MINI PROJECT (2019-20)

Intelligent Chatbot using Python and Machine Learning

MID-TERM REPORT

Institute of Engineering & Technology

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Content

ABSTRACT

A chatbot is a computer program that can converse with humans using artificial intelligence in messaging platforms. The goal of the project is to make a fully functional chatbot. Chatbots, powered by rules or artificial intelligence/machine learning, that can interact like a human with users in real life. Weather chatbots or book flight chatbots are the real life examples that are developed with this language and machine learning.

Over past few years, messaging applications have become more popular than Social networking sites. People are using messaging applications these days such as Facebook Messenger, Skype, Viber, Telegram, etc. This is making other businesses available on messaging platforms leads to proactive interaction with users about their products. To interact on such messaging platforms with many users, the businesses can write a computer program that can converse like a human which is called a chatbot.

INTRODUCTION

1.1 General introduction to the topic

As its title suggests Chatbot is software designed to interact with humans in their natural language through messaging applications, websites, mobile apps. The chatbot is often considered as the most promising and advanced method for interaction between humans and machines. These chatbots use audio as well as textual ways to converse with people or to communicate with humans in a human-like manner.

Chatbots work as a virtual assistant. It is predicted that by 2020, chatbots will handle nearly 85% of the costumer-brand interaction. The Chatbots answers the base of the question on the set of pre-defined rules and instructions. We use Machine Learning to train chatbot and make chatbot more flexible so that it can handle simple as well as complex conversations.

The aim of this project is that the everyone get understood the real time software development environment.

This mini-project helps in understanding the core concept of automations through implementation of ML concept and using knowledge of python to solve real-time problem.

1.2 Kind of Chatbot

Chatbots come in two kinds:

• Limited set of rules
• Machine learning

1. Chatbot that uses limited set of rules This kind of bots are very limited to set of texts or commands. They have ability to respond only to those texts or commands. If user asks something different or other than the set of texts or commands which are defined to the bot, it would not respond as desired since it does not understand or it has not trained what user asked. These bots are not very smart when compared to other kind of bots.

2. Chatbot and Machine learning Machine learning chatbots works using artificial intelligence. User need not to be more specific while talking with a bot because it can understand the natural language, not only commands. This kind of bots get continuously better or smarter as it learns from past conversations it had with people.

We name this intelligent chatbot as **Technobot** which will do work personal assistant like as google assistant, siri etc.

1.3 Area of scope

Chatbots seem some humane now.

Intelligent enough to understand the patterns and put across answers that are appropriate and relevant, chatbots have come a long way. With efficient chatbot development practices, they can be made capable of literally engulfing and processing whatever information comes their way. They learn and develop a predictive analytical capability just like humans.

Simple chatbots were capable of matching a text string and offering an answer only when the exact match is found. When we said chatbots have come a long way, we actually meant it. The advanced chatbots today have a learning curve powered by artificial intelligence and is leading them to be of great significance.

Role of Chatbots in modern era

- **24x7 time availability:-** The availability of chatbots 24/7 with the immense knowledge they can hold is all set to outperform humans. With speed and accuracy, they are offering support to enterprises, they will soon augment human capabilities.

  Users love to interact with chatbots as it saves them time and in most cases offers them clear and concrete answers. They may not be perfect but they are scary close to be perfect.

- **Chatbots are replacing apps:-** The world has seen almost 6.5 million apps developed. It has been identified that 23% of the users uninstall the apps after a few weeks of use. Chatbots come across as a potential way to engage with the audience then. A messaging app brings along a chatbot that is easy to download and users get engaged with the campaigns quickly.

- **Healthcare**:- Many times patients need a quick piece of advice. They would not wish to take the pain of taking an appointment and wait for days to get in touch with the healthcare professional.

  Chatbots could make things easier. Personalized chatbots would have the patient history stored and would understand the queries of the patient. The queries would be answered as per the history and current situation.

HARDWARE REQUIREMENTS

- Memory [2GB RAM (or higher)]
- Intel core i3 64-bit Processor (or higher)

SOFTWARE REQUIREMENTS

- Pycharm
- Github
- Visual Studio Code

TECHNOLOGY REQUIREMENTS

- Chatterbot Library
- Tkinter (for GUI)
- Natural Language Toolkit(NLTK)
- Python Programming Language
- Machine Learning

OBJECTIVE

A project objective describes the desired results of a project, which often includes a tangible item. An objective is specific and measurable, and must meet time, budget, and quality constraints.

