INT404 (Artificial Intelligence)

Evaluation 3(Assignment)

A Project Report on

CHATBOT

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Submitted to:- Shabnam Mam

Github Link:- https://github.com/ut6300/Artificial-Intelligence-project

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Introduction:-

The purpose of this project is to showcase the power of chatbots and how they can be an alternative to using an application or even a website. The chatbots should be easy to use, respond in a timely fashion and be all round user friendly. The bots should make the users interaction as easy and fast as possible to ensure that the users time is not wasted and that they get what they want without any difficulty or misunderstanding from the bot. The conversation should flow and always keep the user in control of the conversation. Users should come away from their experience with the chatbot and think that it was a fun, easy to use and straightforward interaction that would encourage them to come back without any hesitation. With messaging platforms being the most used type of application in the world, businesses will be looking to take advantage of this and start to develop their own chatbots to work along with their social media pages. For example, a person calling a restaurant to see what time they open at or what is the special today, the customer can simply message the page on Facebook and the bot will respond accordingly. This frees up time for real employees to do other work and allows the chatbot to handle the simple tasks. Since users will already have a messaging app installed on their mobile device, there is no need to download a separate application to use the chatbot. This can turn a lot of users away as nowadays there is an plethora of applications available and most users will be fed up of having to download an application that they may only use once or twice.

Chatbots:-

A chatbot is an AI agent that can participate in a conversation with a user. Most are equipped with a messenger type interface with an input from a user and an output from the chatbot. The

chatbot processes the users input and outputs a reply based on what the user has just sent. It could be a greeting, conversation topic, or even an image. Most basic chatbots work by matching an users input with a predefined set of dialog. For example, a user saying “Thank you” will result in the chatbot saying “You’re Welcome”. The predefined set of dialogs can be set up to imitate a normal conversation between two people. Problems can arise when a user says something the chatbot does not recognize, an example could be the user meaning to say “Thank you”, but instead says “Thanks a lot”, this can confuse the chatbot as it will be looking to match the “Thank you” input with “Welcome”. This leads to a lot of manual work by trying to define every combination of a user saying “Thanks”. Modern chatbots are more complex and feature natural language processing that can learn from user inputs. They can access APIs to get information users such as news,weather, time etc. They can even process orders and make bookings entirely through a chatbot interface.

Chatbots are well suited for mobile devices as messaging is at the heart of a mobile phone. With automation looking to takeover manual labour and factory type jobs, chatbots are starting to make their way into the customer service sector. Call centre and customer service jobs whereby a human worker will work off a script and a set of answers to generic customer queries will soon be replaced by chatbots. Chatbots can be trained and equipped to deal with the everyday needs of a customer, and they can do so at a very little cost. It is also worth mentioning that chatbots can run 24/7 365, giving customers what they need even during the Christmas and public holidays.

Another aspect of chatbots that should not be overlooked is the data they can collect. Chatbots are just another stream of data that companies can exploit benefit from. Chatbot conversations can provide everyday user scenarios that can be used for training material for human workers. Chatbots can be used to complete data sets by acquiring information from users. The conversations can be used a way to learn more about the user and build up an advertising profile that can then be used to for targeted advertising and promotions.A chatbot can collect important data which can be helpful in identifying who your customers are and what they want. The infrastructure is there for chatbots to thrive as more and more people are using messaging apps every day. There is a wealth of APIs and platforms for chatbots to explore and make use of and bring interesting features and services to users.

