



Chandigarh Engineering College Jhanjeri
Mohali-140307
Department of Computer Science & Engineering

PROJECT REPORT
ON
Alfred The WhatsApp Chatbot

Project-I



Department of Computer Science and Engineering
CHANDIGARH ENGINEERING COLLEGE JHANJERI, MOHALI

In partial fulfillment of the requirements for the award of the Degree
of Bachelor of Technology in Computer Science & Engineering

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Affiliated to I.K Gujral Punjab Technical University, Jalandhar
(Batch: 2019-2023)



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CERTIFICATE

We hereby declare that the report of the project entitled “ Alfred The WhatsApp Chatbot ” has not been presented as a part of any other academic work to get my degree or certificate except Chandigarh Engineering College Jhanjeri, Mohali, affiliated to I.K. Gujral Punjab Technical University, Jalandhar, for the fulfillment of the requirements for the degree of B.Tech in Computer Science & Engineering.

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(Signature of Student with Date)

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Diya Arora



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ABSTRACT

Our project developing a Chatbot using sequence modelling focuses on developing a model which will be able to generate responses automatically to the questions asked using a number of different machine learning techniques. This document gives an introduction to the basic aspects of the proposed model. The proposed model may be used for order generating in restaurants or in call centre to deal with the common problems faced. We are pursuing our objective in three phases: Design, analysis and Implementation. For analysis page we have taken a large segment of data from social networking sites to generate the outcomes for commonly discussed problems. The parameters are prioritized based on the interpretation of this data. We have also planned to include algorithms to differentiate the data according to whether we can generate answer for that or we need to use the internet in the types of questions asked. The UI is also pursued from analysis point of view.



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CHAPTER-1 - INTRODUCTION

A **chatbot** (also known as a **talkbots**, **chatterbot**, **Bot**, **IM bot**, **interactive agent**, or **Artificial Conversational Entity**) is a computer program or an artificial intelligence which conducts a conversation via auditory or textual methods.

The term "ChatterBot" was originally coined by Michael Mauldin in 1994 to describe these conversational programs. Today, most chatbots are either accessed via virtual assistants such as Google Assistant and Amazon Alexa, via messaging apps such as Facebook Messenger or WeChat, or via individual organizations' apps and websites.

Chatbots can be classified into usage categories such as conversational commerce (e-commerce via chat), analytics, communication, customer support, design, developer tools, education, entertainment, finance, food, games, health, HR, marketing, news, personal, productivity, shopping, social,



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sports, travel and utilities.

Chatbots can be added to a buddy list or provide a single game player with an entity to interact with while awaiting other "live" players. If the bot is sophisticated enough to pass the Turing test, the person may not even know they are interacting with a computer program.

As consumers continue to move away from traditional forms of communication, chat-based communication methods are expected to rise. Chatbot-based virtual assistants are increasingly used to handle simple tasks, freeing human agents to focus on higher-profile service or sales cases. This

leads to cost savings -- employees cost more -- and it also allows companies to provide a level of customer service during hours when live agents aren't available.

Bots are made for a specific reason. A store would most likely want chatbot services that assists you in placing an order, while a telecom company will want to create a bot that can address customer service questions.



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There are two categories of chatbots: one that works by following a series of rules, and another that uses artificial intelligence.

1.1 Project Prospective:-

Our project developing a Chatbot using sequence modelling focuses on developing a model which will be able to generate responses automatically to the questions asked using a number of different machine learning techniques. This document gives an introduction to the basic aspects of the proposed model. The proposed model may be used for order generating in restaurants or in call centre to deal with the common problems faced. We are pursuing our objective in three phases: Design, analysis and Implementation. For analysis page we have taken a large segment of data from social networking sites to generate the outcomes for commonly discussed problems. The

parameters are prioritized based on the interpretation of this data. We have also planned to include algorithms to differentiate the data according to whether we can generate answer for that or we need to use the internet in the types of questions asked. The UI is also pursued from analysis point of view.



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Our objective is to construct a chatterbot such that it will provide responses for a person instead of people needing to attend the problems themselves and it will answer based on the data provided by the user to avoid disturbance in many matters.

1.2 Importance of Project:-

A chatbot provides streamlined interactions between people and services. It helps to improve the customer's engagement process also. It is generally used for messaging instantly with or without the involvement of humans. According to the IBM survey, Chatbot can successfully answer up to 80% of routine questions.

There are two different tasks at the core of a chatbot:

1. User request analysis
2. Returning the response

1.3 Advantages of Project

- **Reduce customer waiting time – [21% of consumers](#) see chatbots as the easiest way to contact a business.** Bots are a smarter way to ensure that customers



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receive the immediate response that they are looking for without making them wait in a queue.

- **24×7 availability** – Bots are always available to engage customers with immediate answers to the common questions asked by them. The top potential benefit of using chatbots is 24-hour customer service.
- **Better customer engagement** – Conversational bots can engage customers round the clock by starting proactive conversation and offering personalized recommendations that boost customer experience.
- **Save customer service costs** – Chatbots will help businesses save more than [\\$8 billion](#) per year. Bots can be easily scaled which saves customer support costs of hiring more resources, infrastructure costs, etc.
- **Automate lead qualification & sales** – You can automate your sales funnel with chatbots to prequalify leads and direct them to the right team for further nurturing. Being able to engage customers instantly increases the number of leads and conversion rates.

1.4 :-Disadvantages :-

- **Complex Interface** – Chatbots are often seen to be complicated and require a lot of time to understand user's requirement. ...



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- Inability to Understand – Due to fixed programs, chatbots can be stuck if an unsaved query is presented in front of them. ...
- Time-Consuming – Chatbots are installed with the motive to speed-up the response and improve customer interaction. ...
- Increased Installation Cost – Chatbots are useful programs that help you save a lot of manpower by ensuring the all-time availability and serving to several clients at once. ...