Objectives can be used in project planning for business, government, nonprofit organizations, and even for personal use (for example, in resumes to describe the exact position a job-seeker wants). A project may have one objective, many parallel objectives, or several objectives that must be achieved sequentially. To produce the most benefit, objectives must be defined early in the project life cycle, in phase two, the planning phase.

In the future, Chatbots will play a vital role in every field whether it will be IT or corporate world.Some of the benefits of chatbots are-

• As we know Chatbots streamlines interactions between people and services, So it can work as enhancing the customer experiences.

• It also offers companies new opportunities to improve the customer interaction process.

• It can also reduce customer service costs.

• Provide an easier approach to global markets.

• Make customer service available 24/7.

• Think about Siri, Alexa, Google Assistant. Aren’t these just wonderful?

IMPLEMENTATION DETAILS

3.1 Introduction

This section covers the design and implementation of different module of the bot, which contains the design of the Python module, the Translator API and the Machine Learning module.

3.2 Steps to create an intelligent Chatbot:-

Step 1. Import libraries and load the data

Step 2. Preprocessing the data.

Step 3. Create training and testing data.

Step 4. Training the model.

Step 5. Interacting with the chatbot.

Step 6. Running the chatbot.

3.3 Installation

We start the project of Technobot by installing the chatterbot library. For creating chatbot also need to install chatterbot corpus. Corpus - literal meaning is a collection of words. This contains a corpus of data that is included in the chatterbot module. Each corpus is nothing but a prototype of different input statements and their responses. These corpus are used by bots to train themselves. The most recommended method for installing chatterbot and chatterbot_corpus is by using pip.

- **pip install chatterbot**
- **pip install chatterbot_corpus**

then install nltk library and import Chatterbot library.

- **pip install nltk**
- **from chatterbot import Chatbot**

3.4 Training the chatbot

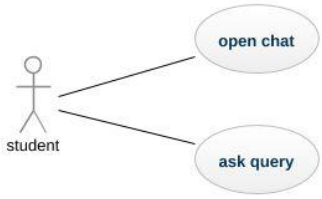
Now the final step in making a chatbot is to train the chatbot using the modules available in chatterbot. Training a chatbot using chatterbot is as simple as providing a conversation into the chatbot database. As soon as the chatbot is given a dataset, it produces the essential entries in the chatbot's knowledge graph to represent the input and output in the right manner. Firstly, let's import the ListTrainer, create its object by passing the Chatbot object, and call the train() method by passing a list of sentences.

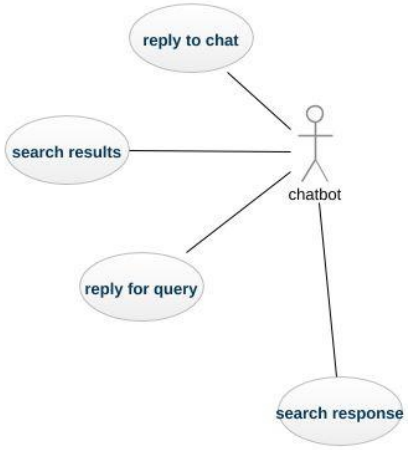
We will create a while loop for our chatbot to run in. When statements are passed in the loop, we will get an appropriate response for it, as we have already entered data into our database.

Chatbot Testing

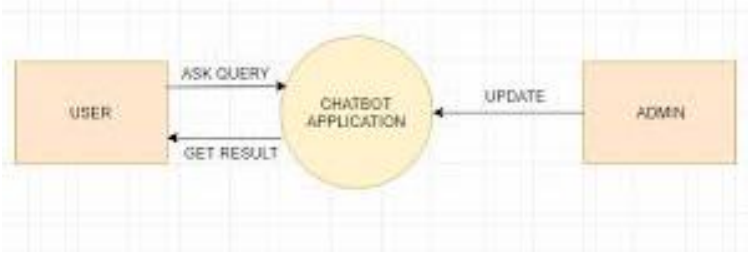
The last step of this project is to test the chatterbot's conversational skills. For testing its responses, we will call the get_responses() method of Chatbot instance.

