

# **PEOPLE'S BEHAVIOUR ANALYSIS IN CHAT MESSAGE USING NATURAL LANGUAGE PROCESSING**

A Main Project Report

submitted by

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to

the APJ Abdul Kalam Technological University  
in partial fulfillment of the requirements for the award of the Degree

of

Master of Computer Applications



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## DECLARATION

I undersigned hereby declare that the project report **People's Behaviour Analysis in Chat Message using Natural Language Processing**, submitted for partial fulfillment of the requirements for the award of degree of Master of Computer Applications of the APJ Abdul Kalam Technological University, Kerala, is a bona fide work done by me under supervision of Hyderali K, Associate Professor, Department of Computer Applications. This submission represents my ideas in my own words and where ideas or words of others have been included, I have adequately and accurately cited and referenced the original sources. I also declare that I have adhered to ethics of academic honesty and integrity and have not misrepresented or fabricated any data or idea or fact or source in my submission. I understand that any violation of the above will be a cause for disciplinary action by the institute and/or the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been obtained. This report has not been previously formed the basis for the award of any degree, diploma or similar title of any other University.

Place:Kuttiippuram

Date:08-07-2022

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MES COLLEGE OF ENGINEERING, KUTTIPPURAM



CERTIFICATE

This is to certify that the report entitled **People's Behaviour Analysis in Chat Message using Natural Language Processing** is a bona fide record of the Main Project work carried out by **NASRIN BP (MES20MCA-2037)** submitted to the APJ Abdul Kalam Technological University, in partial fulfillment of the requirements for the award of the Master of Computer Applications, under my guidance and supervision. This report in any form has not been submitted to any other University or Institution for any purpose.

Internal Supervisor(s)

External Supervisor(s)

Head Of The Department

# Acknowledgements

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# Abstract

People's behavior analysis is the mechanism of creating a professional chat application that will not permit the user to send inappropriate or improper messages to the participants by incorporating the base-level implementation of natural language processing (NLP). Before sending the messages to the user, the typed message is evaluated to find any inappropriate terms in the message that may include vulgar words, etc., using natural language processing.

# Contents

<b>Declaration</b>	<b>i</b>
<b>Certificate</b>	<b>ii</b>
<b>Acknowledgements</b>	<b>iii</b>
<b>Abstract</b>	<b>iv</b>
<b>Contents</b>	<b>v</b>
<b>List of Figures</b>	<b>vii</b>
<b>List of Tables</b>	<b>viii</b>
<b>1 Introduction</b>	<b>1</b>
1.1 Background . . . . .	1
1.1.1 Motivation . . . . .	2
1.2 Objective . . . . .	2
1.3 Report Organization . . . . .	2
<b>2 Literature Survey</b>	<b>3</b>
<b>3 Methodology</b>	<b>4</b>
3.1 Introduction . . . . .	4
3.2 Natural language processing (NLP) . . . . .	5
3.3 Sentimental Analysis . . . . .	5
3.4 Modules . . . . .	5
3.5 Agile Methodology . . . . .	6
3.5.1 User Story . . . . .	7
3.5.2 Product Backlog . . . . .	8
3.5.3 Project Plan . . . . .	9
3.5.4 Sprint Plan . . . . .	10
3.5.5 Sprint Actuals . . . . .	11
<b>4 Results and Discussions</b>	<b>15</b>

<i>Contents</i>	vi
4.1 Datasets . . . . .	15
4.2 Results . . . . .	16
<b>5 Conclusions</b>	<b>20</b>
<b>References</b>	<b>21</b>
<b>Appendix</b>	<b>22</b>
Source Code . . . . .	22

## List of Figures

4.1	User Interface 1 . . . . .	16
4.2	User Interface 2 . . . . .	17
4.3	User Interface 3 . . . . .	17
4.4	User Interface 4 . . . . .	18
4.5	User Interface 5 . . . . .	18
4.6	User Interface 6 . . . . .	19
4.7	User Interface 7 . . . . .	19
A.1	LEVEL 0 . . . . .	28
A.2	LEVEL 1.1 . . . . .	28
A.3	LEVEL 1.2 . . . . .	29



## List of Tables

3.1	User Story . . . . .	7
3.2	Product Backlog . . . . .	8
3.3	Project Plan . . . . .	9
3.4	Sprint Plan . . . . .	10
3.5	Sprint 1 Actual . . . . .	11
3.6	Sprint 2 Actual . . . . .	12
3.7	Sprint 3 Actual . . . . .	13
3.8	Sprint 4 Actual . . . . .	14
A.1	login . . . . .	25
A.2	chat . . . . .	25
A.3	comment . . . . .	25
A.4	emotion . . . . .	26
A.5	feedback . . . . .	26
A.6	friendrequest . . . . .	26
A.7	user . . . . .	27

# Chapter 1

## Introduction

### 1.1 Background

Nowadays, the usage of social media networks now became a common mode of information sharing. A large set of users were now adapting to this model of the technological era. The usage of social media now became common for sharing the messages the video and also the pictures and not only for the personal purpose it was also used for the professional purpose as sharing or advertising the business-related details also nowadays became the new normal.

For the privacy and safety of the users, as of now mostly our chat conversation is through WhatsApp and by the sentimental analyze model we can analyze and we can conclude whether the chat we are going safe or going correctly and also the parents can track their child move and also the business personality can also check how they got their review in the group works.

As now all were going on through the data billions and trillions of data are passing every day and also for the analysis and to enhance the performance and detect the performance of the sentimental analyzing methodology, which was introduced for achieving the better result regarding the business and also regarding the privacy it will be very much useful for the detection.

The text mining concept is also used for mining the text data, which was used in the WhatsApp conversation.

