

# **PSYCHOLOGICAL AID FOR VICTIMS IN EMERGENCY**

**Soft Computing Project Report**



**DEPARTMENT OF COMPUTER SCIENCE ENGINEERING  
NETAJI SUBHAS UNIVERSITY OF TECHNOLOGY  
DWARKA, NEW DELHI**

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## **CANDIDATE’S DECLARATION**

We hereby certify that the work which is being presented in the **Soft Computing Project** entitled **“Psychological Aid for Victims in Emergency”** in partial fulfilment for the award of the Degree of Computer Science Engineering affiliated to **Netaji Subhas University of Technology Dwarka, New Delhi** and submitted to the Department of Computer Science Engineering. It is an authentic record of our own work carried out during a period from **January 2020 to June 2020**.

**Date: - 29<sup>th</sup> June, 2020**

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## **ACKNOWLEDGEMENT**

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We express our sincere thanks to professors for encouraging and allowing us to present the **Soft Computing Project “Psychological Aid for Victims in Emergency”** at department premises for partial fulfilment of the requirements leading to award Degree of Computer Science Engineering. We take this opportunity to thank professors who have helped in our project.

## **ABSTRACT**

Sentiment Analysis is a kind of Natural Language Processing to determine traits and emotions of a person by using text data. The Dataset is created with the help of Social Media APIs that collect information from messages, tweets and profiles. Sentiment Analysis can help victims by giving suggestions of recommended psychologists based on traits and emotions.

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# CHAPTER-1

## INTRODUCTION

In this project report, we propose a Natural Language Processing approach to compute personality traits. The Twitter API segments tweets of a location in tokens, then TextBlob Library performs Sentiment Analysis to find emotion of tweets.

### 1.1 Problem Statement

Design an application identify the types of psychologist for counselling, gathering personality traits through social media accounts, mapping of victims to psychologists on the basis of their mental state and the type of loss incurred.

## CHAPTER-2

### PRE-TEST

#### 2.1 Skills of team members as per project (Pre-test)

Skills	Panda	HTML	Bootstrap	OO Modelling	JavaScript
Vishal Kumar (2019PCS2006)	W	S	W	M	M
Anubhav Dhankhar (2017UCO1550)	W	S	W	M	M
Mansi Joshi (2017UCO1576)	M	S	W	M	W
Prabhat Kumar (2017UCO1621)	W	M	W	M	M

Skills	Data Structures	ER Modelling	MySQL	NN	Software Testing
Vishal Kumar (2019PCS2006)	M	S	M	M	M
Anubhav Dhankhar (2017UCO1550)	S	M	M	W	W
Mansi Joshi (2017UCO1576)	S	M	W	S	W
Prabhat Kumar (2017UCO1621)	S	M	M	W	M

Skills	Software Engineering	NumPy	Software Automation	Android	GitHub
Vishal Kumar (2019PCS2006)	M	M	W	W	W
Anubhav Dhankhar (2017UCO1550)	M	W	W	W	W
Mansi Joshi (2017UCO1576)	M	S	W	W	M
Prabhat Kumar (2017UCO1621)	M	W	W	W	W

Skills	Genetic Algorithm	Algorithms	Version Control	SQL	Python
Vishal Kumar (2019PCS2006)	M	M	W	M	M
Anubhav Dhankhar (2017UCO1550)	W	M	W	M	M
Mansi Joshi (2017UCO1576)	W	S	S	M	S
Prabhat Kumar (2017UCO1621)	W	S	W	M	S



## CHAPTER-3

### PROGRESS ACHIEVED

#### 3.1 Division of Work

VISHAL KUMAR, ANUBHAV DHANKHAR:

Integrating sentiments and tweets of a location and study how to classify tweets.

MANSI JOSHI:

Pre-processing of dataset, sentiment analysis of tweets and their classification, Plotting of results.

PRABHAT KUMAR:

Find and explored various API's that can be used for this work, Extracted the live tweets using TWEETPY API, added the filter to get location wise tweets.

#### 3.2 Tasks Completed

1. Learnt to use the Twitter API.
2. Obtained tweets for given coordinates.
3. Sentiment Analysis and Classification of a given tweet achieved.
4. Tried integrating Step 2 and Step 3.