CHAPTER 2: REVIEW OF LITERATURE

Our project developing a Chatbot using sequence modelling focuses on developing a model which will be able to generate responses automatically to the questions asked using a number of different machine learning techniques. This document gives an introduction to the basic aspects of the proposed model. The proposed model may be used for order generating in restaurants or in call centre to deal with the common problems faced. We are pursuing our objective in three phases: Design, analysis and Implementation. For analysis page we have taken a large segment of data from social networking sites to generate the outcomes for commonly discussed problems. The parameters are prioritized based on the interpretation of this data. We have also planned to include algorithms to differentiate the data according to whether we can generate answer for that or we need to use the internet in the types of questions asked. The UI is also pursued from analysis point of view.



CHAPTER-3:-PROBLEM DEFINATIONS AND OBJECTIVE

3.1 Difficulties in keeping up with Ever-Changing Schedules

1. Context in Chatbots

The key to the evolution of any chatbot is its integration with context and meaningful responses, as conversation without any context would be vague. It becomes challenging for companies to build, develop and maintain the memory of bots that offers personalized responses.

That's when AI technologies like Machine Learning or NLP- Natural Language Processing come into the picture and overcome the challenge of understanding the depth of conversation; up-to an extent. NLP understands the databases and data sets when bots are structured, in predefined sequential order and then converts it into a language that users understand.



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However, humans don't interact in a defined order, as a result intelligent slot filling, which stores the preferences of the regular users is the alternative to maintain the memory of a bot effectively. This insures that your virtual agents are not interacting in the same old predefined order but in a more personalized fashion.

2. Limited User Attention

Users have limited time span for their queries and expect lightning-fast replies. It's quite challenging for firms to develop chatbots, that holds user's attention till the end.

Conversational UI, here plays an important role in exhibiting human like conversations and better customer experiences. It initiates interactions to be more social than being technological in nature. The conversations as a result, should be natural, creative and emotional in order for your chatbot to be successful. In some cases, however a machine wouldn't always render the same empathy that a human could and this is when a human replacement should take care of the users request.

Also Read: [Best Practices to Launch Chatbot for your Business](#)

3. Chatbot Testing

Chatbot testing is another main issue where most of the complexity lies. Chatbots are continuously evolving due to its upgradation in natural language models. Thus, it becomes vital to test and run chatbot to check it's accuracy. Testing a chatbot will depend on what type of method you want to experiment.



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- First method involves automated testing of chatbots. There are many automation testing platforms like Zypnos, TestyourBot, Bot Testing, Dimon etc. These platforms allow detailed reports of the results and coding of test scripts, which could be run for all the test cases.
- The other method involves testing of conversational logic i.e. manual testing executed by a closed group of testers. They act as users and check the bot for all the unexpected slots possible. This method can be time consuming and partially accurate. However, it has its own benefits that outweigh automation, by checking the logic against human conversations.

The best alternative is to combine both the methods to insure that your users are being served better.

4. Viability of Data



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There is no point of having lots of data, intelligent slot filling or technologically advanced chatbot- if it actually doesn't deliver the USP of your organisation. It is vital for a chatbot to not only be enriched with meaningful data, but also to be equipped to deliver the brand identity to your target audience. In order to check the viability of your virtual agents you should consider asking yourself the following:

- Are your virtual agents delivering to the right audience?
- Does it offer business goals uniquely?
- How is it different from other chatbots?

It may definitely seem to be a great idea to implement chatbot in your digital strategy, but creating a one that meets the expectations of your organisation and users, is a big challenge. An effective and well planned strategy is important for you to consider before presenting the chatbot to your audience. If done well, chatbots can become the contact point for your business and can increase the overall productivity by meeting the customer's on-demand expectations.

3.2:-OBJECTIVE

Our objective is to construct a chatterbot such that it will provide responses for a person instead of people needing to attend the problems themselves and it will answer based on



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the data provided by the user to avoid disturbance in many matters.

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.

We can teach chatbot by training it with examples of existing conversations.

Example :

```
bot.train([
```



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'How are you?',

'I am good.',

'That is good to hear.', 'Thank you',

'You are welcome.',

D)



CHAPTER 4: DESIGN AND IMPLEMENTATION

The process of creating a chatbot follows a pattern similar to the development of a web page or a mobile app. It can be divided into Design, Building, Analytics and Maintenance.

Design

The chatbot design is the process that defines the interaction between the user and the chatbot. The chatbot designer will define the chatbot personality, the questions that will be asked to the users, and the overall interaction. It can be viewed as a subset of the conversational design. In order to speed up this process, designers can use dedicated chatbot design tools that allow for immediate preview, team collaboration and video export. An important part of the chatbot design is also centered around user testing. User testing can be performed following the same principles that guide the user testing of graphical interfaces.



Building

The process of building a chatbot can be divided into two main tasks:

understanding the user's intent and producing the correct answer. The first task involves understanding the user input. In order to properly understand a user input in a free text form, a Natural Language Processing Engine can be used.

The second task may involve different approaches depending on the type of the response that the chatbot will generate.

Analytics

The usage of the chatbot can be monitored in order to spot potential flaws or problems. It can also provide useful insights that can improve the final user experience.

Maintenance

To keep chatbots up to speed with changing company products and services, traditional chatbot development platforms require ongoing maintenance. This



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can either be in the form of an ongoing service provider or for larger enterprises in the form of an in-house chatbot training team. To eliminate these costs, some startups are experimenting with Artificial Intelligence to develop self-learning chatbots, particularly in Customer Service applications.

API's

There are lots of API's available for building your own chatbot like Wikipedia api which helps us to get data from Wikipedia etc.

4.1:-Software Requirements:-

Python: for developing algorithms and chatbot backend development

Python Flask:- A web framework is a software architecture that contains tools and libraries used to develop a web application in a fast and efficient way. Flask is a microframework written in Python.



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Advantages of Python Flask

1. It is a lightweight and modular design
2. Contains a built-in development server and a fast debugger.
3. Provides integrated unit testing support
4. RESTful request dispatching.
5. Jinja2 Template.
6. Provides support for secure cookies.

