**SENTIMENT ANALYSIS**

**A PROJECT REPORT**

**Submitted by**

**EKANSH TYAGI**

**(2016743)**

*in partial fulfilment for the award of the degree*

*of*

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*in*

**CSE**

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**CERTIFICATE**

**Certified that this project report “SENTIMENT ANALYSIS” is the Bonafede work of ‘EKANSH TYAGI’ who carried out the project work under my supervision.**

**(GUIDE)**  
**Dr. VIJAY SINGH**

**COMPUTER SCIENCE ENGINEERING**

**GRAPHIC ERA DEEMED TO BE UNIVERSITY**

**Acknowledgement**

The project becomes a reality with the support of many individuals. I would like to extend my sincere thanks to all of them.

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At last, I would like to thank all the other individuals who helped me in the completion of the project in one way or another.

Ekansh Tyagi

2016743

Section A

**Problem Statement**

**Sentiment Analysis:** Here I have to make a python program that imports tweets related to any inputted query and performs sentiment analysis on those tweets and classify them as positive, negative, or neutral. I have used the name of a famous badminton player ‘PV Sindhu’, as query and the number of tweets to be imported is set to 200.

**Motivation**

As a student, my main motive of taking this project was to learn about new and different things in the python programming language. The name and basic idea of the project also motivated me to choose this project i.e., ‘classifying a piece of text based on the emotions delivered in the text’. This project was a great opportunity to explore, understand and implement the knowledge of python language.

**A picture containing diagram

Description automatically generatedIntroduction**

Sentiment Analysis is the process of predicting whether a piece of text indicates positive, negative, or neutral opinion on that topic. Sentiment Analysis is also known as “Opinion Mining”. It is basically an approach to Natural Language Processing (NLP) that identifies the emotion of a text body. In the following project we will learn how to create a python program to perform sentiment analysis of a particular topic on the twitter platform.

Sentiment analysis can be used for getting users’ opinion on any topic. For example, e-commerce websites use sentiment analysis to check the users’ review of any product, any film production company can perform sentiment analysis on the imdb reviews to find out the flaws in their work, a restaurant can perform sentiment analysis on the reviews present on their social media page to find out where they need to improve etc.

In this project we are going to perform sentiment analysis on tweets related to a particular topic imported from twitter. The project will be coded in python language and the tweets will be imported and analysed using two important python libraries.

**Requirements**

1. Basic knowledge of Python – Basic Knowledge of python programming language is a must.
2. Twitter account and a Twitter developer account.
3. Twitter credentials acquired from the developer app created.
4. Python IDE (pycharm, colab or jupyter notebook etc.).
5. Python Libraries (tweepy, textblob).

**Methodology**

* **Understanding The Project-**

The basic idea is to study the emotion given behind any piece of text (in this case tweets) and classify it as positive, negative, or neutral.

For doing so we create a python program in any preferable IDE and import a selected number of tweets related to a certain topic from twitter and find out the percentage of positive, negative, and neutral tweets among the selected number of tweets and then classify them as positive, negative, or neutral with the help of sentiment analysis.

Sentiment Analysis basically works on two factors: -

* + Polarity - refers to the emotions expressed in a piece of text. It ranges from -1 to +1

-1 is for Negative emotion

0 is for No emotion (Neutral)

+1 is for Positive emotion

* + Subjectivity – refers to one’s own beliefs, feelings, and opinions. Its range is also from -1 to +1.

Two python libraries which play a very crucial role in performing sentiment analysis are: -

1. **tweepy-** tweepy is a python library which is used to access the twitter API.
2. **textblob-** textblob is python library used to process textual data.

* **Performing Sentiment Analysis-**

We can perform sentiment analysis on twitter through the following steps-

1. Create a twitter developer account (which requires an already active twitter account) and create an app within the account to acquire the credentials (consumer key, consumer key secret, access token and access token secret) required for performing the test.
2. Write a python code using any platform supporting python (I used Google Colab for coding purpose and Pycharm for display purpose).
3. In the code we perform the following operations: -
4. Input the twitter credentials and getting authentication with the help of tweepy.
5. Write a function to clean the tweets to remove any special character or symbol from them.
6. Set sentiments for tweets according to polarity.
7. Write another function to fetch tweets from twitter and specify the query (the topic on which tweets are to be fetched) as well as the number of tweets to be fetched.
8. Append the fetched tweets to a list. If any tweet has retweet, make sure it is only appended once.
9. In the main function enter the query and number of tweets you want to import and then write code to print the percentage of positive, negative, and neutral tweets from the fetched tweets as well as print the first five positive, negative and neutral tweets respectively.

* **Classification of Tweets-**

As described before, the tweets are classified into 3 different types: -

1. **Positive-** If the entire tweet has a positive/happy/excited/joyful attitude or if something is mentioned with positive connotations. Also, if more than one sentiment is expressed in the tweet but the positive sentiment is more dominant.
2. **Negative-** If the entire tweet has a negative/sad/displeased attitude or if something is mentioned with negative connotations. Also, if more than one sentiment is expressed in the tweet but the negative sentiment is more dominant.
3. **Neutral-** If the creator of tweet expresses no personal sentiment/opinion in the tweet and merely transmits information. Advertisements of different products would be labelled under this category.

**Conclusion**

In this project, we successfully created a python program and performed sentiment analysis on the tweets imported within the program with the help of various python libraries. We learned how to import tweets using tweepy and how to perform sentiment analysis on them. We also learnt how these sentiments are classified. I learnt various things from this project which includes learning about twitter developer account as well as the new libraries (tweepy and textblob). Overall, the project was fun, and I had a good understanding of the topic.

**References**

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