Natural Language Processing:-

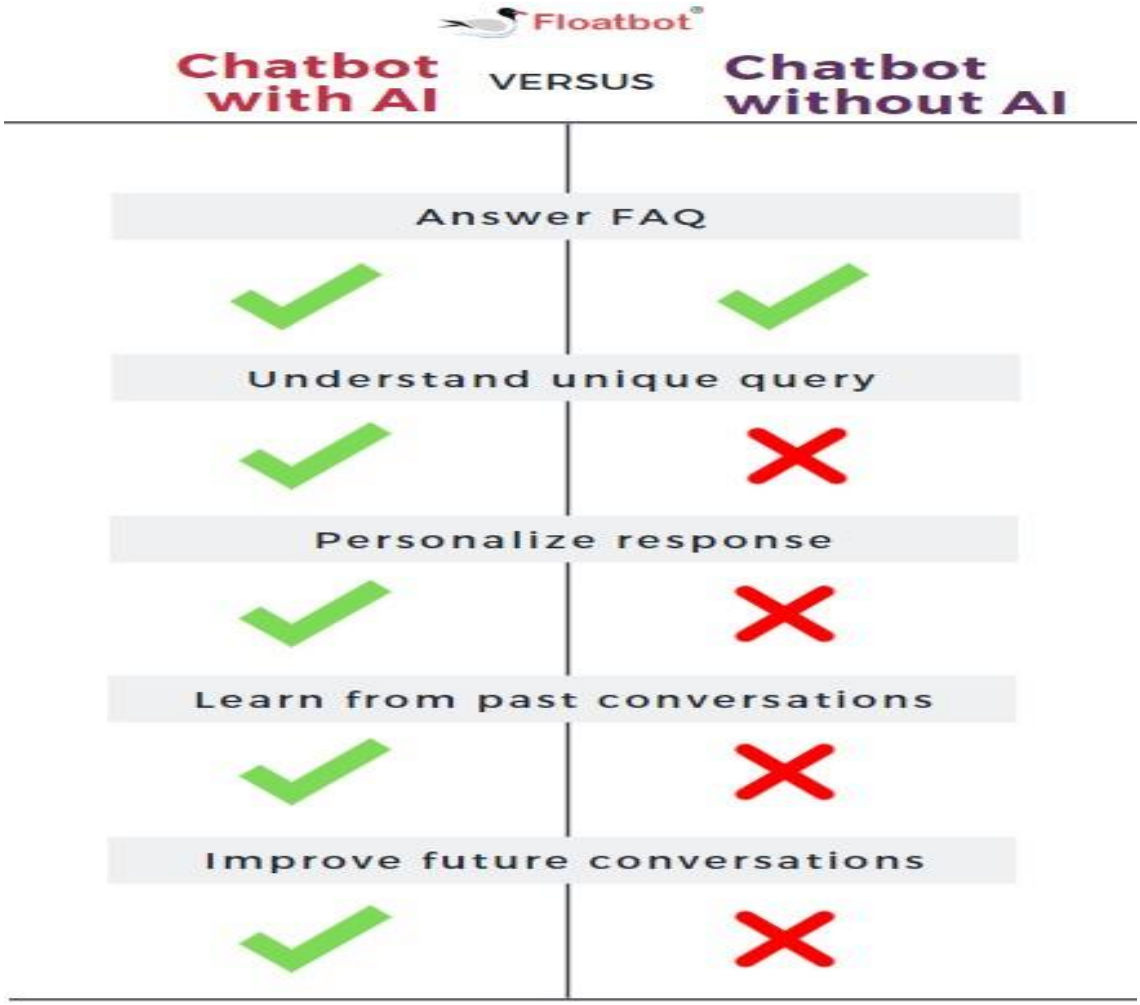
- Natural language processing (NLP) is the ability of a computer program to understand human speech as it is spoken. NLP is a component of artificial intelligence .
- It makes computer to perform useful tasks with the natural languages humans use.
- Current approaches to NLP are based on machine learning
- The input and output of an NLP system can be –
- Speech
- Written Text

Natural Language Processing is what allows chatbots to understand your messages and respond appropriately. When you send a message with “Hello”, it is the NLP that lets the chatbot know that you’ve posted a standard greeting, which in turn allows the chatbot to leverage its AI capabilities to come up with a fitting response. In this case, the chatbot will likely respond with a return greeting.

Without Natural Language Processing, a chatbot can’t meaningfully differentiate between the responses “Hello” and “Goodbye”. To a chatbot without NLP, “Hello” and “Goodbye” will both be nothing more than text-based user inputs. Natural Language Processing (NLP) helps provide context and meaning to text-based user inputs so that AI can come up with the best response.

How Artificial Intelligence makes a difference while making Chatbot with AI?

Let us first understand the difference between having a chatbot with AI and without AI.



From the above table we can conclude:

1. Chatbot with AI powers makes your bot capable and intelligent to answer complex queries. The interaction is engaging, conversational, and lively.

2. Chatbot learns from every conversation it has with the customers. It goes through the previous interaction to improve the current response. This activity helps to improve the efficiency of bot response. Plus, helps to understand your customer's choices and preferences.

3. Smart interactions save customer's time by helping them to find the right information and address their queries.

We should always train our chatbot with enough data. This will help them to strike meaningful conversations. Making the conversation look more natural than robotic.

Artificial intelligence has more to serve us as a technology. And chatbot is one of the aspects under it. A chatbot without AI is just a FAQ answering bot.

In this generation of smart buyers, we need to use smart tools to meet their level of expectancy.

Libraries:-

ChatterBot

ChatterBot is a Python library that makes it easy to generate automated responses to a user's input. ChatterBot uses a selection of machine learning algorithms to produce different types of responses. This makes it easy for developers to create chat bots and automate conversations with users. For more details about the ideas and concepts behind ChatterBot see the process flow diagram.

An example of typical input would be something like this:

user: Good morning! How are you doing?
bot: I am doing very well, thank you for asking.
user: You're welcome. bot: Do you like hats?

Language Independence

The language independent design of ChatterBot allows it to be trained to speak any language. Additionally, the machine-learning nature of ChatterBot allows an agent instance to improve it's own knowledge of possible responses as it interacts with humans and other sources of informative data.