NGROK:-

Ngrok Secure Tunnels work by using a locally installed ngrok agent to establish a connection to the ngrok service. Once the connection is established, you get a public endpoint that you or others can use to access your local service.

When a user hits the public ngrok endpoint, the ngrok edge figures out where to route the request to and forwards it over an encrypted connection to the locally running ngrok agent. From there, the local ngrok agent takes care of sending traffic to your upstream service. The communication between the ngrok edge and agent is secure and encrypted. Traffic from the user to the ngrok edge, and from the ngrok agent to the upstream service rely on the protocol you are using for encryption. For protocols that support end to end encryption using TLS, we provide a TLS tunnel option



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Twilio:-

Twilio powers personalized interactions and trusted global communications to connect you with customers.

Other Basic Python Libraries Requirements:-

- `certifi==2019.9.11`
- `chardet==3.0.4`
- `Click==7.0`
- `Flask==1.1.1`
- `idna==2.8`
- `itsdangerous==1.1.0`
- `Jinja2==2.10.3`
- `MarkupSafe==1.1.1`
- `PyJWT==1.7.1`
- `pytz==2019.3`
- `requests==2.22.0`
- `six==1.13.0`
- `twilio==6.33.1`
- `urllib3==1.25.7`



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Chatterbot: ChatterBot is a Python library that makes it easy to generate automated responses to a user's input.

Jquery: used for social networki,Sng site

4.2:-Hardware Requirements:-

- Windows 7 i3 processor
- Android require
- WhatsApp
- Cell Number Required

1. **Complex dialogues**

In addition to understanding and interacting within conversations, an outstanding chatbot software has **NLP functions (Natural Language Processing)** to analyze the context of a conversation.

It can identify the intent of a question to provide an accurate answer and suggest options to confirm or resolve the issue.

The best chatbots have advanced conversation features and can proactively search for information and ask clarifying questions even if the conversation is not linear.

2. Flexible data connections



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By using Knowledge Graphs, data can be structured and modeled, which in turn helps to generate new knowledge.

Moreover, the integration of company data or external data sources extends the functions of chatbot software enormously.

The chatbot can capture, read and process large amounts of data to gain insights from relevant data and to quickly solve customer problems.

3. Multi-channel capability

A great chatbot communicates seamlessly across multiple channels such as websites, apps, messenger, phone systems or [voice assistants](#) such as [Google Assistant](#) or Amazon Alexa.

For a seamless experience, it is also useful if data and context can be stored over several channels. If a customer shares his order, email address or other information with the bot, it can use this input for further actions on other channels.

Moreover, it should be possible to pass on all to a live agent if necessary.

Also interesting: [Improve Customer Experience With The Help Of Voice Assistants](#)

4. Fast onboarding



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Even if chatbots often build on multi-layered and technologically complex software, this does not mean that getting started should be an equally complex process. It's definitely an advantage if a chatbot can be launched quickly.

“Plug & Talk” solutions that make a chatbot ready to go in 2-4 weeks are therefore very beneficial for companies.

5. Easy handling

Well-designed user interfaces and experiences (UI / UX), both on the company and customer side, are essential.

It has to be possible to edit corporate identity settings, change and add content quickly, send notifications to employees and have a clear and structured overview of conversations.

In addition, the chatbot software has to be able to handle the huge amount of data without any problems and GDPR settings have to be taken into account.

Being able to manage and handle a chatbot and its content easily can make all the difference!

6. Ongoing optimization



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Every single customer interaction represents a way of learning for artificial intelligence (AI). The more often a chatbot is used, [the better it gets](#) because it can access more and more data with continuous use.

What works well, what doesn't? How do customers use the chatbot and are set goals being achieved?

Therefore, a chatbot software should continuously expand its own knowledge base by analyzing conversations.

At [Onlim](#) we are constantly expanding our chatbot software with new functions and by using our [Knowledge Graph technology](#) the knowledge base of the chatbots is constantly growing

7. Analytics & reporting

An outstanding chatbot is an excellent source of data and customer information.

However, if you cannot extract it and use it to increase your knowledge, it will be of little use.

Choose a chatbot provider that provides in-depth [chatbot analytics](#) and analysis of customer information, responses and requests, and gives you the information you need to tailor your products and services to your customers' expectations.