### 1.1.1 Motivation

Humans ourselves are not able to understand how exactly language is processed by our brains. NLP or Natural Language Processing is the field of study that focuses on the interactions between human language and computers. One sub problem of NLP is sentiment analysis, i.e. classifying a statement as positive or negative. analysis isn't as straight forward as it may seem. If you think that the comments which contain the words "good", "awesome", etc can be classified as a positive comment and the comments which the words "bad", "miserable" etc can be classified as a negative comment, think again. E.x: "Completely lacking in good taste" and "Good for a quick meal but nothing special" represent a negative and neutral feedback respectively even though they have the word "good" in them

## 1.2 Objective

Behavior analysis is the scientific study of behavior. It focuses on understanding why people behave the way they do, how behavior can be changed, and how certain behaviors can be prevented. By utilizing the principles of learning theory, behavior analysts can improve the quality of life for individuals and families.

## 1.3 Report Organization

The project report is divided into five sections.

Section 2 describes literature survey.

Section 3 describes the methodology used for implementing the project.

Section 4 gives the results and discussions.

Finally Section 5 gives the conclusion.

## Chapter 2

### Literature Survey

As it is already known that, the sentiment part was playing a major role in one aspect of life. It also has a major impact on one's life. Sentimental analysis part was done in the Twitter as now most of them share their views on the Twitter and also searching their procedures of public opinion over there and also by introducing the sentimental analysis part of the geo tweets, it was made to place whether the process makes a positive impact or not. With the spatial and the temporal methods, the dataset was analyzed and regarding that the sentimental analysis will be calculated

# Chapter 3

## Methodology

### 3.1 Introduction

The usage of social media now became common for sharing the messages the video and also the pictures and not only for the personal purpose it was also used for the professional purpose as sharing or advertising the business-related details also nowadays became the new normal.

For the privacy and safety of the users, as of now mostly our chat conversation is through WhatsApp and by the sentimental analyze model we can analyze and we can conclude whether the chat we are going safe or going correctly and also the parents can track their child move and also the business personality can also check how they got their review in the group works.

As now all were going on through the data billions and trillions of data are passing every day and also for the analysis and to enhance the performance and detect the performance of the sentimental analyzing methodology, which was introduced for achieving the better result regarding the business and also regarding the privacy it will be very much useful for the detection.

The text mining concept is also used for mining the text data, which was used in the WhatsApp conversation.

## 3.2 Natural language processing (NLP)

It is a subfield of computer science and artificial intelligence concerned with the interactions between computers and human language, in particular how to program computers to process and analyze large amounts of natural language data. The goal is a computer capable of "understanding" the contents of documents, including the contextual nuances of the language within them. The technology can then accurately extract information and insights contained in the documents as well as categorize and organize the documents themselves.

## 3.3 Sentimental Analysis

Sentiment Analysis is the process of analyzing the sentiments and emotions of various people in various situations. It aims at a user's attitude toward various situations by investigating and extracting texts which involve the user's opinion, sentiments etc.[2] Nowadays, it's an emerging trend because a lot of organizations or institutions following this procedure to understand the views and opinions of various people. For example, the usage of a particular product can be analyzed by the way people respond to it[1]. Various classification algorithms can be used to classify the data or reviews posted by various users in a social media say, Twitter. Various Natural Language processing tools will be used to process the data extracted from social media.

## 3.4 Modules

There are two module in this application.

### 1.ADMIN

- 1.Login-admin wants to login first
- 2.View users-admin can view the users, who registered in our app
- 3.View posts-admin can view different posts of users
- 4.View feedback- admin can view the feedback that uploaded by the users
- 5.View analysis report-admin can view the peoples behaviour analysis report

## 2.USER

- 1.registration-signup
- 2.login-the users who signed up can login
- 3.view profile/update-after login users can update their profile if any changes comes
- 4.view friends-users can view their friends
- 5.send friend request-users can send friend request to another users who registered in the app
- 6.accept/view friend request-users can view friend request they can either accept or reject the request
- 7.chat with friends-if friends accept our request then we can chat with them.
- 8.post/comment-users can upload their posts, his friends can comment to their posts.
- 9.send feedback-users can send feedback and admin can view the users feedback.
- 10.view analysis report-behaviour analysis report can viewed by admin and users.

## **3.5 Agile Methodology**

The Agile methodology is a way to manage a project by breaking it up into several phases. It involves constant collaboration with stakeholders and continuous improvement at every stage. Once the work begins, teams cycle through a process of planning, executing and evaluating. Continuous collaboration is vital.

### 3.5.1 User Story

User StoryID	As a <type of user>	I want to	So that I can
1	Admin,user	Login	Login successful with correct username and password
2	Admin	view user	Admin can view the users, who registered in our App
3	Admin	view posts	Admin can view different posts of users
4	Admin	view feedback	Admin can view the feedback that uploaded by the users
5	Admin	view analysis report	Admin can view the peoples behavior analysis report
6	User	Registration	Signup
7	User	view profile/update	After login users can update their profile if any changes comes
8	User	view friends	Users can view their friends
9	User	send friend request	Users can send friend request to another users who registered in the app
10	User	accept/view friend request	Users can view friend request they can either accept or reject the request
11	User	chat with friends	If friends accept our request then we can chat with them t
12	User	post/comment	User can upload their posts, his friends can comment to their posts.
13	User	send feedback	Users can send feedback and admin can view the users feedback
14	User	view analysis report	Behaviour analysis can viewed by admin and users

Table 3.1: User Story



### 3.5.2 Product Backlog

User Story ID	Priority <High/ Medium/ Low>	Size (Hours)	Sprint <#>	Status <Planned/ In progress/ Completed	Release Date	Release Goal
1	Medium	8	1	Completed	01/05/2022	Table design
2	High	10		Completed	12/05/2022	Form design
3	Medium	6	2	Completed	25/05/2022	Basic coding
4	Medium	5		Completed	29/05/2022	Tokenization
5	High	3	3	Completed	02/06/2022	Elimination
6	High	2		Completed	05/06/2022	Steaming
7	Medium	11		Completed	15/06/2022	Comparison
8	High	5	4	Completed	20/06/2022	Testing data
9	High	8		Completed	25/06/2022	Output generation

