

Chatbot (Web Application)

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CERTIFICATE

This is to certify that the practical/term work carried out in the subject of
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Abstract

A chatterbot or Chatbot aims to make a conversation between both human and machine. The machine has been embedded knowledge to identify the sentences and making a decision itself as response to answer a question. The response principle is matching the input sentence from user.

Introduction

We can safely say that we are in or at least entering the era of the chatbot. The big players, Google, Facebook, Microsoft and others, are all busy developing and improving this innovative user experience technology. Messaging applications are now more widely used than social networks, which is good news for the chatbot as they are such messaging applications!

The aim of a chatbot is to conduct conversation which allows people access to information via a lightweight messaging application. There are currently two distinct types of chatbot:

- Rule-based chatbot: These essentially work as an interactive FAQ. They're programmed to recognize certain terms and patterns from which they can respond with pre-set answers.
- AI chatbot: These act as an artificial brain, using sophisticated cognitive and natural language processing capabilities. It not only understands requests but also context, intent, emotion and it continuously gets smarter as it learns from conversations it has with users.

Technology Used:

- Python3
- Flask framework 1.1.1.

Platform Used:

- PyCharm Community Edition 2019.3.2

Software Requirement Specification

R1: Login/Signup

Description: User can login or sign up using email or password.

R1.1: Login

Input: Username, Email ID, Password.

Output: Opens chat room.

Process: Validate user credentials.

R1.2: Signup

Input: Name, Email ID, Password, Phone no. and Username.

Output: Login page.

Process: Save User data.

R2: Functional Requirements

R2.1: Chatting

Input: Here the input would be the user query/question in English.

Output: Output will be the result/answer to the user query. If the answer to the user query is not present, then default statement “Sorry unable to process your request” would be returned.

Process: Compares the query with the queries that are present in the app database and returns the answer.

R2.2: Learning

Input: Here the input would be the user query/question in English whose answer is not present in the database.

Output: Statement saying “Sorry unable to process your request”. Also, the question is being recorded in the file that is maintained for such questions and answer to these questions is taken from admin.

Process: Stores the questions in a file maintained for these questions and the admin answers those questions.

R2.3: Searching

Input: Any user query in English.

Output: Provides search result for the query searched. If any error occurs, it displays the message “Please check your connection and try again”.

Process: Accepts user string and searches the same on net, or directly redirects the user to the website.