# DATASET

### 4.1 Dataset Used

The twitter API has been used to fetch tweets that are used as a dataset in this project. Live tweets have been extracted and the process is dynamic. Tweets are short texts and contain relevant topics, making it a good dataset for Sentiment Analysis. It is also a great dataset to analyze user engagement with their respective locations, since geo locations can be identified.

### 4.2 API Employed

Tweepy is a Python library for accessing the Twitter API. It is great for simple automation and creating twitter bots. The Twitter API exposes dozens of HTTP endpoints that can be used to retrieve, create and delete tweets, retweets and likes. The Twitter streaming API is used to download twitter messages in real time. We can filter tweets using its geolocation after identifying the bounding box of its longitude and latitude.

### 4.3 How to get started with the Twitter APIs

1. Apply and receive approval for a Twitter developer account.
2. Create a Twitter developer app.
3. Generate your app's API keys and user's access tokens.
4. Generate your app's bearer token.
5. Apply and receive access to the desired API.
6. Find the documentation, libraries, code examples, and other resources that you need to make your first successful request.

## 4.4 Pre-processing of Dataset

- The raw data having polarity is highly susceptible to inconsistency and redundancy.
- Remove all URLs (e.g. [www.xyz.com](http://www.xyz.com)), hash tags (e.g. #topic), targets (@username)
- Correct the spellings (sequence of repeated characters is to be handled)
- Replace all the emoticons with their sentiment
- Remove all punctuations, symbols, numbers
- Remove Stop Words Expand Acronyms (we can use an acronym dictionary)
- Remove Non-English Tweets

# Models and Soft Computing Technology

## 5.1 Sentiment Analysis using TextBlob

TextBlob is a python library and offers a simple API to access its methods and perform basic NLP tasks.

**Sentiment Analysis** is basically the process of determining the attitude or the emotion of the writer, i.e., whether it is positive, negative or neutral. The sentiment function of TextBlob returns polarity. Cleaning of tweets to remove special characters.

Polarity is a value which lies in the range of  $[-1,1]$  where positive value means positive statement, negative value means negative statement, and 0 means neutral statement.

## 5.2 Workflow

- Inputs - User feeds in the name of the place and the number of tweets required for his study.
- Tweepy client makes the API call to fetch tweets of that location.
- Fetched tweets saved in an output file.
- Cleaning of tweets to remove special characters.
- Textblob returns a polarity for each tweet.
- Classification of tweets and plotting of results.

## CHAPTER-6

# WORKING OF SENTIMENT ANALYSIS

## 6.1 Analysing the Sentiment of a Tweet

Figure 1: Sample Query

```
Enter which place to fetch tweets from: Delhi
Enter how many tweets to search: 50
How people are feeling in Delhi by analyzing 50 tweets:

General Report:
Weakly Positive

Detailed Report:
30.00% people feel positive
12.00% people feel weakly positive
0.00% people feel strongly positive
2.00% people feel negative
16.00% people feel weakly negative
0.00% people feel strongly negative
40.00% people feel neutral
```