4.3:-System Design

By using these two parameters we represent the system design:-

- DFD Diagram
- E-R Diagram

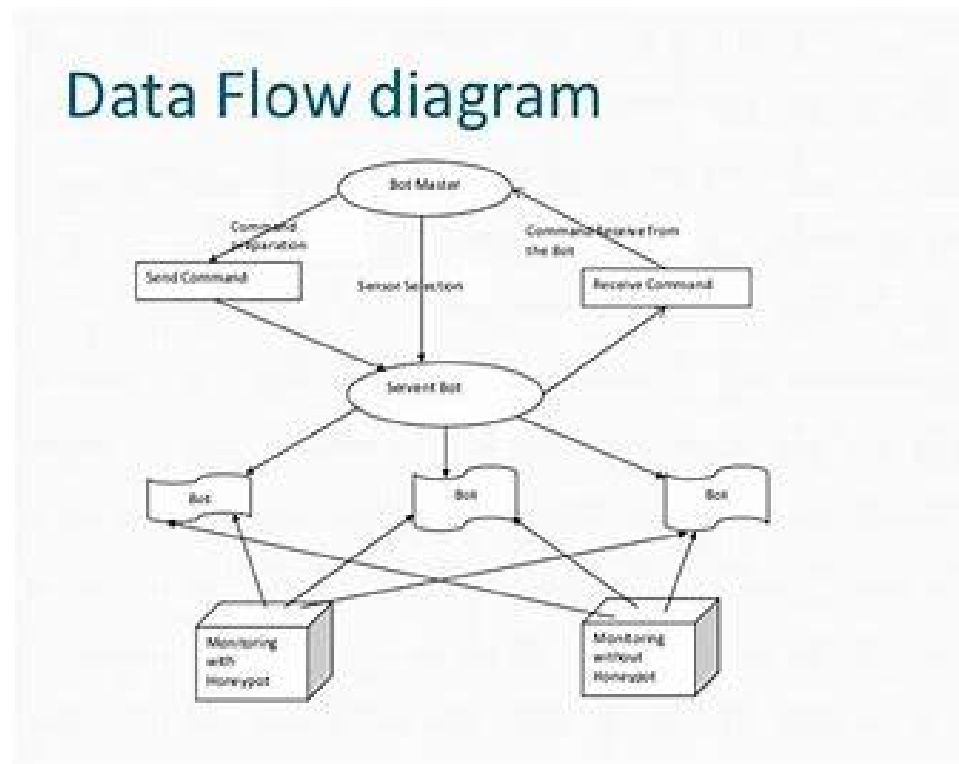


Fig 4.1 DFD Diagram

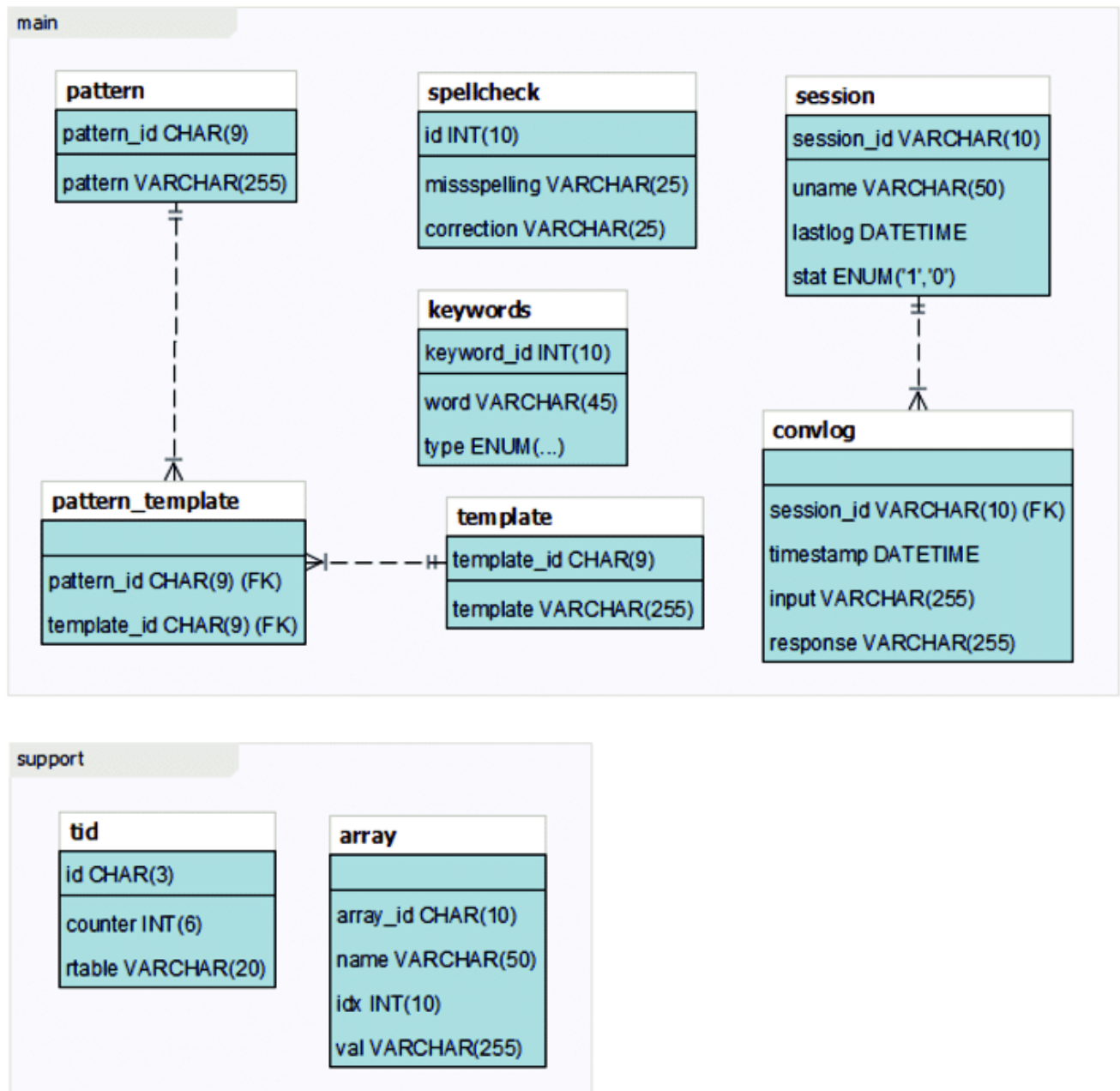


Fig 4.2 E-R Diagram



4.4 Implementation:-

Main:-

```
import requests
```

```
from flask import Flask, request
```

```
from twilio.twiml.messaging_response import MessagingResponse
```

```
from src.pythonREPL import execute_python, install_package
```

```
import src.services as services
```

```
app = Flask(__name__)
```

```
@app.route('/bot', methods=['POST'])
```

```
def bot():
```




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```
incoming_msg = request.values.get('Body', "").strip()
```

```
isPythonCode = False
```

```
resp = MessagingResponse()
```

```
msg = resp.message()
```

```
if incoming_msg.startswith('#!python3'):
```

```
    code = incoming_msg.lstrip('#!python3')
```

```
    output = execute_python(code)
```

```
    msg.body(output)
```

```
    isPythonCode = True
```

```
elif incoming_msg.startswith('!pip install'):
```

```
    package = incoming_msg.split()[-1]
```

```
    output = install_package(package)
```

```
    msg.body(output)
```

```
    isPythonCode = True
```



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```
if isPythonCode:
```

```
    return str(resp)
```

```
incoming_msg = incoming_msg.lower()
```

```
if 'your name' in incoming_msg:
```

```
    output = "I am alfred, alfred at you service"
```

```
if 'who are you' in incoming_msg:
```

```
    output = "I am alfred, alfred at you service"
```

```
elif 'hey' in incoming_msg:
```

```
    output = "hello sir! alfred at you service"
```

```
elif 'heya' in incoming_msg:
```

```
    output = "hello sir! alfred at you service"
```