Table 3.2: Product Backlog

### 3.5.3 Project Plan

User StoryID	Task Name	Start Date	End Date	Days	Status
1	Sprint 1	20/04/2022	01/05/2022	10	Completed
2		04/05/2022	12/05/2022	8	Completed
3	Sprint 2	15/05/2022	25/05/2022	6	Completed
4		26/05/2022	29/05/2022	5	Completed
5	Sprint 3	30/05/2022	02/06/2022	3	Completed
6		03/06/2022	05/06/2022	2	Completed
7	Sprint 4	06/06/2022	20/06/2022	9	Completed
8		24/06/2022	25/06/2022	9	Completed

Table 3.3: Project Plan

### 3.5.4 Sprint Plan

Backlog Item	Status & completion date	Original estimate in hours	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14
UserStory #1,#2,#3																
Table design	01/05/2022	8	1	1	1	2	0	1	1	0	1	0	0	0	0	0
Form Design	12/05/2022	8	1	1	0	1	2	0	1	1	0	0	1	0	0	0
Coding	25/05/2022	6	1	0	0	0	0	0	0	0	1	1	1	1	1	0
UserStory #4,#5																
Analysing	29/05/2022	5	1	1	1	0	0	1	0	0	0	1	0	0	0	0
UserStory #6,#7																
Steaming	02/06/2022	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Sentimental Analysis	05/06/2022	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0
UserStory #8,#9,#10																
Comparison	20/06/2022	11	3	0	0	2	1	0	3	2	0	0	0	0	0	0
UserStory #11,#12,#13, #14																
Testing data	25/06/2022	8	1	1	1	0	0	2	1	2	0	0	0	0	0	0
Output generation	4/07/2022	3	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total		54	10	5	5	5	3	4	6	5	2	2	2	2	2	1

Table 3.4: Sprint Plan

### 3.5.5 Sprint Actuals

Backlog Item	Status & completion date	Original estimate in hours	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14
UserStory #1,#2,#3																
Table design	01/05/2022	8	1	1	1	2	0	1	1	0	1	0	0	0	0	0
Form Design	12/05/2022	8	1	1	0	1	2	0	1	1	0	0	1	0	0	0
Coding	25/05/2022	6	1	0	0	0	0	0	0	0	1	1	1	1	1	0
UserStory #4,#5																
Analysing																
UserStory #6,#7																
Steaming																
Sentimental Analysis																
UserStory #8,#9,#10																
Comparison																
UserStory #11,#12,#13, #14																
Testing data																
Output generation																
Total		22	3	2	1	3	2	1	2	1	2	1	2	1	1	0

Table 3.5: Sprint 1 Actual

Backlog Item	Status & completion date	Original estimate in hours	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14
UserStory #1,#2,#3																
Table design	01/05/2022	8	1	1	1	2	0	1	1	0	1	0	0	0	0	0
Form Design	12/05/2022	8	1	1	0	1	2	0	1	1	0	0	1	0	0	0
Coding	25/05/2022	6	1	0	0	0	0	0	0	0	1	1	1	1	1	0
UserStory #4,#5																
Analysing	29/05/2022	5	1	1	1	0	0	1	0	0	0	1	0	0	0	0
UserStory #6,#7																
Steaming	02/06/2022	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Sentimental Analysis																
UserStory #8,#9,#10																
Comparison																
UserStory #11,#12,#13, #14																
Testing data																
Output generation																
Total		30	5	4	3	3	2	2	2	1	2	2	2	1	1	0

Table 3.6: Sprint 2 Actual

Backlog Item	Status & completion date	Original estimate in hours	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14
UserStory #1,#2,#3																
Table design	01/05/2022	8	1	1	1	2	0	1	1	0	1	0	0	0	0	0
Form Design	12/05/2022	8	1	1	0	1	2	0	1	1	0	0	1	0	0	0
Coding	25/05/2022	6	1	0	0	0	0	0	0	0	1	1	1	1	1	0
UserStory #4,#5																
Analysing	29/05/2022	5	1	1	1	0	0	1	0	0	0	1	0	0	0	0
UserStory #6,#7																
Steaming	02/06/2022	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Sentimental Analysis	05/06/2022	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0
UserStory #8,#9,#10																
Comparison	20/06/2022	11	3	0	0	2	1	0	3	2	0	0	0	0	0	0
UserStory #11,#12,#13, #14																
Testing data																
Output generation																
Total		43	9	4	4	5	3	2	5	3	2	2	2	1	1	0

Table 3.7: Sprint 3 Actual

Backlog Item	Status & completion date	Original estimate in hours	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14
UserStory #1,#2,#3																
Table design	01/05/2022	8	1	1	1	2	0	1	1	0	1	0	0	0	0	0
Form Design	12/05/2022	8	1	1	0	1	2	0	1	1	0	0	1	0	0	0
Coding	25/05/2022	6	1	0	0	0	0	0	0	0	1	1	1	1	1	0
UserStory #4,#5																
Analysing	29/05/2022	5	1	1	1	0	0	1	0	0	0	1	0	0	0	0
UserStory #6,#7																
Steaming	02/06/2022	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Sentimental Analysis	05/06/2022	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0
UserStory #8,#9,#10																
Comparison	20/06/2022	11	3	0	0	2	1	0	3	2	0	0	0	0	0	0
UserStory #11,#12,#13, #14																
Testing data	25/06/2022	8	1	1	1	0	0	2	1	2	0	0	0	0	0	0
Output generation	4/07/2022	3	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total		54	10	5	5	5	3	4	6	5	2	2	2	2	2	1

