Empowering Women: Harnessing Social Media to Combat Stalking in Indian Cities

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Abstract

Stalking is described as the act of following and harassing a woman or girl in public, potentially leading to verbal or physical assault. This study explores the potential of Twitter, Facebook, and Instagram in enhancing the sense of safety for women in major cities across India. It also investigates ways to encourage ordinary Indians to develop a sense of social responsibility, crucial for protecting women in their daily lives. Utilizing tweets, which typically combine images and text, could serve to educate Indian youth about the importance of promptly addressing harassment against women in urban areas. Twitter, along with other handles featuring hashtag messages widely circulated globally, offers a platform for women to share their perspectives on how they feel during commutes or while traveling in public transportation, their experiences with unfamiliar men, and whether they perceive their surroundings as secure. These messages are disseminated worldwide.

Keywords: *Stalking, Social Media Safety, Urban Harassment, Social Responsibility, Global Perspectives*

INTRODUCTION

Twitter users communicate succinctly, adhering to a 140-character limit and employing acronyms, slang, and emoticons. The platform's language lacks structure, utilizing sarcasm and polysemy. Examining tweet language reveals its significance. Sentiment analysis collects vital data, delving into public opinions on government policies, women's perspectives, and more. Extensive scrutiny of Twitter data is conducted to categorize tweets and evaluate their consequences. This paper explores machine learning and emotional analysis of Twitter data, introducing several techniques and models.

The primary cause of harassment towards girls stems from a lack of safety and consequences in women's lives. Examples include harassment by neighbors during school commutes or a general lack of safety inducing anxiety. Women endure lasting effects, grappling with unacceptable actions or sexual harassment. Cities that prioritize safety uphold women's legal rights, and it is society's responsibility to acknowledge and fulfill women's security needs. Imposing restrictions on women, as society often does, contradicts women's equal right to safety in the city. The analysis incorporates the names of women experiencing unwanted propositions in Indian cities, gathered through Twitter, shedding light on women's health data.
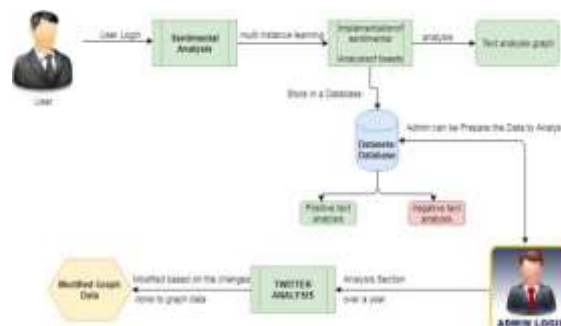
LITERATURE SURVEY

Polarity analysis of phrases employing lexical affect scores and syntactic n-grams is conducted in this study. This presents a classifier capable of predicting the polarity of subjective statements within a phrase, considering context. The method incorporates the Dictionary of Affect in Language (DAL) and Word Net for scoring most input words autonomously, eliminating the need for human intervention. This is made possible by unique strategy, where lexical scoring incorporates n-gram analysis to account for context. DAL scores, combined with syntactic elements, generate n-grams from the entire corpus of utterances, with an assessment of the syntactic polarity of the statement. This results surpass both a majority-class baseline and a more challenging lexical n-grams baseline.

The existing system involves the evaluation of women's safety in social media discussions using machine learning. Online expressions of women after negative experiences provide insights into nations with high rates of female abuse. Despite this, many women express fear and unease while navigating high-traffic areas like malls on their way to work.

In the conceptualization of this system, **MEETOO** tweets about women's safety were collected and stored in a Python dataset folder using **TWEEPY.** The use of **TWEEPY** facilitated the gathering of tweets from Twitter whenever accessible. The program analyzes tweets to determine women's emotions. The Natural Language Toolkit (NLTK) removes unnecessary symbols and stop words from tweets. The author utilizes **TEXTBLOB** corpora and language to ascertain tweet polarity, categorizing tweets with a value less than 0 as negative, those between 0.1 and 0.5 as neutral, and those exceeding 0.5 as positive.

Advantages of this approach includes:

- Twitter posts feature the identities of individuals, both men and women, who have raised their voices against male abuse, harassment, and unethical behavior in Indian cities. This situation poses a threat to their ability to move around freely, imposing restrictions on the freedom of movement for women.

- The statistical information gathered from Twitter concerning the safety of Indian women relates to the attributes of high-quality software. The program's ease of maintenance is attributed to its close connection with the database. Additionally, a streamlined onboarding process for new users is achieved through the reduction of forms.

- Adjusting the software to accommodate new functionalities is straightforward.

METHODOLOGY

TWEET PERFORMANCE ANALYSIS

Social media serves as a valuable platform for capturing individuals' perspectives and emotions on various events, as users actively engage and express their opinions on platforms such as Facebook and Twitter. Numerous tools focused on gathering opinion-oriented data and analytics attempt to extract people's views on diverse subjects. The brevity of tweets on Twitter often leads to the use of different phrases and acronyms, posing a challenge for existing Natural Language Processing (NLP) systems in swiftly discerning sentiment. To address this issue, many researchers leverage deep

learning and artificial intelligence techniques to rapidly extract sentiment polarity from these expressions.

Given the widespread use of social media platforms like Facebook, Twitter, and Instagram, a significant number of individuals use these platforms to articulate their feelings and opinions regarding Indian cities and society. Employing Twitter analytics for business parallels receiving a monthly progress report, compiling various user actions, such as clicks, follows, likes, and expansions, after encountering your content or profile. This aids in effectively tracking performance and engagement metrics.