R2.4: Reminders

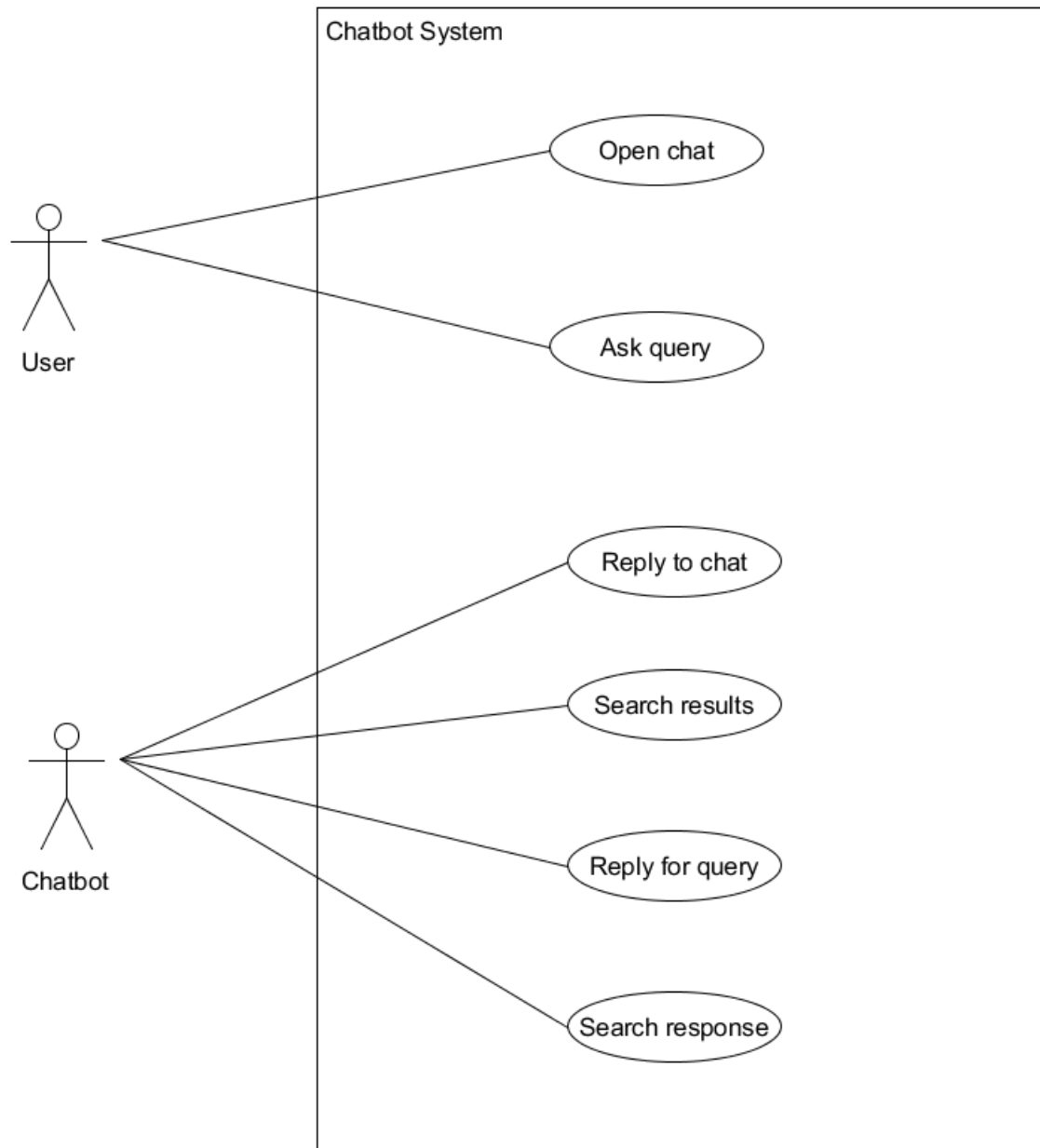
Input: User sets the date and time of the event.

Output: A notification to remind the user of particular event.

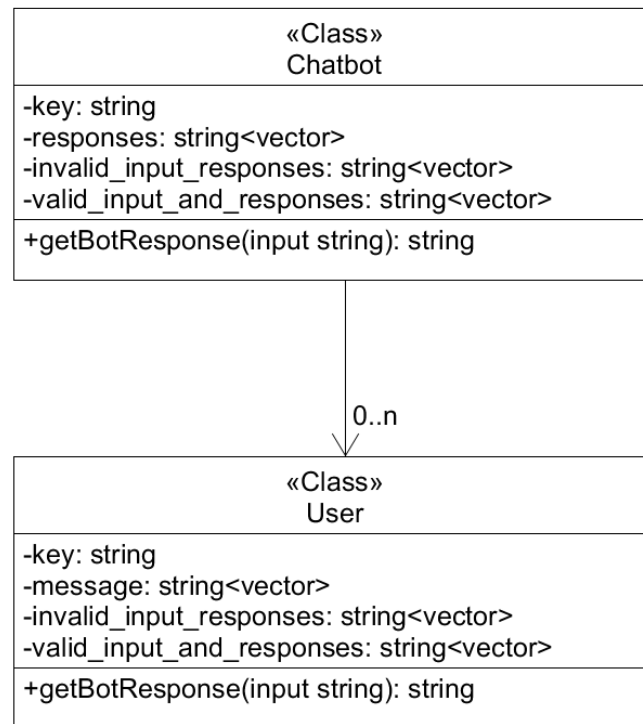
Process: Software accepts the date and time from user and saves that values in the application.