Table 3.8: Sprint 4 Actual

## Chapter 4

# Results and Discussions

### 4.1 Datasets

The term data set refers to a file that contains one or more records. The record is the basic unit of information used by a program running on OS. Any named group of records is called a data set. Data sets can hold information such as medical records or insurance records, to be used by a program running on the system. Data sets are also used to store information needed by applications or the operating system itself, such as source programs, macro libraries, or system variables or parameters. For data sets that contain readable text, you can print them or display them on a console (many data sets contain load modules or other binary data that is not really printable). Data sets can be cataloged, which permits the data set to be referred to by name without specifying where it is stored. In simplest terms, a record is a fixed number of bytes containing data. Often, a record collects related information that is treated as a unit, such as one item in a database or personnel data about one member of a department. The term field refers to a specific portion of a record used for a particular category of data, such as an employee's name or department. The records in a data set can be organized in various ways, depending on how we plan to access the information. If you write an application program that processes things like personnel data, for example, your program can define a record format for each person's data. There are many different types of data sets in OS, and different methods for accessing them. Among the most commonly used types are: Sequential In a sequential data set, records are data items that are stored consecutively.



To retrieve the tenth item in the data set, for example, the system must first pass the preceding nine items. Data items that must all be used in sequence, like the alphabetical list of names in a classroom roster, are best stored in a sequential data set. Partitioned A partitioned data set or PDS consists of a directory and members. The directory holds the address of each member and thus makes it possible for programs or the operating system to access each member directly. Each member, however, consists of sequentially stored records. Partitioned data sets are often called libraries. Programs are stored as members of partitioned data sets. Generally, the operating system loads the members of a PDS into storage sequentially, but it can access members directly when selecting a program for execution. VSAM In a Virtual Storage Access Method (VSAM) key sequenced data set (KSDS), records are data items that are stored with control information (keys) so that the system can retrieve an item without searching all preceding items in the data set. VSAM KSDS data sets are ideal for data items that are used frequently and in an unpredictable order.

