

# Analysis Tweets using Machine Learning for Women Safety

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**Abstract:** *Women are currently subjected to a great deal of violence, including harassment, in a number of cities. This begins with stalking and progresses to abusive harassment, also known as abuse assault. In this study, we primarily focus on the role of social media in promoting women's safety in India, with particular attention paid to the participation of several social media websites or applications, such as Twitter, Facebook, and Instagram platforms. This study also focuses on instilling duties among the general public in various regions of Indian cities in order to protect the safety of women in the vicinity. Text messages, audio data, video data, photos, smiling expressions, and hash-tags are all included in a tweet on the Twitter program. This tweet content can be used to educate individuals and to take strict steps if tweets are hostile to women, and to penalize such persons if harassment occurs. Hash-tag-enabled applications, such as Twitter and Instagram, may be used to send messages throughout the world and provide women the freedom to express their thoughts and feelings. We can learn about their mental condition when they go to work, travel in public transportation, or are surrounded by unknown guys, and whether they feel safe or not.*

**Keywords:** Women, Safety, Sexual Harassment, Hash tag, Sentimental Analysis.

## I. INTRODUCTION

In today's world, Twitter has evolved into the ultimate microblogging online network, with over a hundred million users and over five thousands of 'Tweets' sent every Minutes. With such a large number of users, Twitter attracted people to express their opinions and judgments on any current issue or topic on the internet; as a result, Twitter is an informative source for all zones such as institutions, companies, and organizations.

In the tweets part of Twitter, individuals will offer their thoughts and perspectives. Because a tweet may only be 140 characters long, users must condense their thoughts using acronyms, slang, shot forms, emoticons, and other means. Furthermore, many people convey their viewpoints using polysemy and sarcasm. As a result, twitter language is referred to as unstructured. The sentiment underlying the message is derived from the tweet. The sentimental analysis process is used to retrieve this information. The sentimental analysis' findings can be used in a variety of ways.

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Certain sorts of aggression and harassment, like as staring at women and making comments, are similar, and these activities, although are non-acceptable, they are common mostly in the urban areas. Many research in India have found that ladies have witnessed the sexual harassment and other activities such as those mentioned above. According to surveys, most women in big metropolitan cities like New-Delhi, Bangalore and Hyderabad, feel frightened when they are surrounded by strangers. People can freely share their feelings about Indian democracy, unity, and a variety of other topics via Online platform. Similarly, if women have experienced any assault or sexual harassment, they can share their stories, which pulls together innocent people to fight back. According to a Twitter study of tweets text collection, it includes names of a guilty persons, as well as victim or innocent people who have stood up to such unacceptable crimes or un-ethical behaviors by men.

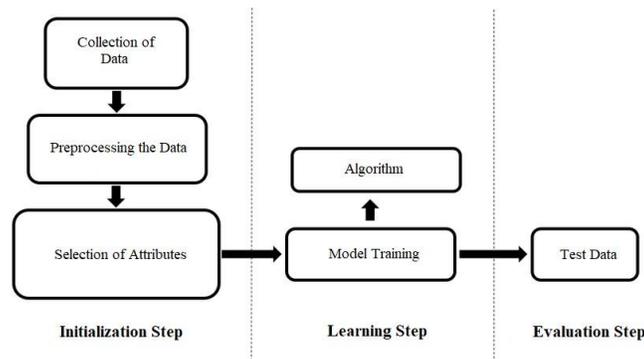
The machine learning techniques and models will be processed using the twitter data set. By removing zero values from the tweet data, our algorithm will smooth it out. A method that is invented to examine the twitter data and remove redundant information from the data set using Laplace and Porter's theory. People have been drawn to online platforms such as Twitter, Facebook, and Instagram in large numbers. People use text messages, emoticons, and hash-tags on such platforms to convey their feelings about society, politics, women, and other topics.

## II. SENTIMENTAL ANALYSIS

Sentiment analysis is the process of extracting the sentiment behind any sentence or statement. It can be called as a classification technique which is used to obtain the opinion from tweet.

This viewpoint is useful in creating the feelings, which can then be used to classify sentiments. Sentiments are most unique to the people day-to-day issues, thus we shall decide what kind of requirements should be inherited from those tweets. The person doing the sentimental analysis wishes to use the programming model to discover the class of entities in the tweets. The sentimental class's dimension is a crucial consideration for determining the algorithm's efficiency. For example, sentimental classification of tweets can be classified into two categories: positive and negative, or the following categories: positive, negative, and neutral. The process of machine learning is included in the approach the extraction of features, and the training of a programming model utilizing a features dataset. The dictionary and dash board system are used to detect opinions in the lexicon learning based approach. We employ a machine learning strategy in this paper. The essential phases in sentimental analysis are collection of data, pre-processing of data, feature extraction, base feature selection, sentimental detection, and sentiment categorization using simple computations.