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```
elif 'hello' in incoming_msg:
```

```
    output = "hello sir! alfred at you service"
```

```
elif 'hi' in incoming_msg:
```

```
    output = "hello sir! alfred at you service"
```

```
elif 'hola' in incoming_msg:
```

```
    output = "hello sir! alfred at you service"
```

```
elif 'help' in incoming_msg:
```

```
    output = "How may i help you sir ? Please eleborate.  "
```

```
elif 'bye' in incoming_msg:
```

```
    output = "Goodbye Sir !! Have a nice day.  "
```

```
elif 'date' in incoming_msg:
```

```
    output = services.get_date()
```



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```
elif 'today' in incoming_msg:
```

```
    output = services.get_day()
```

```
elif 'day' in incoming_msg:
```

```
    output = services.get_day()
```

```
elif 'time' in incoming_msg:
```

```
    output = services.get_time()
```

```
elif 'joke' in incoming_msg:
```

```
    output = services.get_joke()
```

```
elif 'quote' in incoming_msg:
```

```
    output = services.get_quote()
```

```
else:
```



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```
api_key = services.fetch_apikey('wolfram-alpha')
```

```
if api_key == None:
```

```
    output = 'Wolfram alpha api key needed, check docs'
```

```
else:
```

```
    output = services.chatbot(api_key, incoming_msg)
```

```
msg.body(output)
```

```
return str(resp)
```

```
if __name__ == '__main__':
```

```
    app.run()
```

pythonREPL.py:-

```
import sys
```

```
import importlib
```



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```
import contextlib
```

```
import subprocess
```

```
from io import StringIO
```

```
@contextlib.contextmanager
```

```
def stdoutIO(stdout=None):
```

```
    old = sys.stdout
```

```
    if stdout is None:
```

```
        stdout = StringIO()
```

```
    sys.stdout = stdout
```

```
    yield stdout
```

```
    sys.stdout = old
```

```
def execute_python(code):
```

```
    with stdoutIO() as c:
```

```
        try:
```

```
            exec(code)
```



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except:

```
print("Something wrong with the code")
```

```
return c.getvalue()
```

```
def install_package(package):
```

```
    try:
```

```
        importlib.import_module(package)
```

```
        return f'{package} already installed'
```

```
    except:
```

```
        subprocess.check_call([sys.executable, "-m", "pip", "install", package])
```

```
        return f'{package} installed successfully'
```

Services.py

```
import os
```

```
import json
```

```
import random
```

```
import requests
```



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```
import datetime
```

```
from datetime import date
```

```
import calendar
```

```
def get_date():
```

```
    dt = datetime.datetime.now()
```

```
    dt = dt.date()
```

```
    return dt.strftime('%B %d, %Y')
```

```
def get_day():
```

```
    curr_date = date.today()
```

```
    dt = calendar.day_name[curr_date.weekday()]
```

```
    return dt
```




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```
def get_time():
```

```
    dt = datetime.datetime.now()
```

```
    dt = dt.time()
```

```
    return dt.strftime('%I:%M %p')
```

```
def get_joke():
```

```
    url = 'https://some-random-api.ml/joke'
```

```
    r = requests.get(url)
```

```
    data = r.json()
```

```
    return data['joke']
```

```
def get_quote():
```

```
    url = 'https://api.quotable.io/random'
```

```
    output = "
```



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```
r = requests.get(url)
```

```
quote = r.json()
```

```
output += quote['content'] + '\n'
```

```
output += f"    -{quote['author']}"
```

```
return output
```

```
def fetch_apikey(api):
```

```
    with open('data/credentials.json') as f:
```

```
        data = json.load(f)
```

```
    key = data.get(api, None)
```

```
    return data[api]
```

```
def chatbot(api_key, query):
```

```
    url = f"http://api.wolframalpha.com/v1/result?appid={api_key}&i={query}%3f"
```

```
    r = requests.get(url)
```



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```
data = r.text
```

```
if data == 'Wolfram|Alpha did not understand your input':
```

```
    return 'Couldn\'t understand the query'
```

```
else:
```

```
    return data
```



CHAPTER-5 RESULTS AND DISCUSSION

When the bot is unable to find the matching statement in its data set it returns the first line of data. This problem can be seen in the below two tests we performed. Even though we add large amount of data whenever we run out of data we can go to internet or use the Wikipedia api to get a part of data from Wikipedi

When there are lots of matching for the same word we can use the regression algorithm to generate the output which has the maximum amount of hits in the past. We can also create a list of responses for a particular question to keep the chat interesting and keep changing the common correct answers.

Example : when user reply hello we can reply back with hi, hello, good morning etc and we can also initiate further Reponses like how are you ? Or what can I help you with? Etc.



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```
ngrok
(Ctrl-C to quit)

