:

- Speech recognition
- Normal conversations
- Search web for anything (using google)
- Search for files on your system
- Open files on your system
- Send emails
- Solve numeric expressions
- Play music on your system
- Display latest news articles
- See locations on google maps
- Shut down, Restart, log off
- Information about weather
- Search Wikipedia
- Random Jokes

Its very obvious that the proposed system has high functionality as well as the ability to chat normally with the user.

V.CONCLUSION AND FUTURE SCOPE

A good UI is created of a chatbot which has a lot of functionality and has the ability to carry out normal conversations. The proposed system carries out daily activities with minimal effort from the user. The application will help a lot of people in their daily life.

VI.ACKNOWLEDGEMENT

Motivation and guidance are the keys towards success. i would like to extend my thanks to all the sources of motivation.

We would like to grab this opportunity to thank Dr. S. D. Sawarkar, principal for encouragement and support he has given for our project.

we express our deep gratitude to Prof. A. P. Pande, head of the department who has been the constant driving force behind the completion of this project.

We wish to express our heartfelt appreciation and deep sense of gratitude to my project guide Prof. R. N. Mendhe for his/her encouragement, invaluable support, timely help, lucid suggestions and excellent guidance which helped us to understand and achieve the project goal. his/her concrete directions and critical views have greatly helped us in successful completion of this work.

We extend our sincere appreciation to all professors for their valuable inside and tip during the designing of the project. their contributions have been valuable in so many ways that we find it difficult to acknowledge of them individually.

We are also thankful to all those who helped us directly or indirectly in completion of this work.

REFERENCES

- [1] M.Dahiya "A Tool of Conversation: Chatbot" Dept.of Computer Science, Maharaja Surajmal Institute, Janakpuri, India
- [2] J. Weizenbaum, "Eliza computer program for the study of natural language communication between man and machine," Communications of the ACM, vol. 9, no. 1, pp. 36–45, 1966
- [3] N. Thomas, "An e-business chatbot using aiml and lsa," in Advances in Computing, Communications and Informatics (ICACCI), 2016 International Conference on. IEEE, 2016, pp. 2740–2742.
- [4] Jack Cahn, "CHATBOT: Architecture, Design, & Development" Senior Thesis (EAS499) University of Pennsylvania School of Engineering and Applied Science - April 26, 2017
- [5] S. Reshmi and K. Balakrishnan, "Implementation of an inquisitive chatbot for database supported knowledge bases," S² sadhana, vol. 41, no. 10, pp. 1173–1178, 2016.



INNO  SPACE
SJIF Scientific Journal Impact Factor

Impact Factor:
7.488

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 9940 572 462  6381 907 438  ijircce@gmail.com



www.ijircce.com

Scan to save the contact details