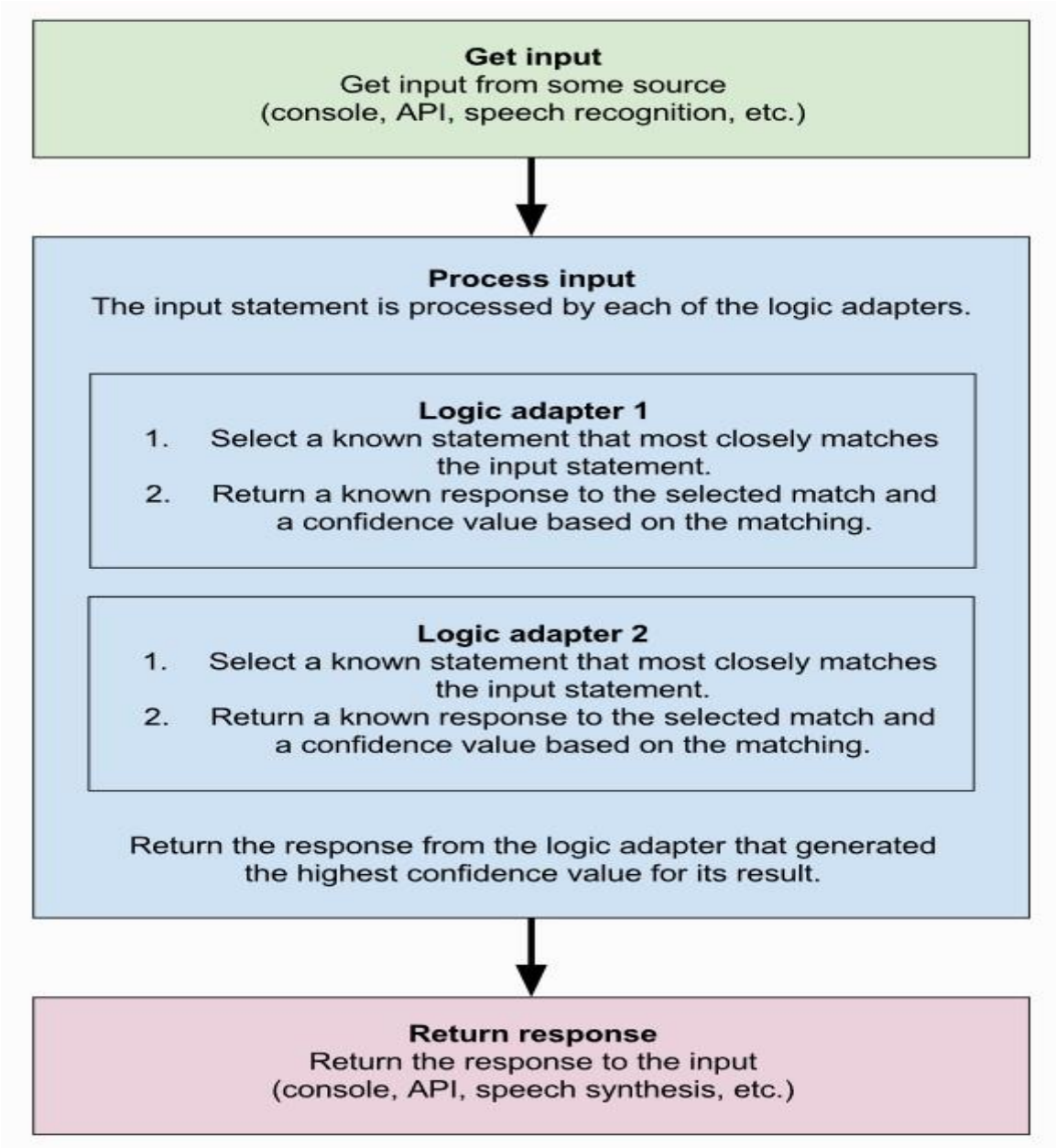
How ChatterBot Works

ChatterBot is a Python library designed to make it easy to create software that can engage in conversation.

An untrained instance of ChatterBot starts off with no knowledge of how to communicate. Each time a user enters a statement, the library saves the text that they entered and the text that the statement was in response to. As ChatterBot receives more input the number of responses that it can reply and the accuracy of each response in relation to the input statement increase.

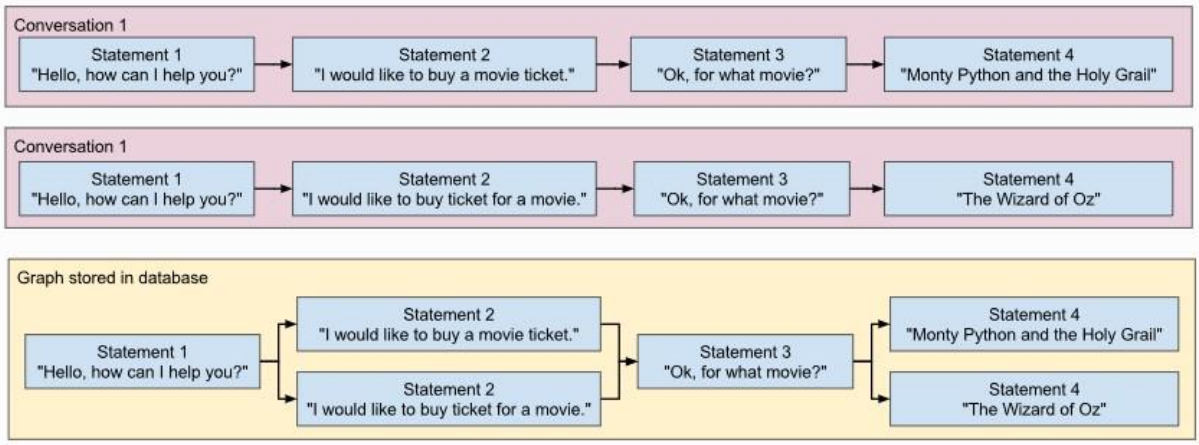
The program selects the closest matching response by searching for the closest matching known statement that matches the input, it then chooses a response from the selection of known responses to that statement.