Use Case Diagram for Chatbot





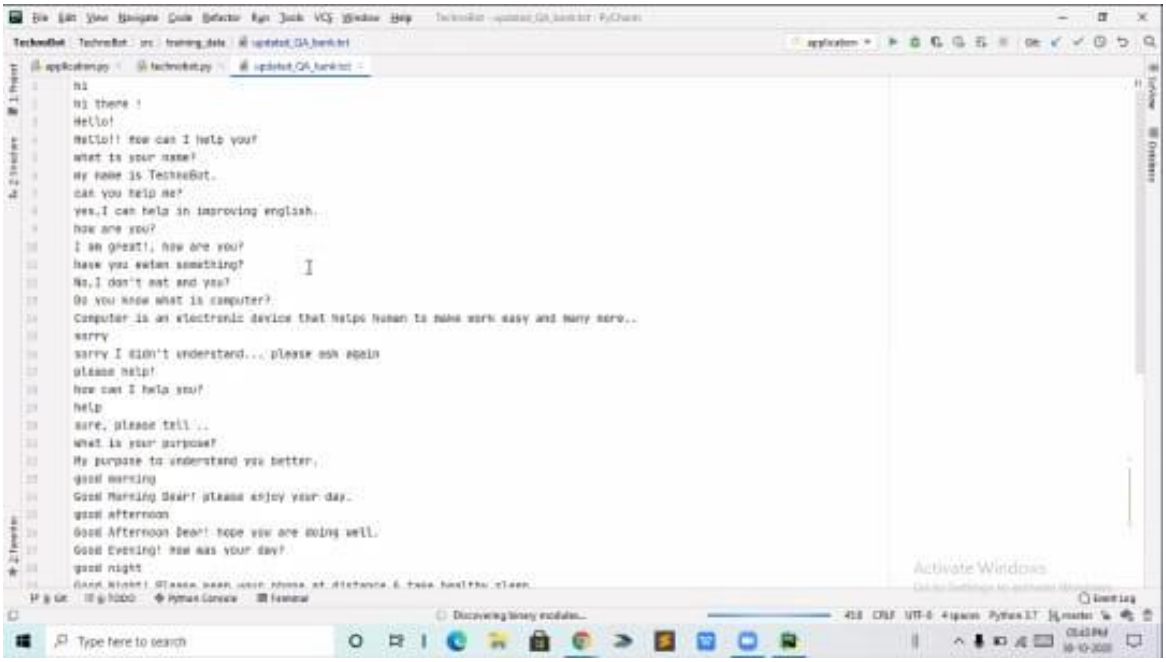
Data Flow Diagram For Chatbot

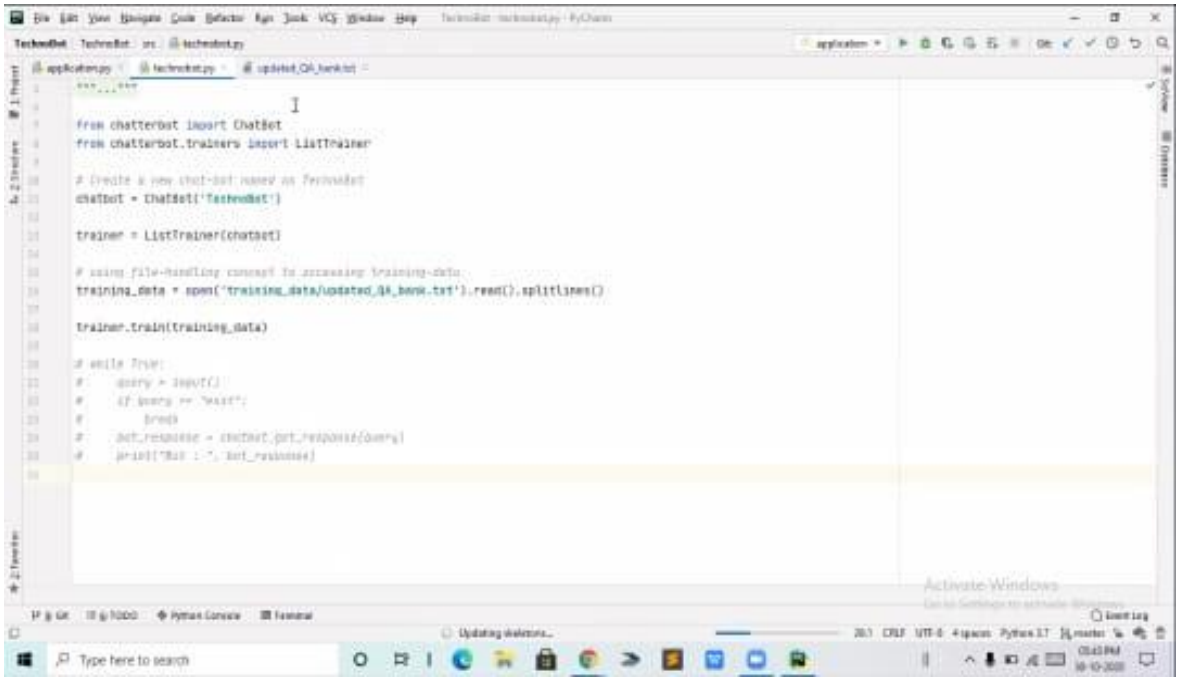


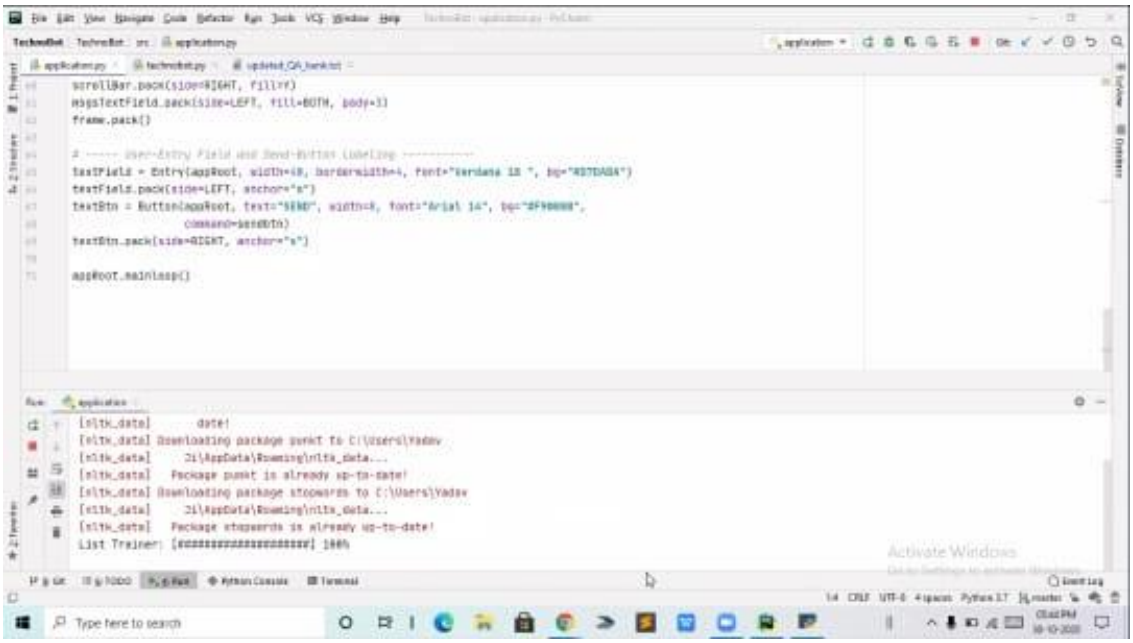
PROGRESS TILL DATE AND REMAINING WORK

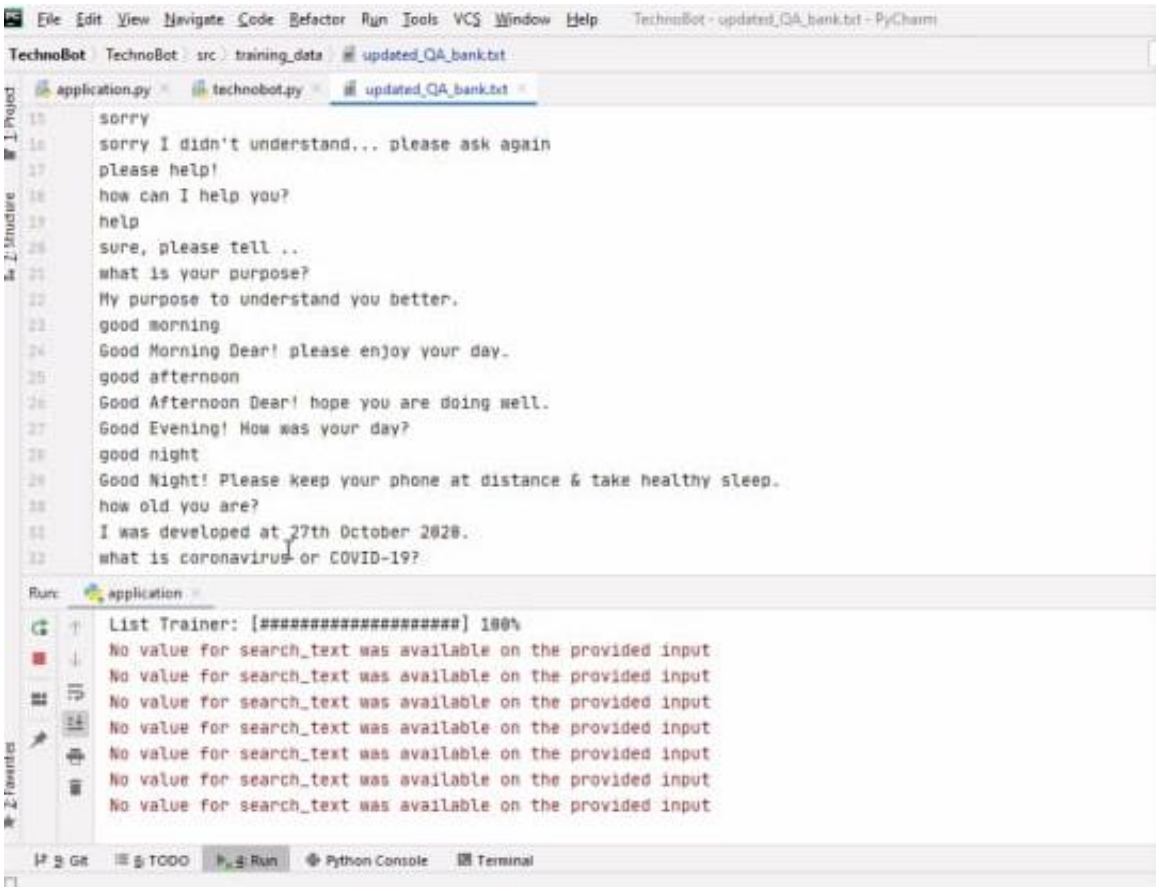
Almost 90% of the project work is finished. Only the remaining work will be of the user interface of Technobot. By using tkinter we will create the better interface for our intelligent chatbot.

SCREENSHOTS






scrollBar.pack(side=RIGHT, fill=Y)
msgTextField.pack(side=LEFT, fill=BOTH, pady=1)
frame.pack()
# ----- User-Entry Field and Send-Button Labeling ----------
textField = Entry(appRoot, width=60, borderwidth=4, font="Verdana 10 ", bg="#37DA9A")
textField.pack(side=LEFT, anchor="s")
textBtn = Button(appRoot, text="SEND", width=8, font="Arial 14", bg="#F90000",
command=sendBtn)
textBtn.pack(side=RIGHT, anchor="s")
appRoot.mainloop()
[nltk_data] date!
[nltk_data] Downloading package punkt to C:\Users\Yadav
[nltk_data] 2i\AppData\Roaming\nltk_data...
[nltk_data] Package punkt is already up-to-date!
[nltk_data] Downloading package stopwords to C:\Users\Yadav
[nltk_data] 2i\AppData\Roaming\nltk_data...
[nltk_data] Package stopwords is already up-to-date!
List Trainer: [####################] 100%
Activate Windows
Type here to search


