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Review Classification Approach for User Sentiment Analysis

Mr. Pratik S. Yawale[1], Prof. S. P. Akarte[2]
[1, 2]*Prof. Ram Meghe Institute of Technology & Research, Badnera*

Abstract: Sentiment analysis or opinion mining is one of the fastest growing fields with its demand and benefits that is increasing day by day. With the availability of the internet and modern technology, there has been a tremendous growth in the amount of data. The text that has been posted by people to express their sentiment on social media ,can be analysed and used in order to draw benefits and quality information. In this paper, the focus is on cyber-hate classification based on for public opinion or views, since the spread of hate speech using social media can have disruptive impacts on social sentiment analysis. In particular, here proposing a modified fuzzy approach with two stage training for dealing with text ambiguity and classifying three type approach positive, negative and neutral sentiment, and compare its performance with those popular methods as well as some existing fuzzy approaches.

Keywords: Ambiguity, cyber hate, fuzzy, Sentiment analysis.

I. INTRODUCTION

Sentiment analysis recognises the attitude or mood of people through natural language processing, text analysis. In recent years, machine learning has become a very powerful for classifying sentiments. In particular, support vector machines ,naïve bayes, decision trees, deep neural networks kind of method used to classify the text into categories and to detect cyberbullying detection [1], [2], abusive language detection [3], [4], movie reviews [5], [6], and cyberhate identification [7], [8]. In the context of machine learning, the above-mentioned algorithms are all aim to distinguish between one class and other classes. However, in the context of text classification, different classes are truly mutually exclusive, instances could be very complex and are thus difficult to be classified uniquely to only one category. This has motivated researchers to develop fuzzy methods for text classification, which are able to deal with fuzziness, imprecision, and uncertainty of text. The proposed fuzzy approach is different from existing fuzzy systems in two aspects. First, traditional fuzzy approaches typically aim at the production of single classifiers. In this aspect, the proposed fuzzy approach involves fusion (combining the membership degrees for each class) of multiple fuzzy classifiers produced with different parameters setting. Second, traditional fuzzy approaches generally employ a fixed rule to provide a distinct class label as an output. In contrast, proposed fuzzy approach involves a semifixed rule of defuzzification. In both of the two aspects, the proposed fuzzy approach can achieve effective disambiguation of text. Therefore, the bias of a single fuzzy classifier on the majority class (nonhate class) is much reduced, leading to reduction of the false negative rate. The rest of this paper is organized as follows. Section II describes related work that is relevant to cyberhate research and fuzzy classification. In Section III, presenting the proposed fuzzy approach and illustrate the procedure of fuzzy classification. In Section IV presents conclusion and next appears the references.

A. Objective

1) To propose a model called Text classification and sentiment analysis, to address problem for data classification.
2) To propose a novel data expansion technique by creating a sentiment-reversed review for each training and test data performance.
3) In the above point the last and main aim to proposed this system is to find the different user data rating point automatically on the basis of speech, namely, religion, race, disability, and sexual orientation.
4) Main Objective of system to classify user review data for sentiment analysis in E-commerce application.

II. BACKGROUND AND RELATED WORK

The computational study of opinions of people towards entities and their attributes is defined as Sentiment Analysis. A product, person, service, topic or an individual can be referred to as an entity whereas an opinion is a positive, negative or neutral point of view towards an entity. Sentiment Analysis can be of many types – document based, sentence based, phrase based, and aspect based sentiment analysis. In the paper [1], a method is discussed which uses dual training and dual prediction for sentiment classification while addressing polarity shift. The terms dual training and dual prediction refer to usage of both original review sample and opposite review sample for training and prediction.

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In the research [2], represented noun as sentimental words and which has a good impact on sentiment detection additionally some words has duel sentiment base on its application, mostly those words are a noun. It introduced the possible solution for these issues and experiment on those. Finally, we maximize the accuracy by 3% by applying our offered solution. A dual prediction algorithm [3] is used for classification of test reviews by considering both positive and negative sides of each review. At the end we build a pseudo-opposites dictionary using a corpus based method. By this we tackle the problem of having to depend upon an external opposites dictionary for opposites of reviews. By doing this we also get a domain adaptive dictionary for training a classifier which increases the accuracy of the dual opinion mining model. Based on the review of current prediction algorithms of network security situation, prediction algorithms based on Kalman filtering are studied [5]. A prediction algorithm of network security situation based on grey correlation entropy Kalman filtering is presented, hoping to be more helpful to network administrators through providing them information more effectively. We propose a dual training algorithm to make use of original and reversed training reviews in pairs for learning a sentiment classifier, and a dual prediction algorithm to classify the test reviews by considering two sides of one review. We also extend the DSA framework from polarity (positive-negative) classification to 3-class (positive negative- neutral) classification, by taking the neutral reviews into consideration. Finally, we develop a corpus-based method to construct a pseudo-antonym dictionary, which removes DSA's dependency on an external antonym dictionary for review reversion.

III. EXISTING METHODOLOGIES

A. Machine Learning

Train up the machining is the primary requirement for sentiment analysis. Machine learning is most popular technology besides this lexicon is also use for sentiment analysis. Without any of that sentiment analysis is not possible. There are many algorithm and approaches for machine learning. Some are supervised where some are unsupervised. Machine learning methods and term-counting methods are generally used for document-level opinion classification as well as sentence level opinion classification [2].