Process flow diagram :-



Training:-

ChatterBot includes tools that help simplify the process of training a chat bot instance. ChatterBot's training process involves loading example dialog into the chat bot's database. This either creates or builds upon the graph data structure that represents the sets of known statements and responses. When a chat bot trainer is provided with a data set, it creates the necessary entries in the chat bot's knowledge graph so that the statement inputs and responses are correctly represented.



Several training classes come built-in with ChatterBot. These utilities range from allowing you to update the chat bot's database knowledge graph based on a list of statements representing a conversation, to tools that allow you to train your bot based on a corpus of preloaded training data.

You can also create your own training class. This is recommended if you wish to train your bot with data you have stored in a format that is not already supported by one of the pre-built classes listed below.

Setting the training class
ChatterBot comes with training classes built in, or you can create your own if needed. To use a training class you call *train()* on an instance that has been initialized with your chat bot.

Training classes
Training via list data
chatterbot.trainers.ListTrainer(*chatbot*, ***kwargs*)[source]

> Allows a chat bot to be trained using a list of strings where the list represents a conversation.

For the training process, you will need to pass in a list of statements where the order of each statement is based on its placement in a given conversation.For example, if you were to run bot of the following training calls, then the resulting chatterbot would respond to both statements of "Hi there!" and "Greetings!" by saying "Hello".

chatbot.py

chatbot = ChatBot('Training Example') train.py

```
from chatbot import chatbot
from chatterbot.trainers import ListTrainer

trainer = ListTrainer(chatbot)

trainer.train([
"Hi there!",
   "Hello",
])
```

```
trainer.train([
"Greetings!",
   "Hello",
])
```
You can also provide longer lists of training conversations. This will establish each item in the list as a possible response to it’s predecessor in the list.

train.py

```
trainer.train([
"How are you?",
   "I am good.",
   "That is good to hear.",
   "Thank you",
   "You are welcome.",
])
```
Training with corpus data
chatterbot.trainers.ChatterBotCorpusTrainer(*chatbot, **kwargs*)[source]

Allows the chat bot to be trained using data from the ChatterBot dialog corpus.

ChatterBot comes with a corpus data and utility module that makes it easy to quickly train your bot to communicate. To do so, simply specify the corpus data modules you want to use.

chatbot.py

```
 chatbot = ChatBot('Training Example') train.py

from chatbot import chatbot
from chatterbot.trainers import ChatterBotCorpusTrainer

trainer = ChatterBotCorpusTrainer(chatbot)

trainer.train(
   "chatterbot.corpus.english"
)
```
Specifying corpus scope
It is also possible to import individual subsets of ChatterBot’s corpus at once. For example, if you only wish to train based on the english greetings and conversations corpora then you would simply specify them.

train.py

```
trainer.train(
   "chatterbot.corpus.english.greetings",
   "chatterbot.corpus.english.conversations")
```
You can also specify file paths to corpus files or directories of corpus files when calling the train method.

train.py

```
trainer.train(
    "./data/greetings_corpus/custom.corpus.json",
    "./data/my_corpus/")
```

Function:-

Chatbots are being made to ease the pain that the industries are facing today. The purpose of chat bots is to support and scale business teams in their relations with customers. It could live in any major chat applications like Facebook Messenger, Slack, Telegram, Text Messages, etc.

Chatbots may sound like a futuristic notion, but according to Global Web Index statistics, it is said that 75% of internet users are adopting one or more messenger platforms. Although research shows us that each user makes use of an average of 24 apps a month, wherein 80% of the time would be in just 5 apps. Undoubtedly among them are Facebook Messenger, Snapchat, Whatsapp, WeChat etc. This means you can hardly shoot ahead with an app, but you still have high chances to integrate your chatbot with one of these platforms.

Wouldn't it be great if someone could ease your pain by helping you out 24*7 making your work easier and less hectic. Chatbots can do just that!!

Different applications of chatbots:

1. Accessible anytime:
I'm sure most of you are always kept on hold while operators connect you to a customer care executive. On an average people spend around 7 minutes until they are assigned to a person. Gone are the frustrating days of waiting in a queue for the next available operative. They are replacing live chat and other forms of slower contact methods such as emails and phone calls.

Since chatbots are basically virtual robots they never get tired and continue to obey your command. They will continue to operate every day throughout the year without requiring to take a break. This improves your customer UX and helps you rank highly in your sector. Another advantage of this instant response is that you can also skillfully craft your chatbot to maintain your image and brand.

2. Handling Capacity:
Unlike humans who can only communicate with one human at a time, chat bots can simultaneously have conversations with thousands of people. No matter what time of the day it is or how many people are contacting you, every single one of them will be answered immediately.