Figure 2: Pie Chart Classification

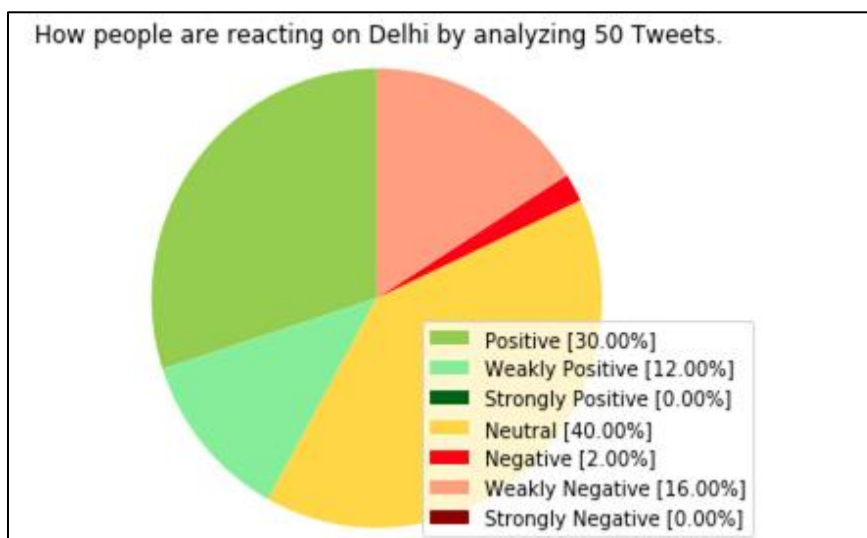


Figure 3: Tweet Text

"b""I'm really sad to hear that Mentoring students is one of my favourite parts of being a teacher It feels  
<https://t.co/Y6wDHafJdC>""",b'trying to sleep is hard when you\ue2\x80\x99re sad',b'RT Solidarity bank accounts The lie of those  
who made up that the Cuban Government was asking for money was over in a blink\ue2\x80\xa6',b'RT It was very sad to open my social  
media accounts today to several messages from concerned fans asking if \_Styles h\ue2\x80\xa6',"b""RT A MOA kind of failed her exam  
today and Beomgyu said don't be sad/upset and don't think about too much. \xf0\x9f\x90\xbb Actually I'm fi\ue2\x80\xa6""",b'So so  
sad we can not move past history and live for the future !',"b""RT This sad situation is due to Gujarat government's lack of  
willingness Lack of timely intervention and inactiveness on gov\ue2\x80\xa6""",b'RT More and more Trump team members will be in  
this situation where there\ue2\x80\x99s no possible way to defend him as even\ue2\x80\xa6',b'Your bio just screams of such  
desperation It\ue2\x80\x99s sad Is <https://t.co/yW2EGjoaEJ>',b'RT Indonesian sad songs are probably the most heartfelt  
songs',"b""The sad kids still in there trying to gain victim points when I'm just looking up funny crack kpop videos on YouTube  
<https://t.co/35SSFIYEfx>""",b'RT im so sad and mad right now jongdae is still part of exo they shouldn\ue2\x80\x99t ban his name or  
anything related to him during\ue2\x80\xa6',b'RT So sad.. <https://t.co/XcEc85fFvZ>',b'Sad to see stealing a norm',b'RT #Breaking  
Sad news former DC City Administrator Allen Lew has died of coronavirus complications Lew oversaw rebuildin\ue2\x80\xa6',"b""Oh  
wow that's so sad I hope he gets help""",b""A sad but touching reminder that leaving a legacy in cancer research isn't just about  
finding new molecules or gene <https://t.co/VpFlpRfuvY>""",b'Such sad faces <https://t.co/cCU92cC1fk>',b'By making someone happy you  
will have happy tears instead of regret & sad tears.'',"b""I really doubt there will be any debates with Biden in them My mother  
is in late stage dementia and he's not far b <https://t.co/cLi2h1cb02>""  
b'RT 12/n Now this is quite interesting and imp to note. Nehru sent the first Patrol team only in April 1958 a long time after  
R\ue2\x80\xa6',"b'RT I would also like to inform the people of Delhi that a 1,000 bed full-fledged hospital with 250 ICU beds is  
being developed f\ue2\x80\xa6",b'RT BIG BIG BIG Government of India has taken the decision to reduce the staff strength in the  
Pakistan High Comm\ue2\x80\xa6',b'RT After 4 days in Ladakh we have headed back to Delhi to resume our trip #OnTheRoad reporting  
the Pandemic Lockdown and the conse\ue2\x80\xa6',"b'RT Dear Kejriwal ji It has already been decided in our meeting 3 days back and  
MHA has assigned the work of operating the 10,\ue2\x80\xa6',"b'RT Dear Kejriwal ji It has already been decided in our meeting 3  
days back and MHA has assigned the work of operating the 10,\ue2\x80\xa6',"b'RT I would also like to inform the people of Delhi  
that a 1,000 bed full-fledged hospital with 250 ICU beds is being developed f\ue2\x80\xa6",b'RT #Delhi CM writes to Home  
Minister inviting him to inspect the 10,000-bedded #COVID care centre at\ue2\x80\xa6',"b'RT Dear Kejriwal ji It has already been  
decided in our meeting 3 days back and MHA has assigned the work of operating the 10,\ue2\x80\xa6",b'RT Armed Forces personnel  
have been detailed for providing medical care and attention to COVID patients housed in the Railway co\ue2\x80\xa6',b'RT I would  
also like to inform the people of Delhi that a 1,000 bed full-fledged hospital with 250 ICU beds is being developed  
f\ue2\x80\xa6",b""RT theindian In #NewIndia even court houses aren't safe for women. A woman was r\ue2\x80\x99d inside