C:\Users\Sharanjeet\Downloads>ngrok-v3-stable-windows-amd64\ngrok.exe -ngrok http 5000

hello World! https://ngrok.com/next-generation
ngrok
Session Status
Account sharanjeetsingh2014@gmail.com (Plan: Free)
Version 3.0.4
Region India (IN)
Latency 7ms
Web Interface http://127.0.0.1:4040
Forwarding https://20e22401-4980-41fc-5c7b-94ea-2f3b-e655-96d9.in.ngrok.io -> http://localhost:5000
Connections
t11 0 0.00 0.00 0.00 0.00 1.23 2.48
p20 0 0.00 0.00 0.00 0.00 1.23 2.48
rt1 0 0.00 0.00 0.00 0.00 1.23 2.48
p10 0 0.00 0.00 0.00 0.00 1.23 2.48
HTTP Requests
-----
POST /bot 200 OK
POST /bot 200 OK
POST /bot 200 OK
POST /bot 200 OK
POST /bot 200 OK
POST /bot 200 OK
POST /bot 200 OK
POST /bot 200 OK
POST /bot 200 OK
POST /bot 200 OK
```

Fig 5.1

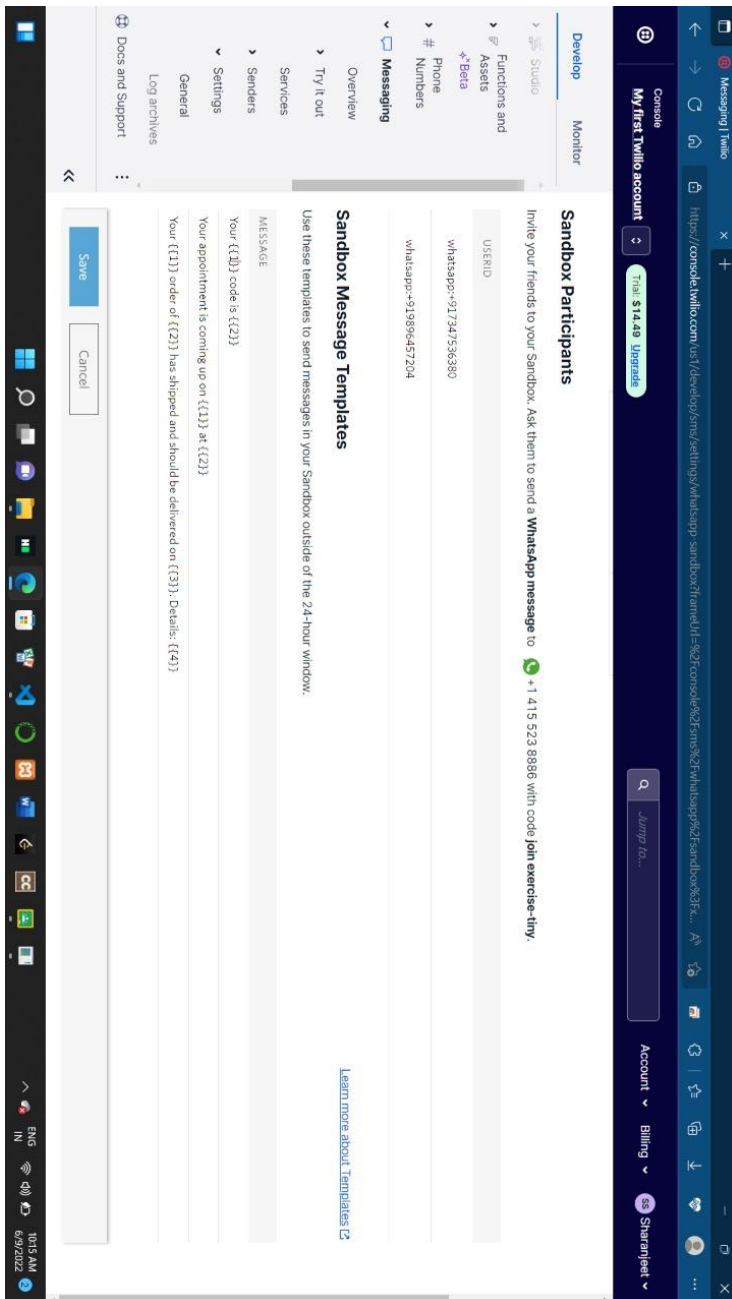
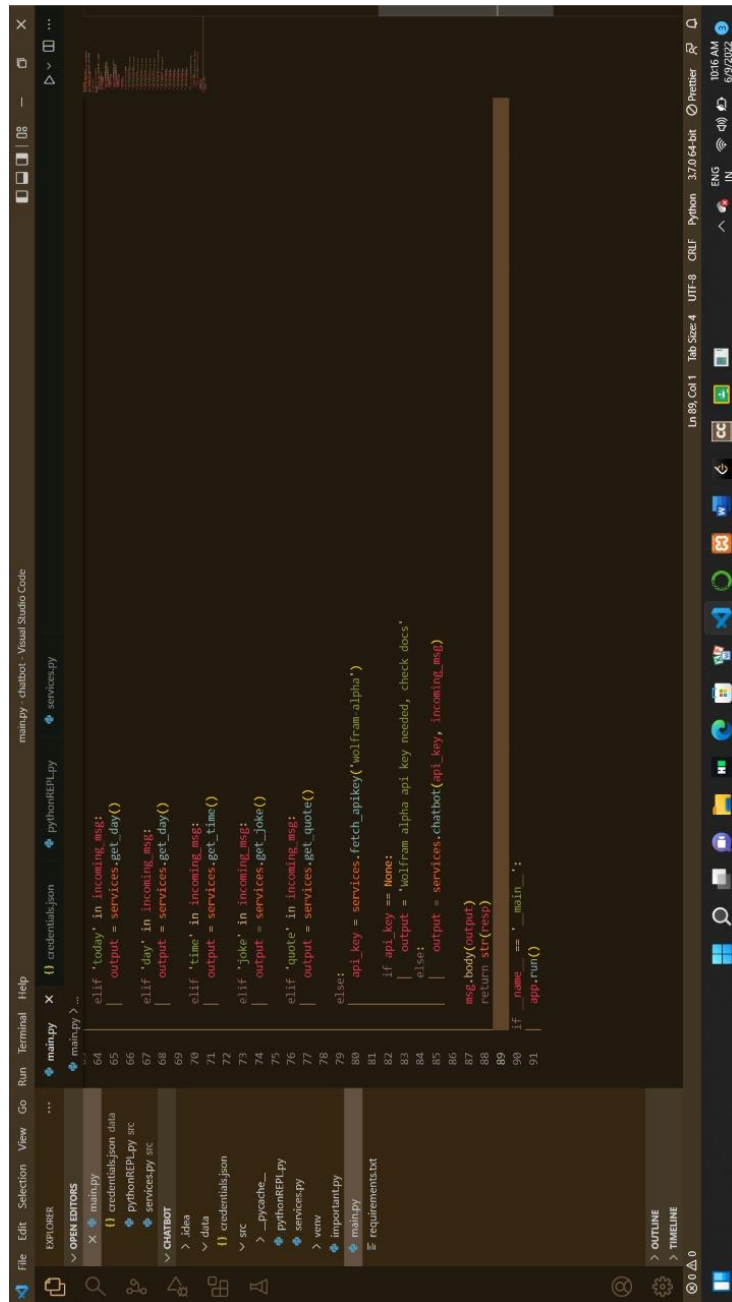


Fig 5.2