Imagine you own a restaurant, and you have a good reputation for your food of which most of your revenues come from delivery. As the demand keeps rising, you will have more customers to take orders from but very few staff to attend them all. Having a chatbot would eliminate such problem and cater to each and every person and ensure that no order is missed. Companies like Dominos are already using chatbots to arrange delivery of parcels.

3. Flexible attribute:

Chatbots have the benefit that it can quite easily be used in any industry. Unlike other products where you have to do a lot of development and testing to change platforms, chatbots are relatively easy to switch. One has to just train the bot by giving the right conversation structure and flow to switch its current field or industry.

Or if there is a lot of back and forth between two sections of the industry say customer support and sales, then you could have custom built presets which would already have the conversation flow and structure to carry out the interactions with the user.

4. Customer Satisfaction:
Humans are bound to change of emotions. Chatbots, on the other hand, are bound by some rules and obey them as long as they're programmed to. They will always treat a customer in the perfect way no matter how rough the person is or how foul language the person uses. Not everyone orders the same food everyday, people's choices may change everyday. In this case, it can use your order history to make suggestions for the next order, learn your address details and much more. Customers love this smooth interaction and want all their transactions to be as simple as possible.

5. Cost Effective:
Hiring a human for a job is never a cheap affair, and it will be expensive if your revenue are not high or sales targets are not met and would create havoc in the business. Due to the boundaries of human beings, a single human can only handle one or two people at the same time. More than that would be extremely tough for the employee.

Chatbots could help solve this age-old problem. As one chatbot is equal to loads of employees, it can easily communicate with thousands of customers at the same time. We would only need a handful of people to jump into conversations sometimes when necessary. Hence, it would drastically bring down the expenses and bring about a steep rise in revenue and customer satisfaction.

6. Faster Onboarding:
Before you want to accomplish a task, you first must learn how to work on the task and complete it. Only then will they be considered fit for the job. There is a continuous teaching involved in every level of hierarchy the employee will go through. Also, there will be a lot of change in the employees, some stay, some get fired, some more join in etc.

What we want to say is, employees will change; it's a fact. And this would require you to allot a lot time of your employees into grooming the new joinees. Chatbots could eliminate that time to almost zero, but provide a very clean and easy to understand conversation flow and structure that needs to be maintained by the chatbot. No doubt there will be changes in this too, but it will rather take a fraction of your time to resolve as compared to human employees.

7. Work Automation:
People tend to be less productive when given a recurring job or work. We humans usually get bored doing the same thing over and over again. Chatbots can now automate tasks which are to be done frequently and at the right time. And now there are already numerous slack bots which automate repetitive tasks. This helps people save time and be more productive.

Suppose there are new items bought from your eCommerce site or there is a bug reported then it sends a short summary to a slack channel. Or consider a financial bot whom you can

train to inform you when the share prices fall so that you can take preventive measures. One popular AI-based health chatbots which automate work of Doctors is Melody by Baidu.

8. Alternate sales channel:
Chatbots can sell your products for you because they're online 24/7. A recent study suggests that 70% people prefer texting rather than calling. And now with the dominance of Amazon in eCommerce, no one needs to drive themselves to a store to buy things. As a result, people tend to go online to meet their needs. This provides chatbots an opportunity to sell products which would suit the needs of each customer. Also, chatbots will remember a customer's answers and tailor their responses. In doing so they create a personal level of service that closely mirrors human interaction.

E-commerce brands like H&M, eBay shopbot, Amazon is also betting heavily with a far more advanced voice recognition AI called 'Alexa' which is gaining popularity nowadays.

9. Personal Assistant:
People could use Bots as personal fashion advisor for clothing recommendations, or ask trading tips from a finance bot, suggest places to visit from a travel bot and so forth. This would help the users get a more personal touch from the chatbot. Also, the chatbot will remember all your choices and provide you with relevant choices the next time you visit it. Notable examples is CNN bot for personalized news.

Chatbots have a wide array of applications, even more than the above mentioned few of them. Since data shows that more and more people are more comfortable to chat rather than call there will be a demand for use of chatbots by several industries. The reason for such exploding popularity is the rise of mobile messengers and extension technology of artificial intelligence. It would gravely improve their revenues and customer satisfaction. With technology moving faster than ever before, it has become very easy to create a chatbot with so many platforms out there. It's safe to say that there is a chatbot revolution coming and let us be ready to embrace and integrate it with our businesses.