SUPPORT VECTOR MACHINE:

One way to tackle both classification and regression challenges is through a supervised machine learning method known as "Support Vector Machine" (SVM). Although it is commonly applied to classification issues, it can also be effective in regression tasks. In this algorithm, each data point is represented as a coordinate in an n-dimensional space, where n represents a set of functions. The value of each function corresponds to a specific coordinate. The algorithm involves utilizing a hyperplane to distinctly separate the two classes, enabling categorical analysis (refer to the image below). To simplify, support vectors refer to the coordinates of individual observations. The support vector machine, serving purposes such as outlier identification or regression, constructs an active plane or multiple planes in a high- or infinite-dimensional space.

The active plane with the maximum distance to the nearest training data element of any class, known as the functional margin, facilitates significant separation. Generally, a larger margin correlates with a smaller generalization error for the classifier. Although the sets to be distinguished are often not linearly separable in the given space, addressing the initial problem in a finite-dimensional space can resolve this challenge. To enhance separability, it has been proposed to map the initial finite-dimensional space into a significantly higher-dimensional space.

RECOMMENDED SYSTEM

Women possess the right to navigate the city freely, allowing them the freedom to travel to educational institutions and other chosen destinations. However, due to the pervasive but unidentified instances of body shaming and harassment, women often feel unsafe in places such as malls and shopping centers, especially during their commute to work. The primary reason behind the harassment of girls is the lack of security or tangible impacts on women's lives. Incidents have been reported where women experienced harassment from neighbors during their journeys to school. The absence of safety measures has led young girls to feel psychologically anxious, impacting them throughout their lives. In some cases, women were compelled to engage in inappropriate tasks or faced abuse from neighbors and unknown individuals.

Many secure cities approach female safety by recognizing women's legal rights to navigate the city without fear of physical assault or harassment. It is society's responsibility to acknowledge that women have an equal right as men to feel secure in the city, rather than imposing the restrictions typically placed on women. The proposed system brings several benefits, including the inclusion of names of individuals, especially women, who speak out against sexual harassment and dishonest behavior by men in Indian cities. These voices are part of the Twitter text

collection analysis, contributing to the dataset on women's safety and security in Indian society obtained through Twitter.

MODULES:

1. **Belief Assessment:** After the classifier has preprocessed the dataset, the data is prepared for sentiment evaluation. Several approaches to sentimental analysis are available, such as machine learning, lexicon-based learning, and hybrid learning. Additionally,Neuro-Linguistic Programming and Natural Language Processing are alternative techniques. In the machine learning approach, the dataset undergoes training and testing phases. Both data training and evaluation are essential for the classifier to apply the algorithm. Some algorithms suitable for training the classifier include Maximum Entropy, Naive Bayes classification, Bayesian Networks, and Network Support Vector Machine. To gauge the effectiveness of the sentiment classifier, information is assessed.

Lexicon-based learning, on the other hand, does not rely on a training dataset. Instead, it utilizes a pre-built lexicon containing words associated with human sentiments. The third approach, known as hybrid learning, combines both machine learning and lexicon-based learning methods to enhance the performance of the classifier.

2. **Emotion Classification:** The dataset is now set for categorization. The language of each tweet is examined, and opinions are generated based on subjectivity. Sentences expressing subjectivity are retained, while those with an objective expression are excluded. Various levels of sentimental analysis employ tools like unigrams, negation, lemmas, and others. Positive and negative emotions can be broadly classified into two distinct types.

3. **Implementation of Sentiment Analysis on Tweets:** Involves categorizing each retained subjective sentence into positive, negative, good, bad, like, or dislike. Maintain a log of the tweets obtained through the Twitter API. The availability of the Twitter API has significantly facilitated various approaches to analyze sentiment in social media data. This paper has utilized a range of accessible libraries for this purpose.

4. **CHART:** To minimize the disparity between actual and clinically depressed interaction graphs, a modified social graph version is employed to construct the clinically depressed communication graph, denoted as $G\_$. The data from the original (real) social networking platforms is utilized to generate an interaction graph denoted as G. The communication patterns among social media celebrities are illustrated in a communication graph [25, 26]. Following the identification of entities and their interactions on social media, an interaction graph is formed with a vertex set V representing the entities, an edge set E for the interactions, and an attribute collection A for both vertex (entity) attributes and edge (interaction) connections.

5. **Final Report**
If there is a disproportionately high number of neutral tweets, it suggests that people are not deeply invested in the subject and lack a strong opinion about it. It's essential to acknowledge that the experiment's outcomes may vary based on changing circumstances, as people's perspectives can shift. For instance, in 2017, news about rape garnered significant attention and became one of the year's most

discussed stories. The prevalence of neutral tweets exceeding 60% in various queries highlights the limitations of the viewpoints.

From the analysis it is just conducted, it is apparent that Delhi emerges as the riskiest city, while Chennai appears to be the safest. Retrospective analysis is pivotal in transforming raw data into valuable and pertinent information. Once the process is finalized, various types of charts can be generated to illustrate the final outcomes of the analysis. Examples include pie charts, time series, and bar charts. Bar graphs can be employed to gauge the positive and negative sentiments expressed in the tweets. Similarly, time series can measure sentiments over time, including approval, disapproval, and average tweet length for a specific period. Pie charts can provide insights into the original sources of the tweets.

CONCLUSION:

In this study, it explored diverse machine learning approaches to structure and analyze the extensive data available on Twitter. This dataset encompasses millions of tweets and SMS messages on a daily basis. Techniques like SPC and linear algebraic Factor Model prove effective in handling substantial data volumes and categorizing the outcomes. Both methods involve factor modeling. Additionally, support vector machines can be applied to extract vital information from Twitter and assess the safety of women in urban India.

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