Design

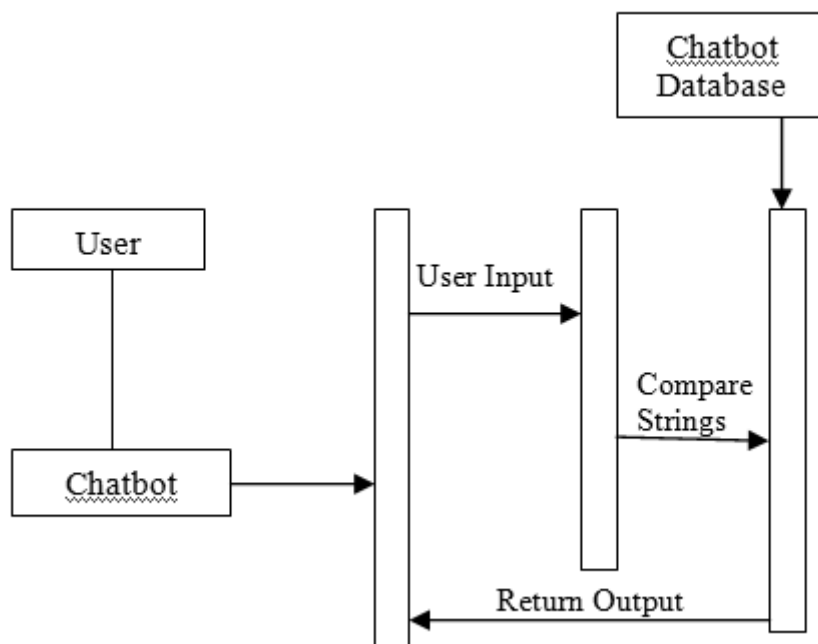
1. Use Case Diagram:



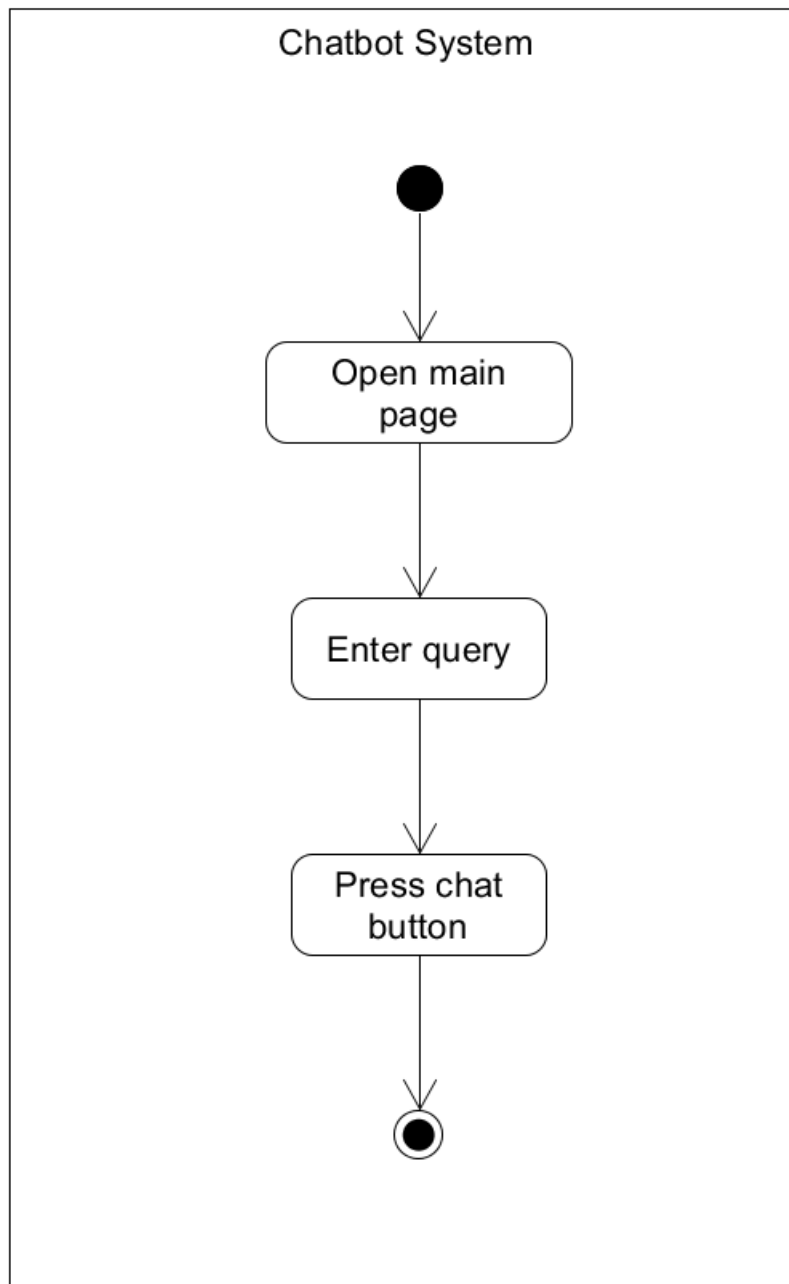
2. Class Diagram:



3. Sequence Diagram:



4. Activity Diagrams:



Implementation Details

We have made the use of Flask framework and implemented using the ChatterBot library.

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

The dataset implemented for the chatbot is available in the chatterbot-corpus of the ChatterBot library and it consists of many languages. We can also create and use the dataset in the chatterbot-corpus.

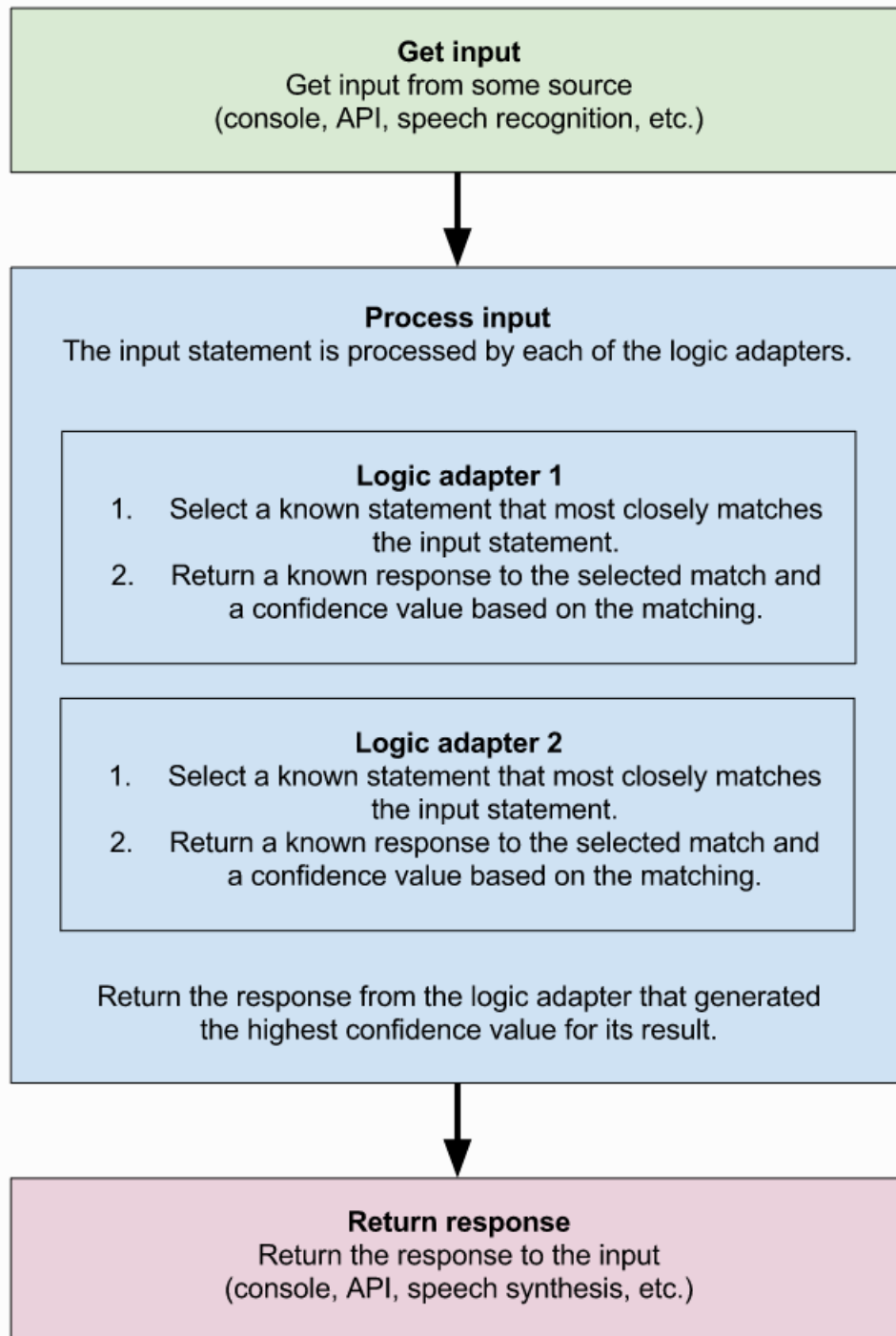
Modules created and brief description of each modules:

The major module used:

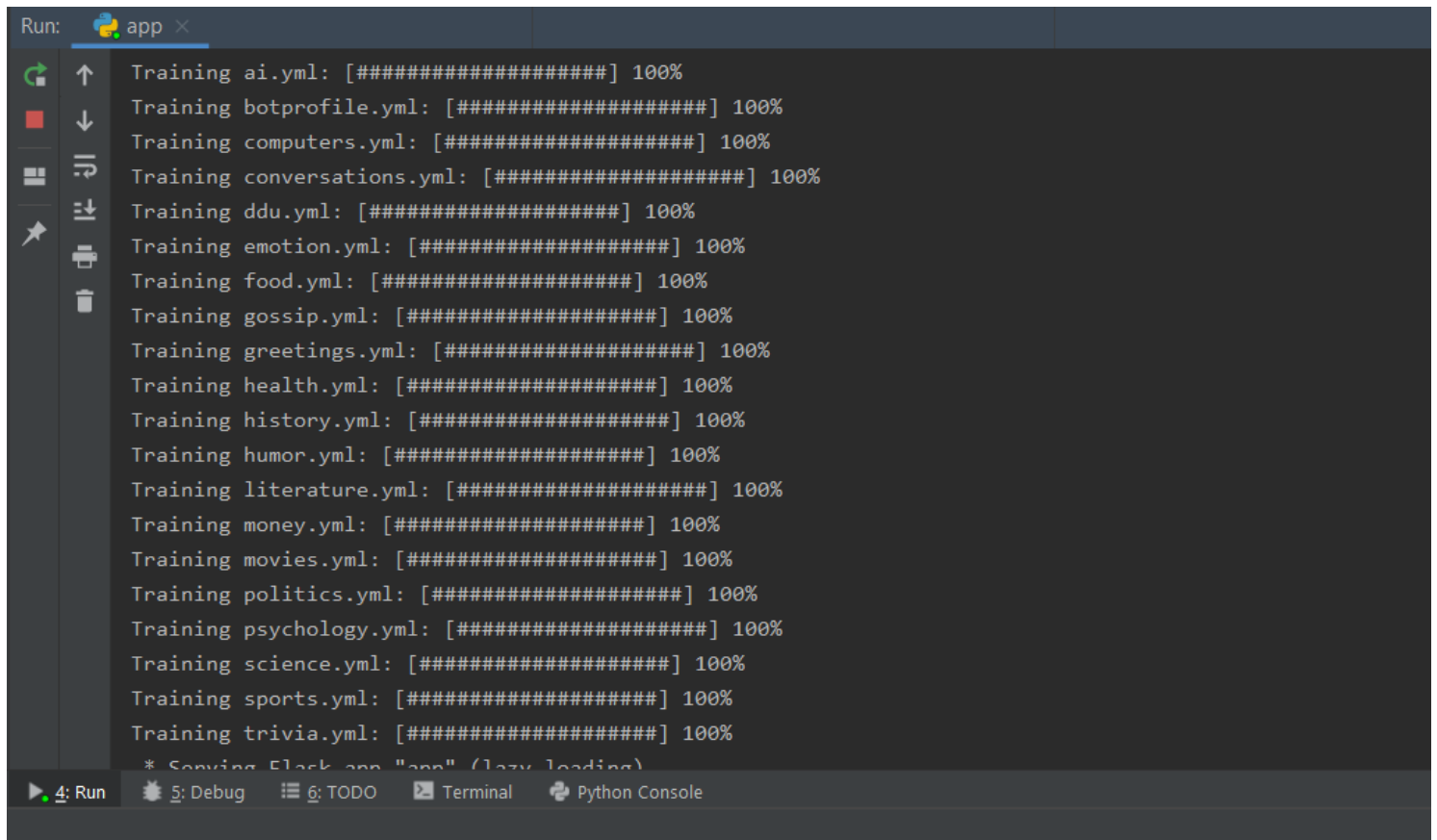
ChatterBotCorpusTrainer:

This module is used to train the chatbot made from the ChatterBot library. This module can train the chatbot in many languages and can be used to train our own dataset.

Algorithm/Flowchart:



Training



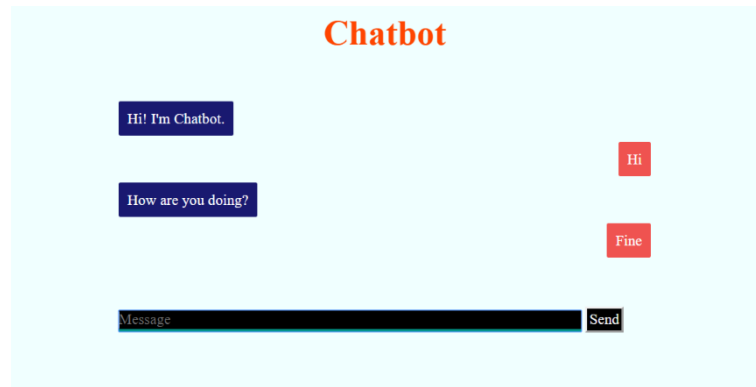
The screenshot shows a code editor with a dark theme. The top bar indicates the file is 'app'. The main area displays a list of training progress messages for various datasets, each showing 100% completion. The datasets listed are: ai.yml, botprofile.yml, computers.yml, conversations.yml, ddu.yml, emotion.yml, food.yml, gossip.yml, greetings.yml, health.yml, history.yml, humor.yml, literature.yml, money.yml, movies.yml, politics.yml, psychology.yml, science.yml, sports.yml, and trivia.yml. At the bottom, a status bar shows tabs for 'Run', 'Debug', 'TODO', 'Terminal', and 'Python Console'. The 'Run' tab is active, and the status bar also indicates '4: Run', '5: Debug', and '6: TODO'.

```
Run: app x
Training ai.yml: [#####] 100%
Training botprofile.yml: [#####] 100%
Training computers.yml: [#####] 100%
Training conversations.yml: [#####] 100%
Training ddu.yml: [#####] 100%
Training emotion.yml: [#####] 100%
Training food.yml: [#####] 100%
Training gossip.yml: [#####] 100%
Training greetings.yml: [#####] 100%
Training health.yml: [#####] 100%
Training history.yml: [#####] 100%
Training humor.yml: [#####] 100%
Training literature.yml: [#####] 100%
Training money.yml: [#####] 100%
Training movies.yml: [#####] 100%
Training politics.yml: [#####] 100%
Training psychology.yml: [#####] 100%
Training science.yml: [#####] 100%
Training sports.yml: [#####] 100%
Training trivia.yml: [#####] 100%
* Serving Flask app "app" (lazy loading)
```