Source Code:-

```
from chatterbot import Chatbot from

chatterbot.trainers import ListTrainer from

tkinter import*


bot=Chatbot("Natasha") convo={

    "hiii"

    "hello..."

    "what is name??"

    "My name is Natasha. I am made by RITIK SHARMA, KESHAV PRANSHUL, DIVYA RAUSHAN, KUMAR UTKARSH !!!"

    "Who are you ?"
```

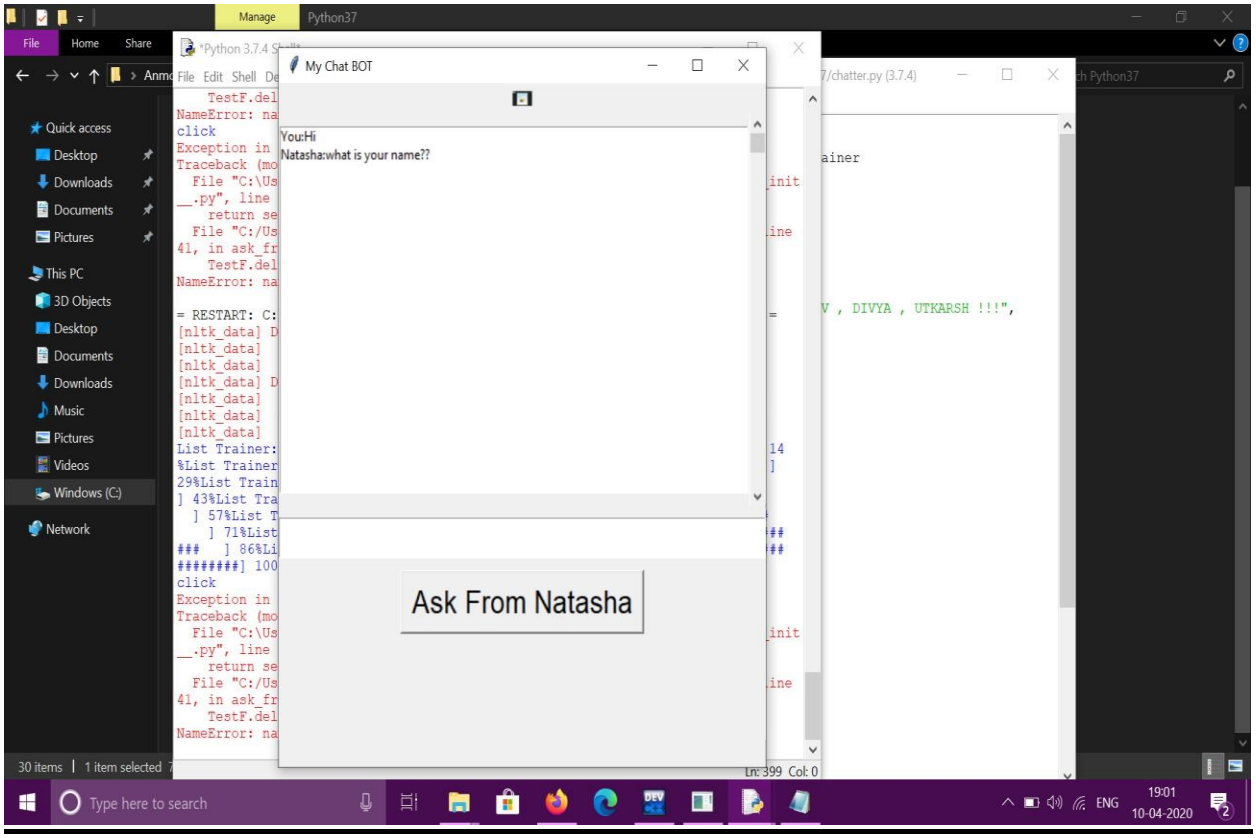
```
    "I am Natasha a Chat bot."
    "Which language do you speak?"
    "I gernally speak in english."
    "In which language are code in??"
    "I am code in python."
    "Sorry !!!"
    "Thanku:)"
    "Where do you live?"
    "I use to live in your device:)"

} trainer=ListTrainer(bot)
trainer=train(convo)

main=TK() main.geometry("500x600")
main.title("My Chat BOT")
img=PhotoImage(file="bot1.pnj")
Photol=Label(main,image=img)
Photol.pack(pady=5)

def ask_from_bot():     print("click")
query=textF.get()
answer=bot.get_response(query)
msgs.insert(END,"You:"+query)
msgs.insert(END,"Natasha:"+str(answer))
    TestF.delete(0,END)

frame=Frame(main) sc=scrollbar(frame)
msgs=Listbox(frame,width=80,height=20)
sc.pack(side=RIGHT,fill=Y)
msgs.pack(side=LEFT,fill=BOTH,pady=1
0) frame.pack()
```