## 4.2 Results

The Output were generated

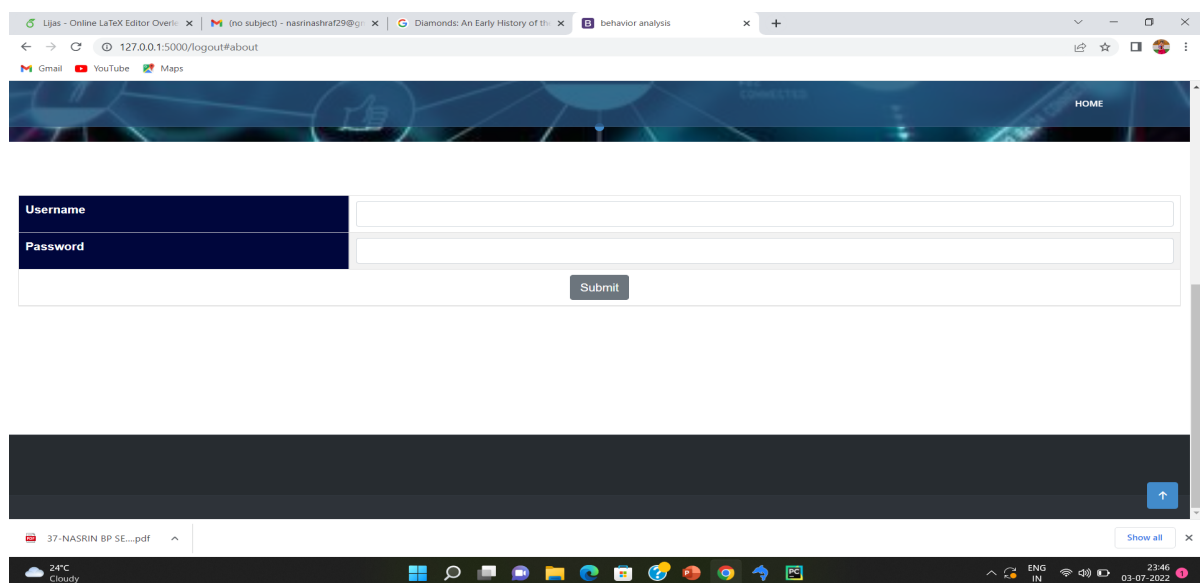


Figure 4.1: User Interface 1

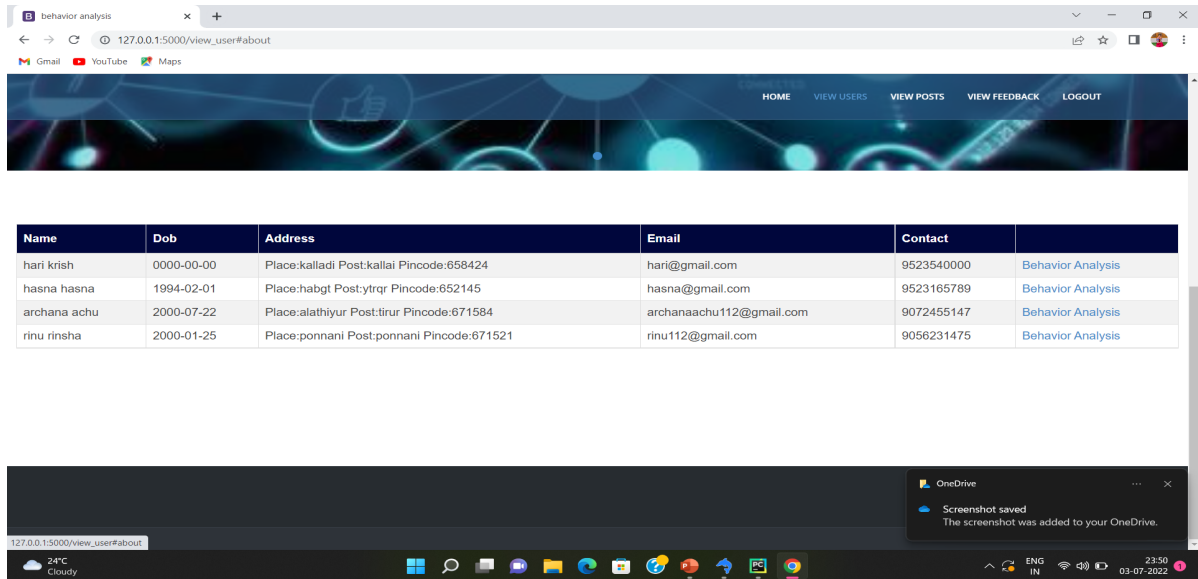


Figure 4.2: User Interface 2

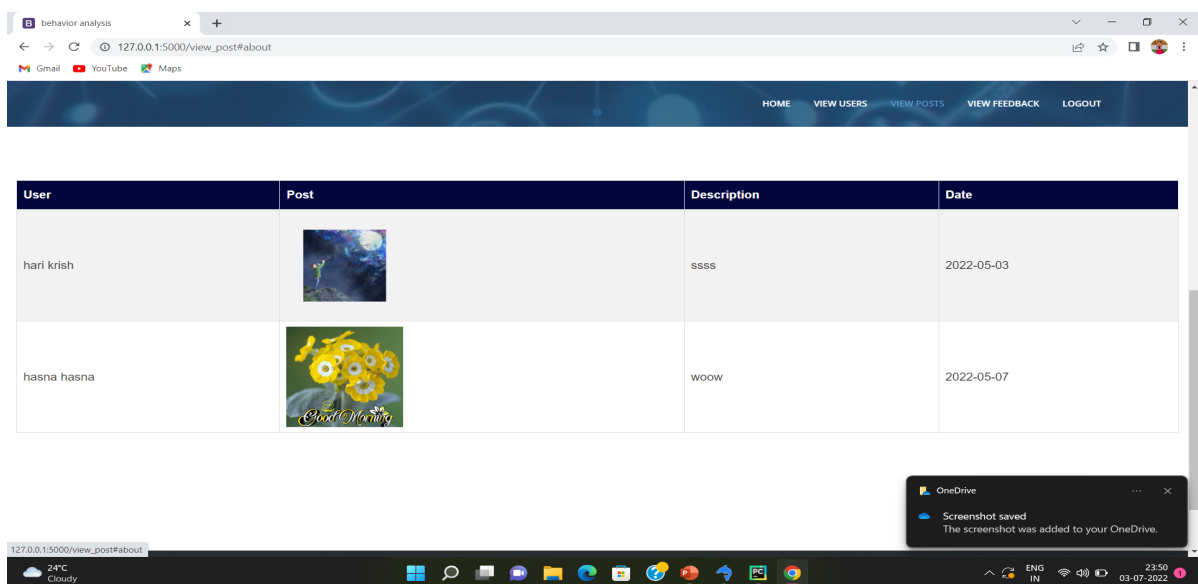


Figure 4.3: User Interface 3

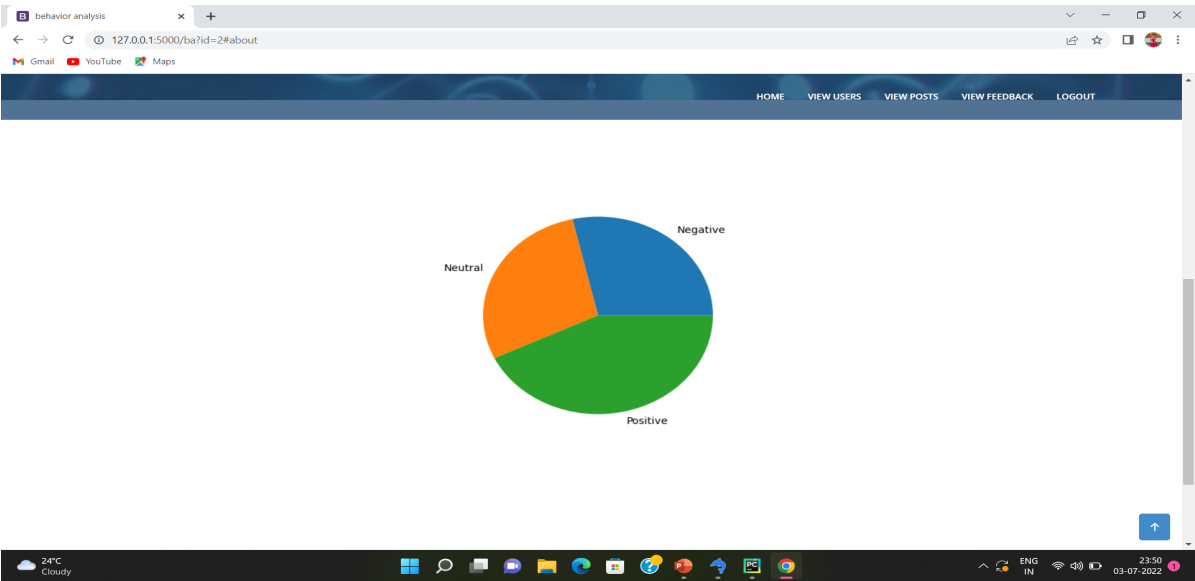


Figure 4.4: User Interface 4

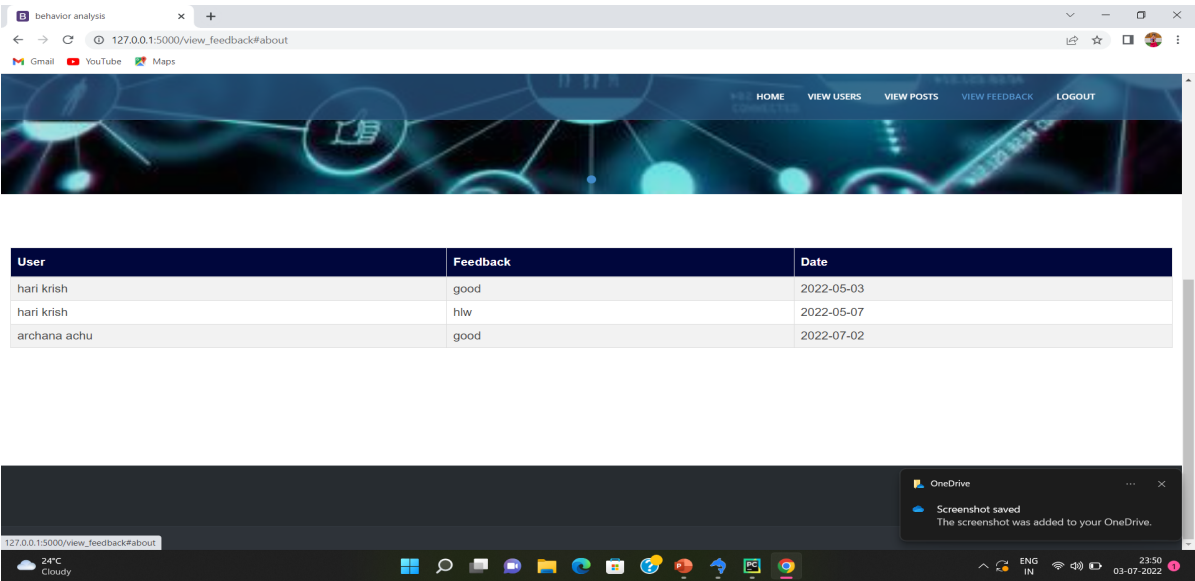


Figure 4.5: User Interface 5

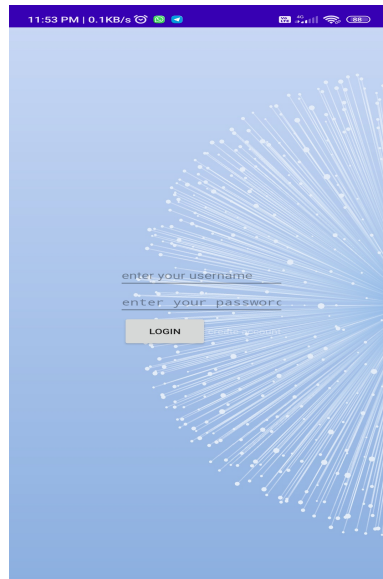


Figure 4.6: User Interface 6

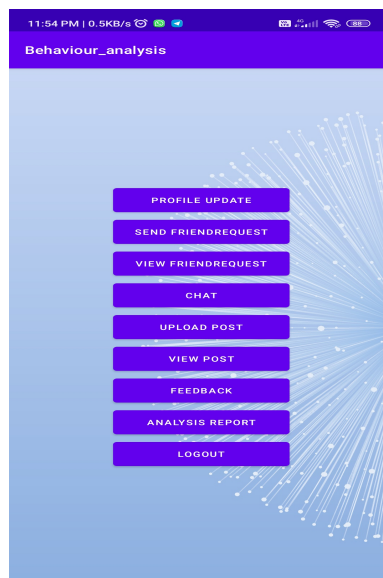


Figure 4.7: User Interface 7

## Chapter 5

### Conclusions

In this paper the sentimental flirt analysis methods was implemented in the all the entire chats and was given out the respective result can be obtained The entire methodology can be implemented but for the storage the cost was little high for using the cloud storage and can be reduced in the future works

The respective chat messages can be taken out from various users with the approval of the respective users it was having some delay in execution can be used effectively in future works.

## References

- [1] **Sentiment analysis of Twitter data during critical events through Bayesian networks classifiers”,Gonzalo A.RuzabPablo A.HenríquezAldoMascareño-8 January 2020**
- [2] **Mohammad A.Hassonah, RizikAl-Sayyed, AliRodan, Ala’ M.Al-Zoubic IbrahimAl-jaraha HossamFaris, “An efficient hybrid filter and evolutionary wrapper approach for sentiment analysis of various topics on Twitter”- 11 December 2019**