File Edit View Navigate Code Refactor Run Tools VCS Window Help
TechnoBot - updated_QA_bank.txt - PyCharm
TechnoBot TechnoBot src training_data updated_QA_bank.txt
application.py technobot.py updated_QA_bank.txt
sorry
sorry I didn't understand... please ask again
please help!
how can I help you?
help
sure, please tell ..
what is your purpose?
My purpose to understand you better.
good morning
Good Morning Dear! please enjoy your day.
good afternoon
Good Afternoon Dear! hope you are doing well.
Good Evening! How was your day?
good night
Good Night! Please keep your phone at distance & take healthy sleep.
how old you are?
I was developed at 27th October 2020.
what is coronavirus or COVID-19?
Run: application
List Trainer: [####################] 100%
No value for search_text was available on the provided input
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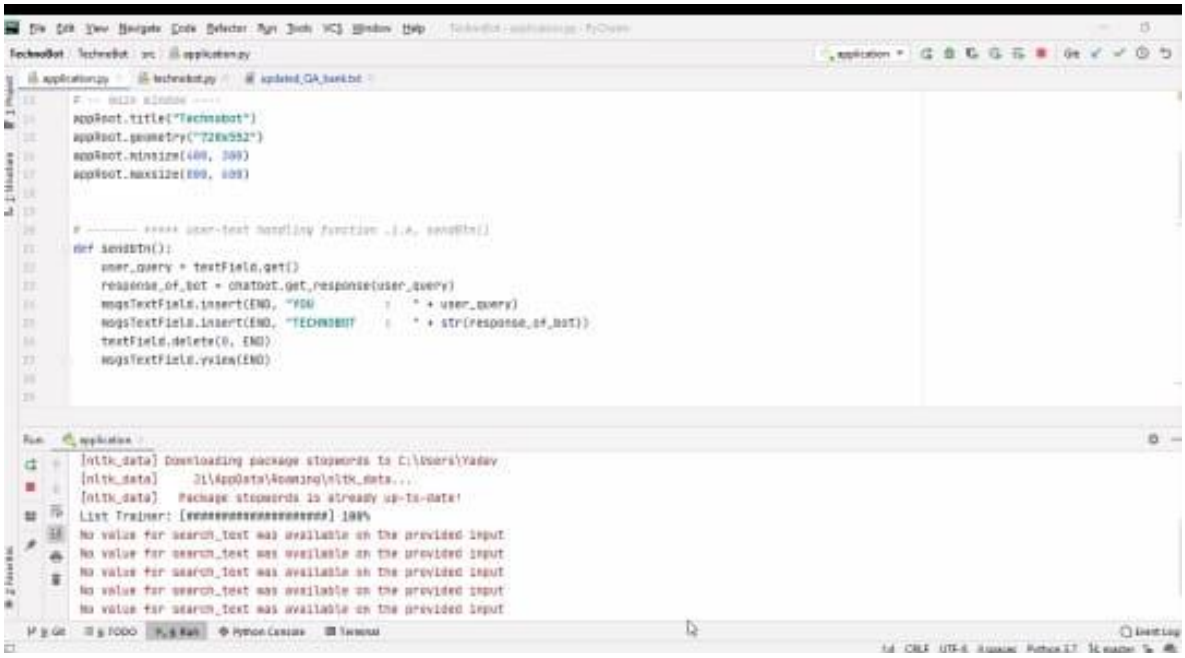
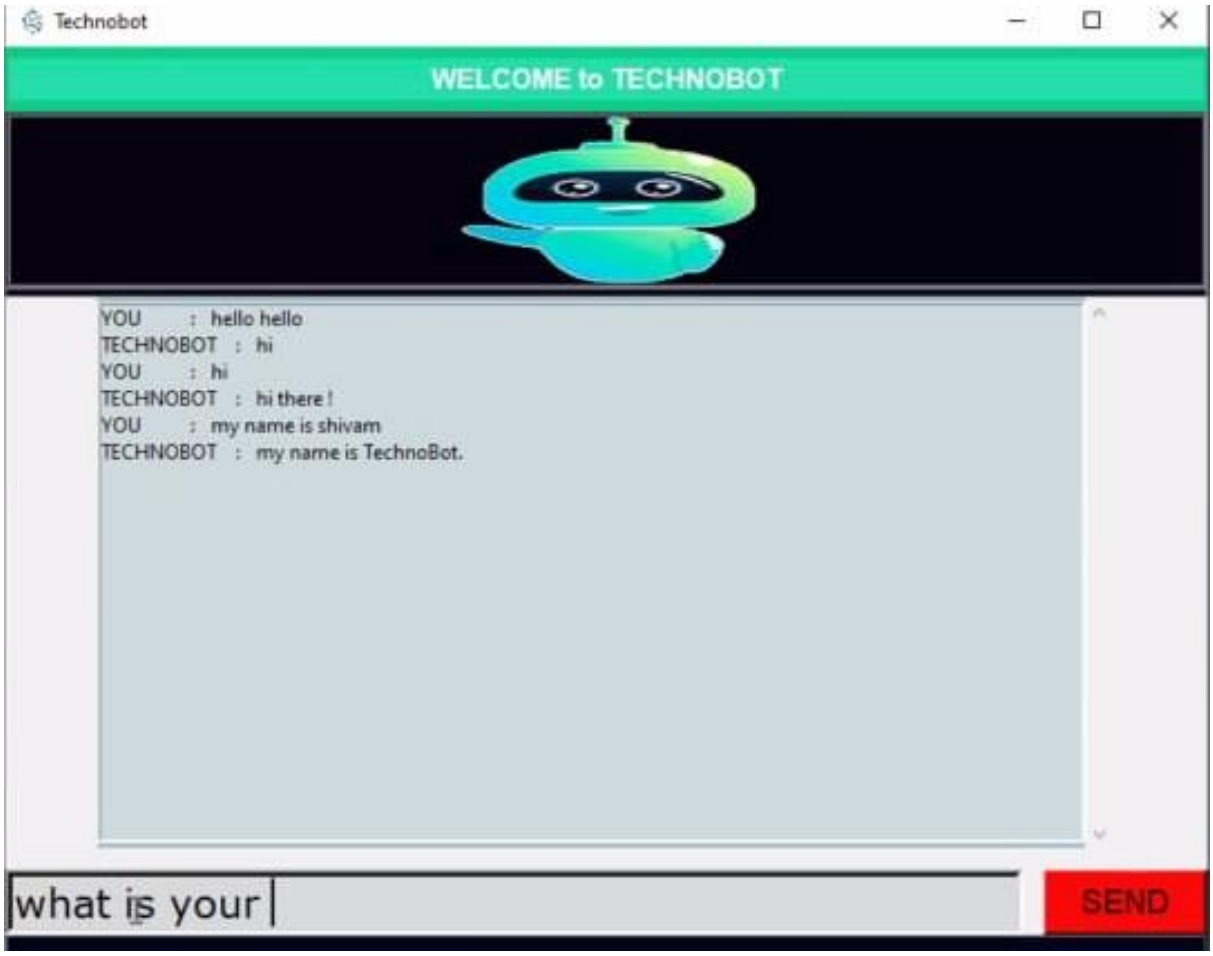
9 Git 6 TODO 4 Run Python Console Terminal