```

64 elif 'today' in incoming_msg:
65     output = services.get_day()
66
67 elif 'day' in incoming_msg:
68     output = services.get_day()
69
70 elif 'time' in incoming_msg:
71     output = services.get_time()
72
73 elif 'joke' in incoming_msg:
74     output = services.get_joke()
75
76 elif 'quote' in incoming_msg:
77     output = services.get_quote()
78
79 else:
80     api_key = services.fetch_apikey('wolfram alpha')
81     if api_key == None:
82         output = 'Wolfram alpha api key needed, check docs'
83     else:
84         output = services.chatbot(api_key, incoming_msg)
85
86 msg_body(output)
87 return str(resp)
88
89 if __name__ == '__main__':
90     app.run()
91

```

Fig .5.3



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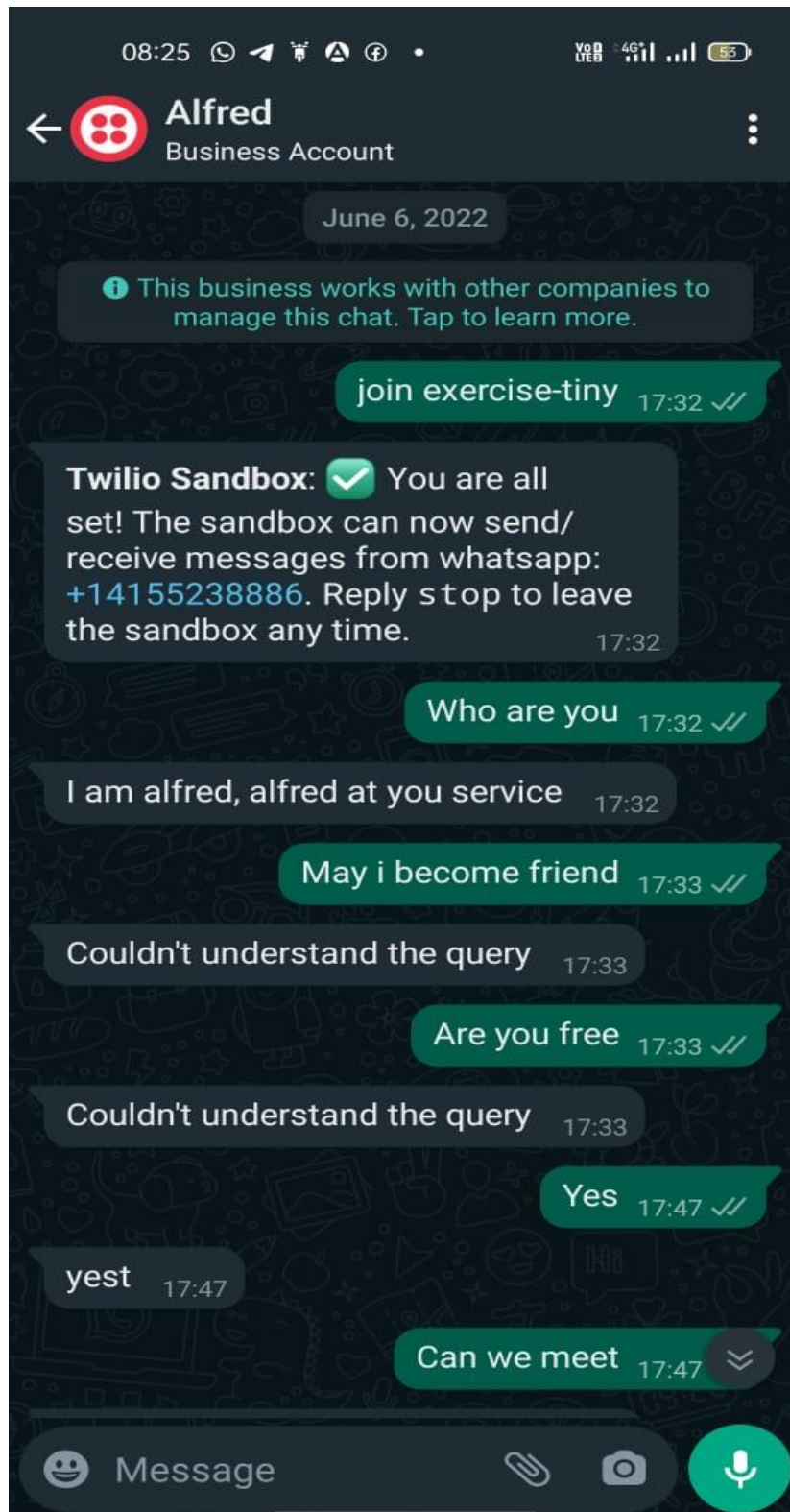


Fig-5.4



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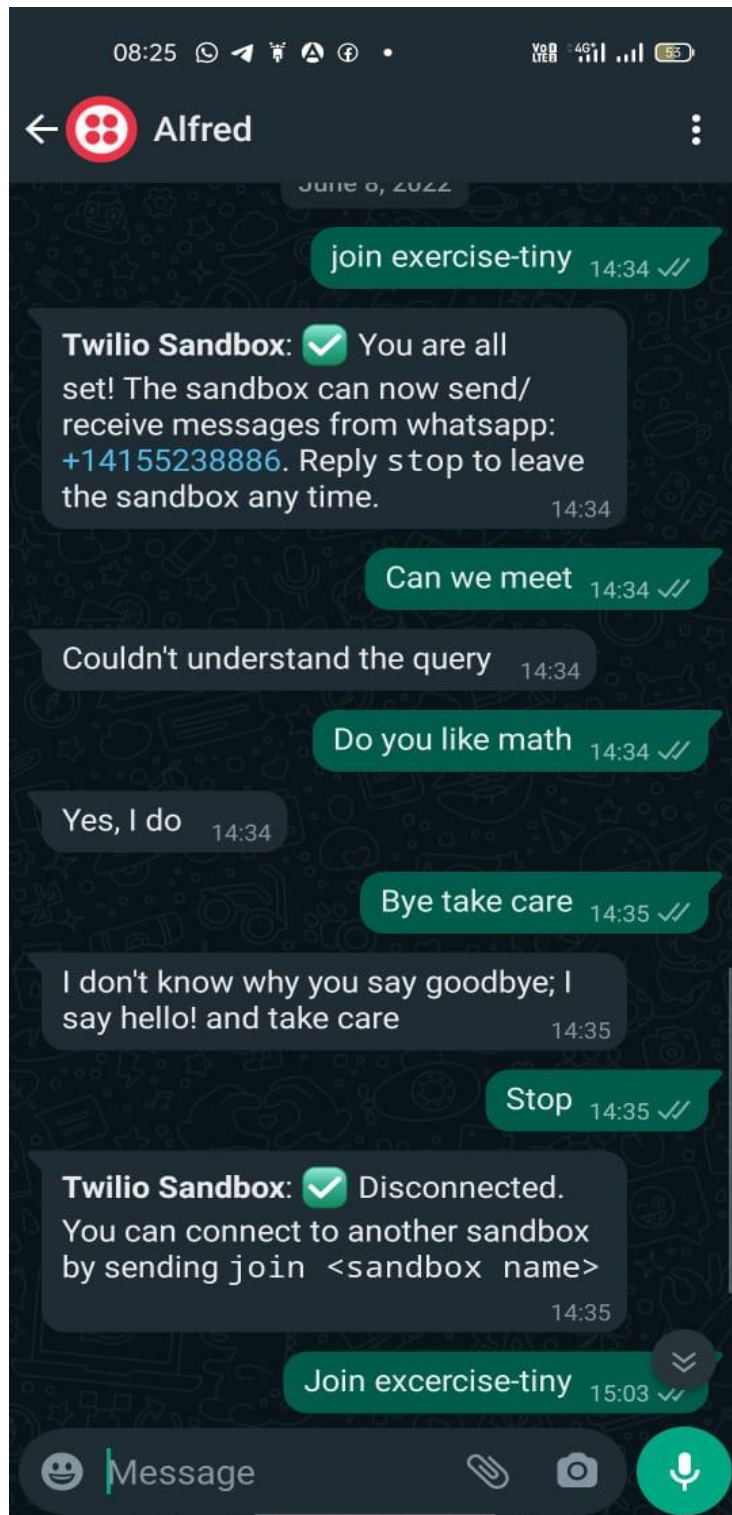


Fig- 5.5



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Fig 5.6





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Fig 5.7



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fig 5.8



CHAPTER-6 CONCLUSION & FUTURE SCOPE

6.1 Conclusion

We have started collection data on different fields and have built a basic sequence modeling chatbot in linux. We have also started designing a small social networking site with limited features so as to show real time modification of data and improved accuracy in generating results

We have a basic model developed and our applying algorithms on the model to test the best algorithm. We have also starting planning to create our own social media in php and directly read data from it and modify the data held previously.

We have plans to add speech recognition using google api for speech to text conversion and will try to add it into our project

We are also trying to use more api like Wolfram Alpha to make our search results come faster and complexity is reduced

We are also trying to add a data classifier into our project so that when we read data we can solve the problems if they are related to maths instead of wasting time to search the whole database.