# Appendix

## Source Code

---

```
from flask import *
from werkzeug.utils import secure_filename

from src.dbconnector import *

app = Flask(__name__)
app.secret_key="qqqq"

import functools
def login_required(func):
    @functools.wraps(func)
    def secure_function():
        if "lid" not in session:
            return redirect ("/")
        return func()
    return secure_function

@app.route('/logout')
def maillogoutn():
    session.clear()
    return render_template('login.html')

@app.route('/')
def main():
    return render_template('login.html')

@app.route('/logincode',methods=['post'])
def logincode():

    uname=request.form['textfield']
    password = request.form['textfield2']
    q ="select * from login where username=%s and password=%s"
    val=(uname,password)
    s=selectone(q,val)
    print(s)
    if s is None:
        return '''<script>alert("Invalid Username or Password");
        window.location="/"</script>'''
```

```

        elif s[3]=='admin':
            session['lid'] = s[0]
            return '''<script>alert("Welcome Admin");
            window.location="/adminhome"</script>'''

        else:
            return'''<script>alert("Check the username or password");
            window.location="/"</script>'''

@app.route('/adminhome')
def adminhome():
    return render_template("admin_home.html")

@app.route('/view_feedback')
@login_required
def view_feedback():
    qry="SELECT `feedback`.*, `user`.`fname`,`user`.`lname` FROM `user` JOIN `feedback` ON `user`.`lid`='feedback`.`userid'"
    res=select(qry)
    return render_template("view_feedback.html",val=res)

@app.route('/view_user')
@login_required
def view_user():
    qry="SELECT * FROM `user`"
    res=select(qry)
    return render_template("view_user.html",val=res)

@app.route('/ba')
@login_required
def ba():
    id=request.args.get('id')

    qry1="select count(*) from `emotion` where `uid`=%s and `emo`=%s"
    val=(id,"Neutral")
    res=selectone(qry1,val)
    nuc=0
    try:
        nuc=int(res[0])
    except:
        pass

    qry1="select count(*) from `emotion` where `uid`=%s and `emo`=%s"
    val=(id,"Negative")
    res = selectone(qry1, val)
    nec = 0
    try:
        nec = int(res[0])
    except:
        pass

    qry1="select count(*) from `emotion` where `uid`=%s and `emo`=%s"
    val=(id,"Positive")
    res = selectone(qry1, val)
    poc = 0
    try:
        poc = int(res[0])
    except:
        pass

    import matplotlib.pyplot as plt
    import numpy as np
    import datetime

    y = np.array([nec,nuc,poc])
    mylabels = ["Neutral", "Negative", "Positive"]

```



```
plt.pie(y, labels=mylabels)
fn = datetime.datetime.now().strftime("%Y%m%d%H%M%S") + ".png"

plt.savefig("static/graph/"+fn)
plt.close()

return render_template("view_post1.html", img=fn)

@app.route('/view_post')
@login_required
def view_post():
    qry="SELECT 'post'.*, 'user'. 'fname', 'user'. 'lname' FROM 'user' JOIN 'post' ON 'post'. 'uid'='user'. 'lid'"
    res=select(qry)
    return render_template("view_post.html", val=res)

app.run(debug=True)
```

---

## Database Design

Attribute Name	Datatype	Width	Description
id	Integer		Primary Key
username	Integer		
password	Integer		

Table A.1: login

Attribute Name	Datatype	Width	Description
msgid	Integer		primary key
fromid	integer		
toid	integer		
msg	text		
date	date		
status	varchar		

Table A.2: chat

Attribute Name	Datatype	Width	Description
cmtid	Integer		Primary Key
postid	Integer		
user id	Integer		
comment	Text		

Table A.3: comment

Attribute Name	Datatype	Width	Description
id	Integer		Primary Key
uid	Integer		
emo	Varchar	100	

Table A.4: emotion

Attribute Name	Datatype	Width	Description
fid	Integer		Primary Key
user id	Integer		
feedback	varchar		
date	Date		

Table A.5: feedback

Attribute Name	Datatype	Width	Description
fid	Integer		Primary Key
formid	Integer		
toid	Integer		
date	date		
status	varchar		

Table A.6: friendrequest

Attribute Name	Datatype	Width	Description
id	Integer		primary key
lid	Integer		
f name	Varchar		
l name	Varchar		
place	varchar		
post	varchar		
d o b	Varchar		
phone number	BigInt		
email	Varchar		
pin	Varchar		