appRoot.title("Technobot")
appRoot.geometry("720x552")
appRoot.minsize(400, 300)
appRoot.maxsize(800, 600)
def sendBtn():
user_query = textField.get()
response_of_bot = chatbot.get_response(user_query)
msgsTextField.insert(END, "YOU : " + user_query)
msgsTextField.insert(END, "TECHNOBOT : " + str(response_of_bot))
textField.delete(0, END)
msgsTextField.yview(END)
[nltk_data] Downloading package stopwords to C:\Users\Yadav
[nltk_data] Package stopwords is already up-to-date!
List Trainer: [####################] 100%
No value for search_text was available on the provided input
No value for search_text was available on the provided input
No value for search_text was available on the provided input
No value for search_text was available on the provided input
No value for search_text was available on the provided input


Technobot
WELCOME to TECHNOBOT
YOU : hi
TECHNOBOT : hi there !
YOU : what is your name?
TECHNOBOT : my name is TechnoBot.
YOU : what is your purpose?
TECHNOBOT : My purpose to understand you better.
YOU :


Technobot
WELCOME to TECHNOBOT
YOU : hello hello
TECHNOBOT : hi
YOU : hi
TECHNOBOT : hi there !
YOU : my name is shivam
TECHNOBOT : my name is TechnoBot.
what is your
SEND

REFERENCES

[1]- International Journal of Innovative Research in Computer Science & Technology (IJIRCST) ISSN: 2347-5552, Volume-6, Issue-3,

[2]- AIML Based Voice Enabled Artificial Intelligent Chatterbot", International Journal of u- and e- Service, Science and Technology Volume 8 - No. 2, 2015.