6.2 Future Scope:-

The future scope of chatbots can be evaluated by its present demand and scope.

Remember how back then we used to think that someday the bots will rule the world?



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They could perform most of the tasks a human does with double the speed and with double the efficiency?

Well, thankfully or not, that time has not come yet, but the future isn't that far away.... Bots are slowly taking over a lot of tasks which earlier a human used to do...it all began with using them as AI personal assistance giving birth to the Siris and the Alexa's of the world...then came the Facebook, integrating messenger bot on its platform..it made our lives easier so we loved it... Marketers quickly realised the benefits a chatbot could bring to their businesses. Time passed away... and now, the chatbots have become the more advanced human agents...Now we see them everywhere – websites, E-commerce, social media, even in our homes... Businesses use chatbots for a variety of applications – market research, lead generation, customer service, sales assistant, customer outreach, lead nurturing and the list goes on...



REFERENCES

- [1] BUILD BETTER CHATBOTS: A COMPLETE GUIDE TO GETTING STARTED WITH CHATBOTS by Anik Das
- [2] CHATBOT: Architecture, Design, & Development By Jack Cahn
- [3] <https://en.wikipedia.org/wiki/Chatbot>
- [4] <https://www.skillshare.com>
- [5] [What is a Chatbot | Oracle India](#)
- [6] <https://www.geeksforgeeks.org/chatbot-theory-explained>
- [7] <https://www.javatpoint.com/chatbot-in-python>
- [8] <https://www.ibm.com/cloud/learn/chatbots-explained>
- [9] <https://www.guru99.com/best-ai-chatbots.html>
- [10] <https://www.youtube.com/watch?v=o9-ObGgfpEk>
- [11] <https://github.com/topics/chatbots>
- [12] Colace, F., De Santo, M., Lombardi, M., Pascale, L., Pietrosanto, A. (2018). Chatbot for E-Learning: A Cases Study. International Journal of Mechanical Engineering and Robotics Research Vol. 7, No. 5, September.
- [13] Chatbot Magazine (2019). A Visual History of Chatbots. Retrieved March 9, 2019