Table A.7: user

## DataFlow Diagram

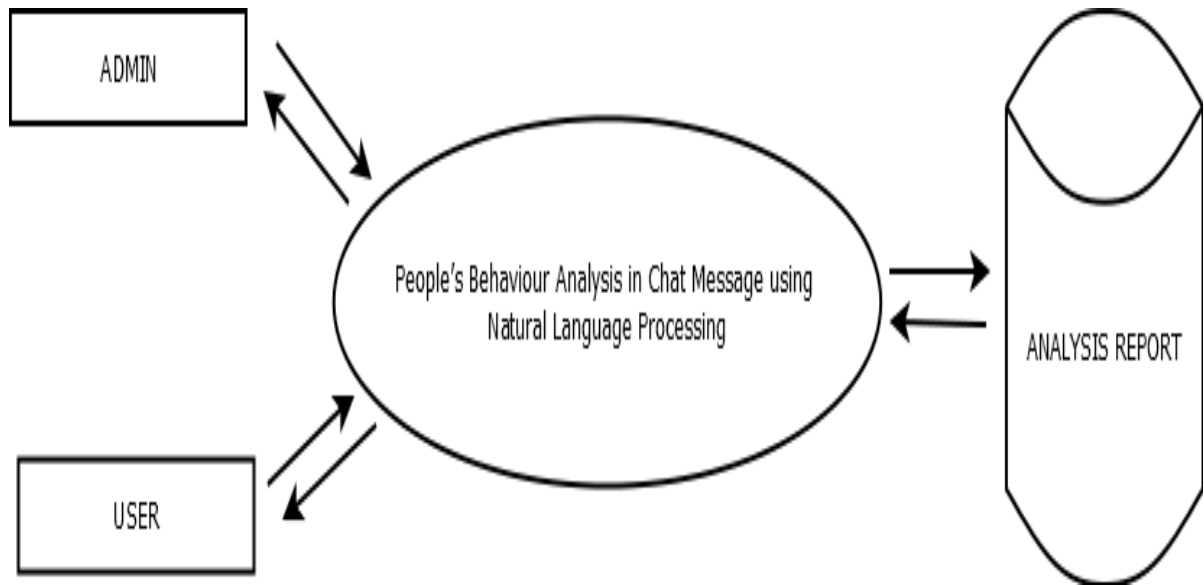


Figure A.1: LEVEL 0

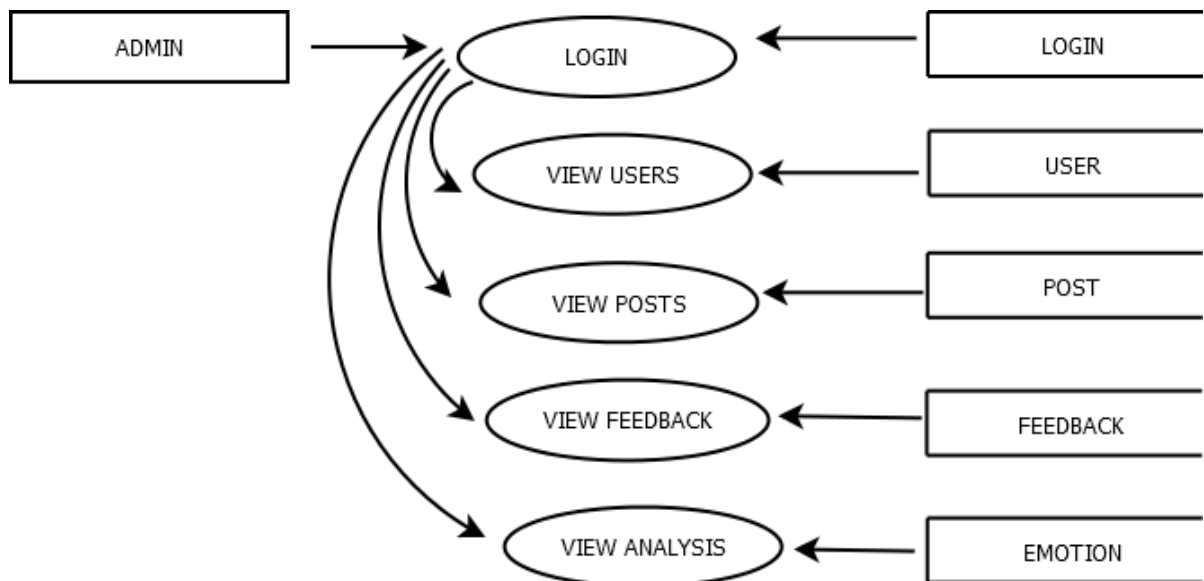


Figure A.2: LEVEL 1.1

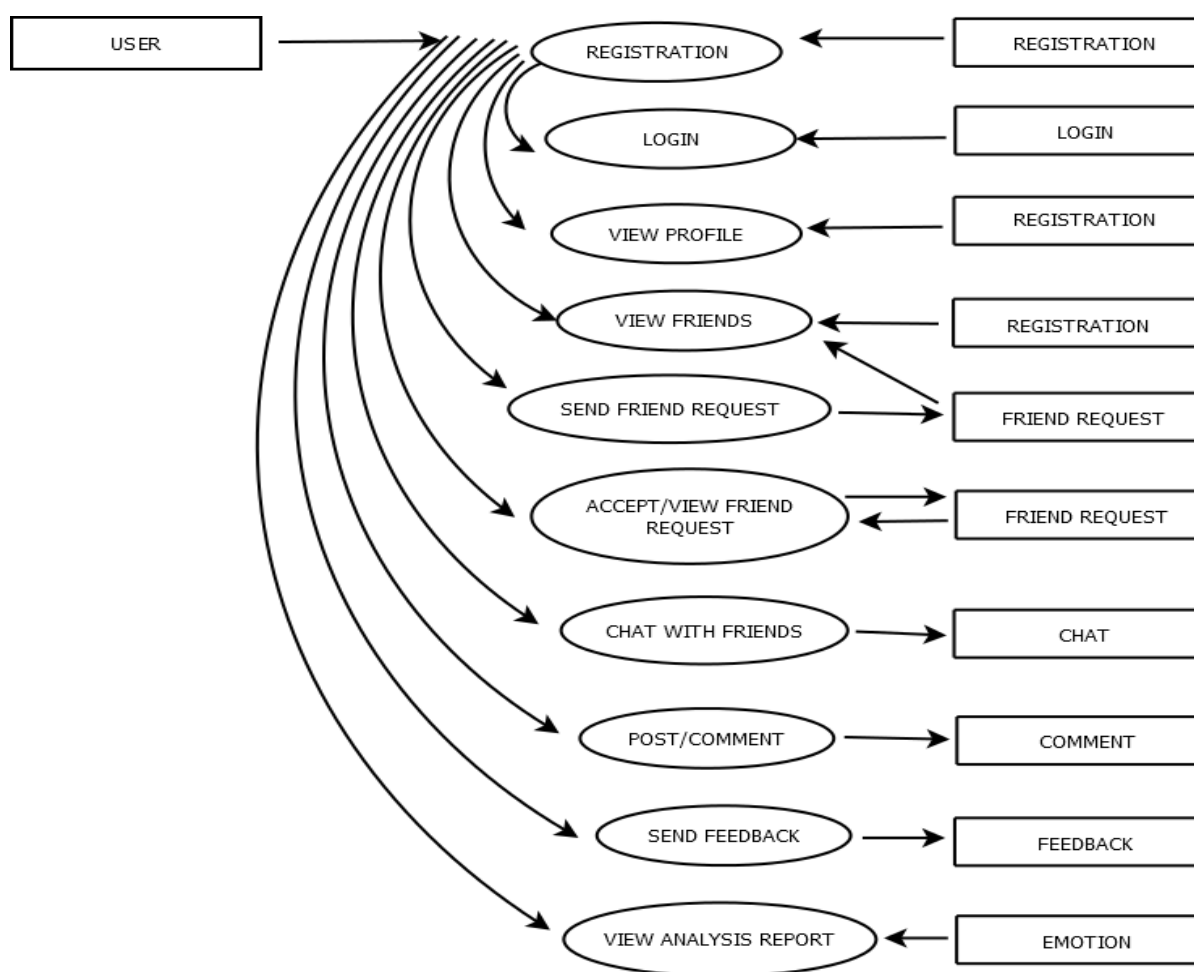


Figure A.3: LEVEL 1.2