### 2.1 Analysis of Sentimental Data



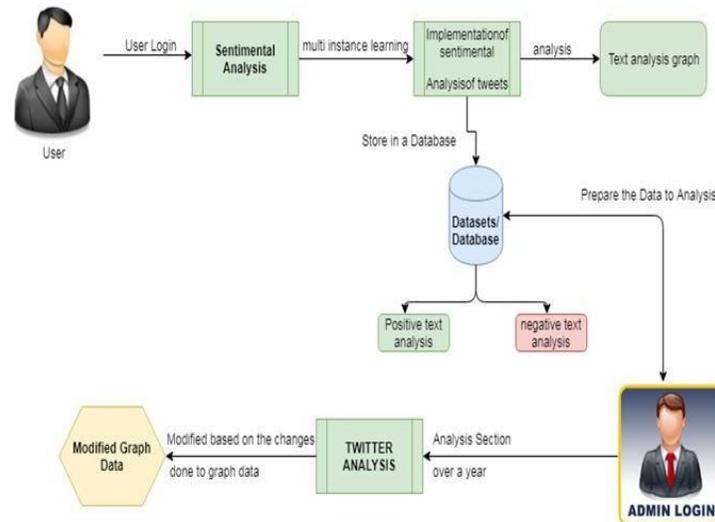
**Figure 1:** Process of Analysis

The process of obtaining the sentiments of tweet includes five steps:

1. **Data extraction:** The first stage in sentiment analysis is to get data from social media sites such as Twitter. This aids in the extraction of the tweet message, but this message also contains additional information such as tweet likes, dislikes, and comments.
2. **Text Cleaning:** Once the data has been extracted as datasets from the social media resource, it has to sent to the classifier. Before the analysis, the classifier cleans the dataset by removing unnecessary data such as stop words and emoticons to ensure that non-textual stuff is recognized and removed.
3. **Sentimental Analysis:** The data is ready for sentiment analysis after the classifier cleans the dataset. Sentiment analysis employs a variety of techniques, including machine learning, Lexicon-based learning, and hybrid learning. Other techniques, such as Nero-Linguistic Programming and NLP(Natural Language Process), are also available. A machine learning approach involves training a dataset and then testing that dataset. The classifier needs both training and testing data to complete the algorithm. Many algorithms that can be used to train the classifier like maximum entropy, Naives Bayes classification, Bayesian Networks, and Network Support Vector Machine. The sentiment classifier's efficiency is determined by using the testing data. The training dataset is not used in Lexicon-based leaning. This method employs a built-in vocabulary that includes words connected with

- human emotions. In order to increase the effectiveness of the classifier, the third approach, Hybrid learning, combines both machine learning and lexical learning
4. **Sentimental Classification:** This is the point at which the dataset is ready for classification. For subjectivity, each sentence of the tweet will be evaluated and an opinion developed accordingly. Subjective expression sentences are kept, but objective expression sentences are discarded. At various levels of sentiment analysis, techniques like as metagrams, Negation and Lemmas etc., are applied. Positive and negative emotions can be broadly divided into two categories. At this stage of sentimental analysis, each of the retained subjective statements is rated as excellent, bad, like, dislike, or positive and negative.
  5. **Output Result:** Sentiment analysis is most essential for extracting the usable and relevant information from raw data. After the method has been performed, the results of the analysis can be shown using several graph forms. The result can be shown in a different ways, including bar graphs, time series, and pie charts. Bar graphs can be used to assess the sentiment of tweets in terms of positive and negative sentiment. Time series can also be used to measure likes, dislikes, and average tweet length over the time of period.

## 2.2 System Architecture



**Figure 2: Architecture**

Every user's information, including credentials, new tweets, retweets, and tweet score, will be saved in the database for the administrator to monitor and analyse. The user data is subjected to sentiment analysis in order to monitor and confirm whether any tweets are abusive to women. To ensure women's safety, Admin does this analysis on each and every user's tweets. Sentiment analysis will be applied to user tweets that are saved in the database. The data can now be prepared for analysis by the administrator. The starting input for the sentimental analysis will be tweet produced by each user of the application, and so they will constitute the dataset. In addition, a content analysis graph can be displayed. The filters will be saved in the database by the administrator. Filters are keywords that will be searched for in the tweet context to determine if it is abusive or not. Positive keyword and negative keyword filters are the two sorts of filters available. Positive keywords are ones that are not in any way abusive or disrespectful to women. Negative keywords are words that are commonplace and will not be used to abuse women.

The database can have an unlimited amount of positive and negative terms. Every term in the database will be compared with each and every word in the user's tweet when the sentimental analysis is implemented by the admin. If a tweet contains any of the positive keywords, it will be labelled as positive sentimental analysis, which is harmful to women. If a tweet has a negative keyword, it will be labelled as negative sentimental analysis, which is not harmful to women. As a result, by this point, there will be two forms of sentimental analysis dependent on the database filter. There will be a list of all the tweets in the app that are abusive to women under positive sentimental analysis. Similarly, there will be a

list of clean and non-abusive tweets under negative sentimental analysis. At each of the analysis lists, user details will be presented in addition to the tweet context.

### **III. CONCLUSION AND FUTURE WORK**

Throughout the project, the machine learning algorithm has been discussed. Machine learning algorithms help organise and analyse Twitter data, which includes millions of tweets and messages every day. Some of the algorithms that are useful in analysing massive data that provide categorization and convert into meaningful datasets include the SPC algorithm and linear algebraic. As a result, we may use machine learning algorithms to do sentimental analysis and increase women's safety by raising awareness.

Because only Twitter is examined in our experiment, we may extend the use of these machine learning algorithms to other online sites such as Twitter and Snapchat in the future. The proposed ideology may be combined with the Twitter application interface to reach a wider audience and do sentimental analysis on billions of tweet's to increase security.

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