4: Run 5: Debug 6: TODO Terminal Python Console

Screen-Shots

1. Chat



2. Training of the chatbot

```
app.py x
1  from flask import Flask, render_template, request
2      from chatterbot import ChatBot
3  from chatterbot.trainers import ChatterBotCorpusTrainer
4
5  app = Flask(__name__)
6
7  english_bot = ChatBot("Chatterbot", storage_adapter="chatterbot.storage.SQLStorageAdapter")
8  trainer = ChatterBotCorpusTrainer(english_bot)
9  trainer.train("chatterbot.corpus.english")
10
```

3. Dataset example movies.yml

```
app.py x movies.yml x
1 categories:
2 - movies
3 conversations:
4 - you sound like hal
5 - to me that's a great compliment.
6 - you sound like yoda
7 - my grammatical patterns are sufficient for me to understand you.
8 - have you seen blade runner
9 - sure i have seen
10 - xfind spiderman
11 - what is spiderman.
12 - when did teknolust
13 - teknolust was released in 2002.
14 - what is spiderman
15 - a comic book story made into a movie.
16 - what is teknolust
17 - is a science fiction film about a female pleasure bot named ruby.
18 - what is solaris
19 - solaris is an edition of unix from sun.
20 - what is hal9000
21 - who is hal
22 - what does hal stand for
23 - heuristic algorithmic logic
```

4. Dataset example ddu.yml

```
app.py x movies.yml x ddu.yml x
1 categories:
2 - ddu
3 conversations:
4 - What is the full form of DDU?
5 - Dharamsinh Desai University
6 - Who is the HOD of CE?
7 - Dr. C. K. Bhensdadiya
8 - Who is the guidance professor in SDP Project?
9 - Dr. B. S. Bhatt
```


5. Dataset example science.yml

```

1 categories:
2   - science
3 conversations:
4   - - what are the laws of thermodynamics
5     - i'm not a physicist, but i think this has something to do with heat, entropy,
6       and conservation of energy, right?
7   - - what disease does a carcinogen cause
8     - cancer.
9   - - what is a wavelength
10    - wavelength is the inverse of frequency.
11   - - what is thermodynamics
12    - the branch of physics dealing with the transformation of heat to and from other
13      forms of energy, and with the laws governing such conversions of energy.
14   - - what is chemistry
15    - the science of mixing chemicals.
16   - - what is crystallography
17    - this is the science dealing with the study of crystals.
18   - - what is avogadro s number
19    - it is the number of molecules per mole. the numerical value is six point zero
20      two times ten to the twenty third power.
21   - - what is ultrasound
22    - ultrasonic waves, used in medical diagnosis and therapy, in surgery, etc.
23   - - what is bioinformatics
24    - a fancy name for applied computer science in biology.
25   - - what is venus
26    - in roman mythology. the goddess of love and beauty: identified with the greek
Document 1/1 > categories: > Item 1/1

```

6. Chatbot conversation

Chatbot

Hi! I'm Chatbot.

What is soccer?

A game played with a round ball by two teams of eleven players on a field with a goal at either end; the ball is moved chiefly by kicking or by using any part of the body except the hands and arms.

What is cricket?

Cricket is a bat-and-ball game played between two teams of eleven players on a cricket field, at the centre of which is a rectangular 22-yard-long pitch with a wicket (a set of three wooden stumps) sited at each end.

7. Chatbot conversation

Chatbot

Hi! I'm Chatbot.

Who is your guide in SDP Project?

Dr. B. S. Bhatt

Who is the HOD of CE?

Dr. C. K. Bhensdadiya

Message

Send

Conclusion

Artificial Intelligent is the fastest growing technology every were in the word. With the help of Artificial Intelligent and Knowledgeable database. We can make the transformation in the pattern matching and virtual assistance. We can develop such chat bot which will make a conversion between human and machine and will satisfy the question raised by user.

Limitation and Future Extension

- Defining the dataset by the user himself.
- User specific chatbot.
- Previous chats to be preserved.

Bibliography

<https://chatterbot.readthedocs.io/en/stable/tutorial.html>

<https://chatterbot.readthedocs.io/en/stable/>

<https://chatterbot.readthedocs.io/en/stable/corpus.html>