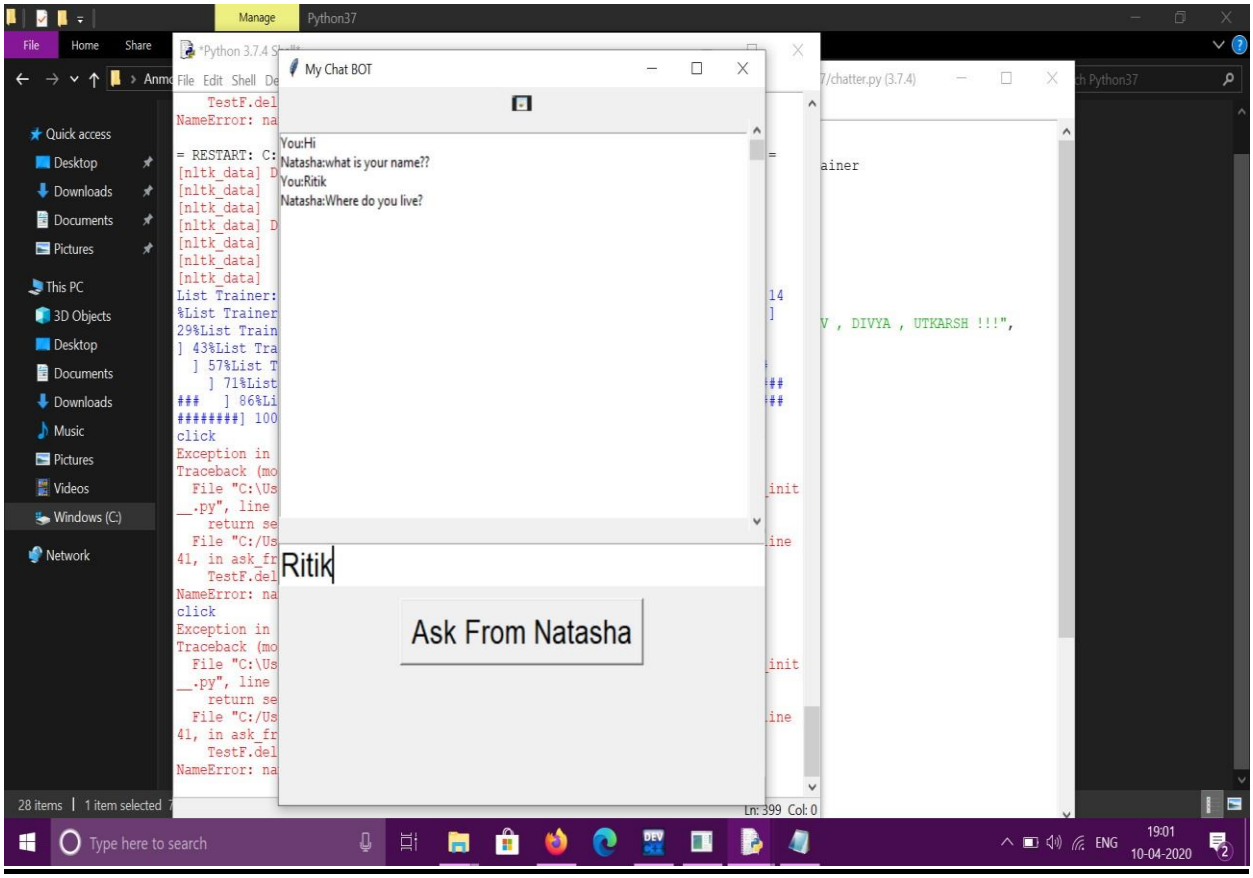
textF=Entry(main,font=("Lucida Sans",20)) textF.pack(fill=x,pady=10)

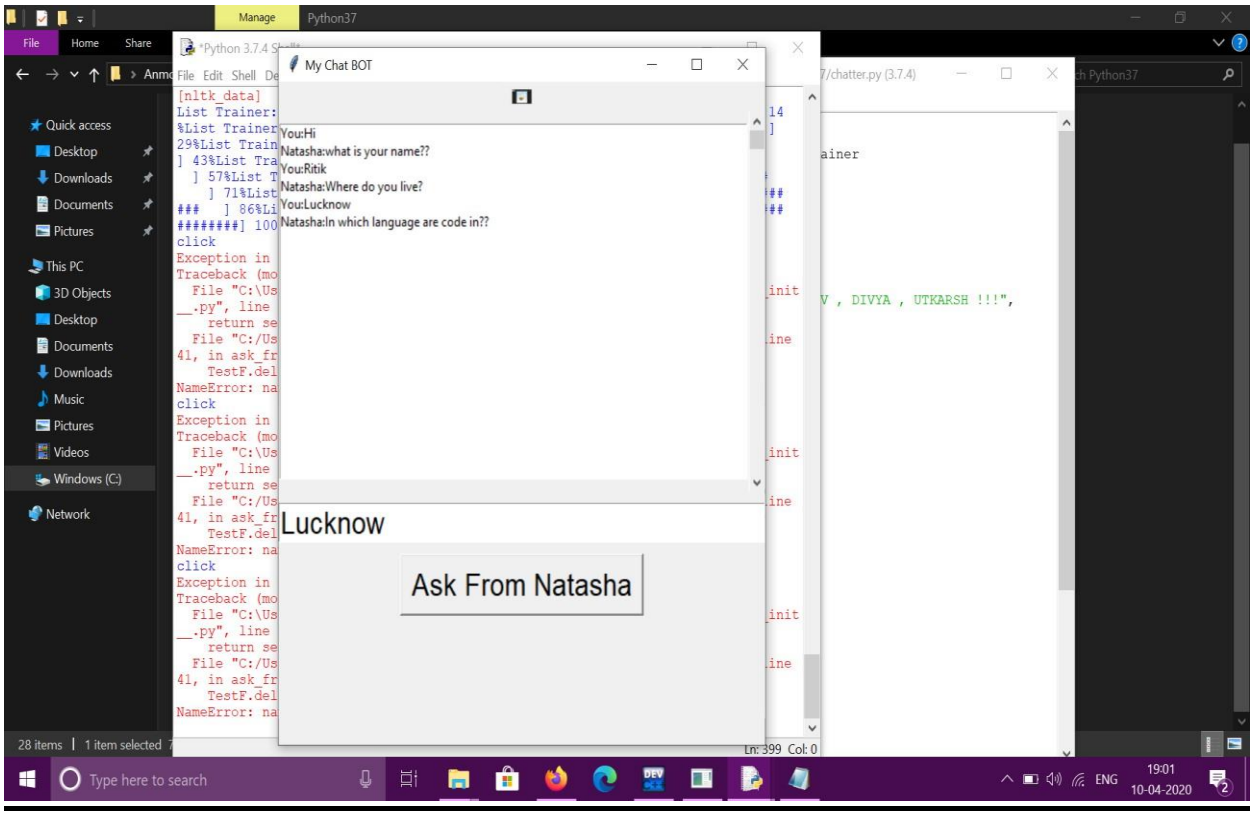
btn=Buttom(main,text="Ask From Natasha",font=("Lucida Sans",20),command=ask_from_bot)