# CHAPTER-7

## LEARNING FROM THE PROJECT

### 7.1 Challenges

- Developer account approval
- A lot of unstructured data.
- Fake profiles on twitter.
- Only 1% tweets are geotagged.
- Execution error when trying to integrate “tt.py” and Sentiment module.
- There is a limit of accessing tweets using API.
- Lack of communication with all the group members making the project somewhat cumbersome.
- Ongoing internships.

### 7.2 Learning

Vishal Kumar	-	Python, NLP using TextBlob
Anubhav Dhankhar	-	Python, NLP
Mansi Joshi	-	Python, Use of Twitter APIs and tweepy Client Sentiment Analysis
Prabhat Kumar	-	Python, Using API, Cleansing of data

## CHAPTER-8

### POST-TEST

#### 8.1 Skills of team members as per project (Post-test)

Skills	Panda	HTML	Bootstrap	OO Modelling	JavaScript
Vishal Kumar (2019PCS2006)	<u>M</u>	S	W	M	M
Anubhav Dhankhar (2017UCO1550)	<u>M</u>	<u>M</u>	W	M	M
Mansi Joshi (2017UCO1576)	M	S	W	M	<u>M</u>
Prabhat Kumar (2017UCO1621)	<u>M</u>	M	W	M	M

Skills	Data Structures	ER Modelling	MySQL	NN	Software Testing
Vishal Kumar (2019PCS2006)	M	S	M	M	M
Anubhav Dhankhar (2017UCO1550)	S	M	M	W	W
Mansi Joshi (2017UCO1576)	S	M	W	S	W
Prabhat Kumar (2017UCO1621)	S	M	M	W	M



Skills	Software Engineering	NumPy	Software Automation	Android	GitHub
Vishal Kumar (2019PCS2006)	M	M	W	W	W
Anubhav Dhankhar (2017UCO1550)	M	W	W	W	W
Mansi Joshi (2017UCO1576)	M	S	W	W	<u>S</u>
Prabhat Kumar (2017UCO1621)	M	<u>M</u>	W	W	W

Skills	Genetic Algorithm	Algorithms	Version Control	SQL	Python
Vishal Kumar (2019PCS2006)	M	M	W	M	M
Anubhav Dhankhar (2017UCO1550)	<u>M</u>	M	W	M	M
Mansi Joshi (2017UCO1576)	<u>M</u>	S	S	M	S
Prabhat Kumar (2017UCO1621)	<u>M</u>	S	W	M	S

# REFERENCES

- [1] Tweepy Documentation - [docs.tweepy.org](https://docs.tweepy.org)
- [2] Twitter API - [developer.twitter.com/en/docs](https://developer.twitter.com/en/docs)
- [3] TextBlob - [textblob.readthedocs.io/en/dev/](https://textblob.readthedocs.io/en/dev/)
- [4] Stack Overflow - [stackoverflow.com](https://stackoverflow.com)
- [5] How to Track Tweets by Geographic Location - [www.bmc.com/blogs/track-tweets-location](https://www.bmc.com/blogs/track-tweets-location)
- [6] Vishal A. Kharde and S.S. Sonawane, "Sentiment Analysis of Twitter Data: A Survey of Techniques", International Journal of Computer Applications, Vol 139 - No.11, April 2016
- [7] Barbara Plank, Dirk Hovy - Personality Traits on Twitter or. How to get 1,500 Personality Tests in a Week
- [8] Sentiment Analysis - [monkeylearn.com/sentiment-analysis/](https://monkeylearn.com/sentiment-analysis/)