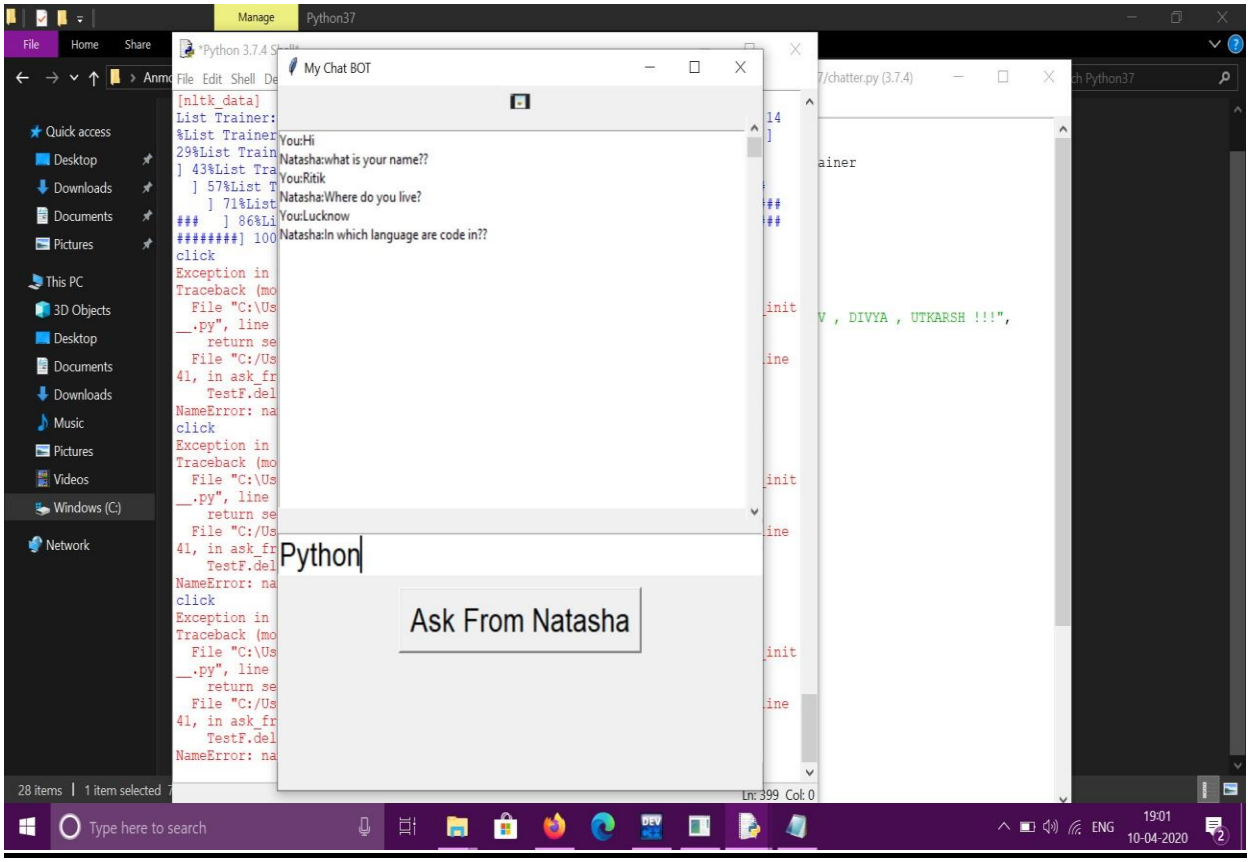
btn.pack() main.mainloop()

Output Screenshots:-




My Chat BOT
You:Hi
Natasha:what is your name??
You:Ritik
Natasha:Where do you live?
Ritik
Ask From Natasha


My Chat BOT
You:Hi
Natasha:what is your name??
You:Ritik
Natasha:Where do you live?
You:Lucknow
Natasha:In which language are code in??
Lucknow
Ask From Natasha



Github Link:- https://github.com/ut6300/Artificial-Intelligence-project