B. Opinion mining and Polarity Shift

The opinion orientation is calculated by summation of orientation scores, based on manually collected or lexical resources. In the machine learning methods, opinion classification is considered to be a statistical problem. A structure in which sentence is broken into its words and stored which resembles a bag of words is used to store opiniated text. The previously trained machine learning algorithms are applied as classifiers. However, these traditional models resembling bag of words prove inefficient in dealing with polarity shifting of the text [3].

C. Building Predictive Model with Naive Bayes

The Naive Bayes algorithm is a classification technique based on the Bayes Theorem with an assumption of independence among predictors. This stage aims to classify the reviews into categories that help or do not help properly. The data used to build the model is labelled data with two categories: 280 reviews with help categories and 50 reviews with categories not helpful. Prediction is done by using probabilistic methods with Naïve Bayes algorithm to classify each of the reviews into one category [6].

D. Lexicon-based approach

The lexicon-based approach depends on finding the opinion lexicon which is used to analyse the text. There are two methods in this approach. The dictionary-based approach which depends on finding opinion seed words, and then searches the dictionary of their synonyms and antonyms. The corpus-based approach begins with a seed list of opinion words, and then finds other opinion words in a large corpus to help in finding opinion words with context specific orientations. This could be done by using statistical or semantic methods [8].

IV. PROPOSED METHODOLOGY

In proposed system there are basically two modules are available .First module indicate text analysis framework in detail. And second module indicate the prediction user review rating on user previously review data. In this system, we focus on the detection of online hate speech (cyberhate) in short informal text posted to social media platforms. This has become a priority research topic due to the concern that the spread of online hate speech could lead to antisocial outcomes. In particular, we deal with four types of online hate speech, namely, religion, race, disability, and sexual orientation, by proposing a novel fuzzy approach grounded in generative learning, especially for dealing with text ambiguity, which could result from the following cases: 1) the same word may be used in different contexts leading to different semantic meanings and 2) that similar instances are assigned different labels by different annotators due to their different opinions. The proposed fuzzy approach is different from existing fuzzy systems in two aspects.

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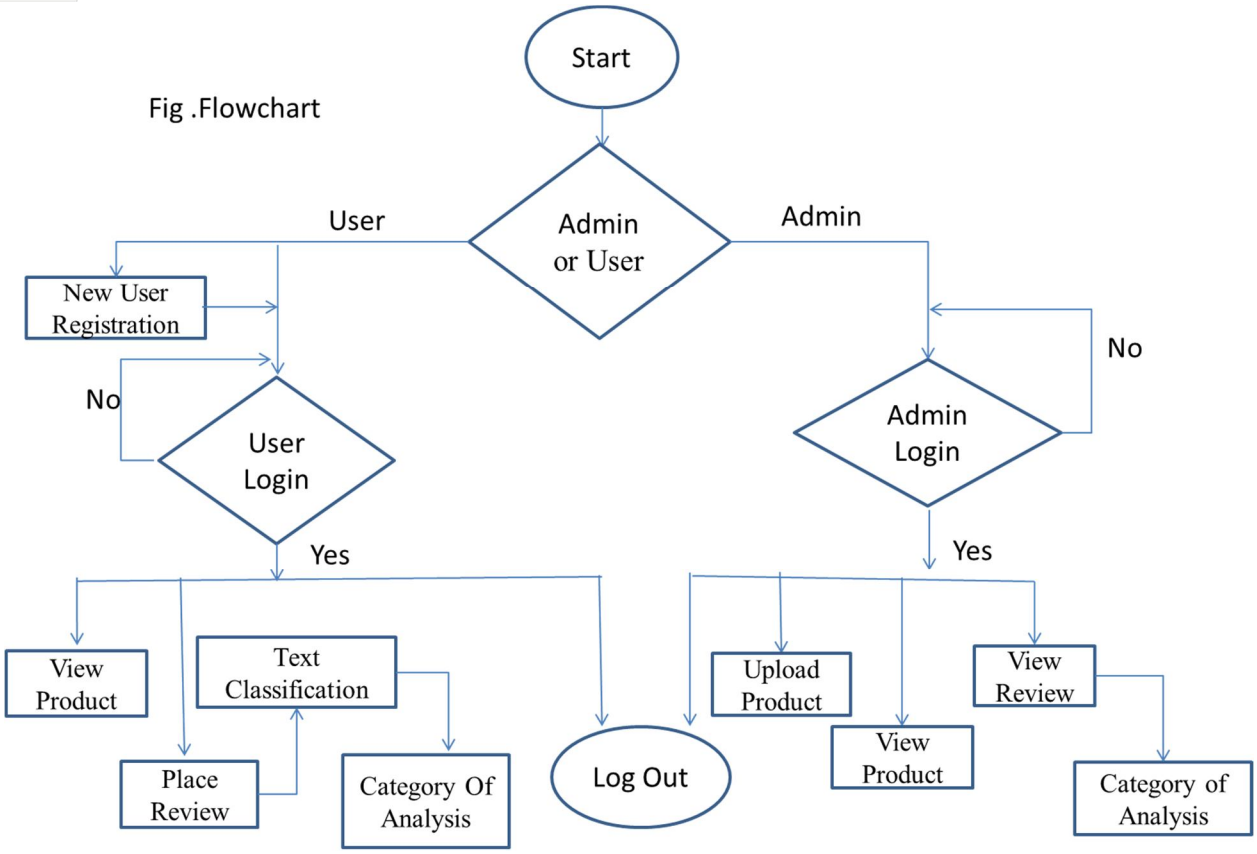


Fig .Flowchart

Fig 2: Proposed System Flowchart

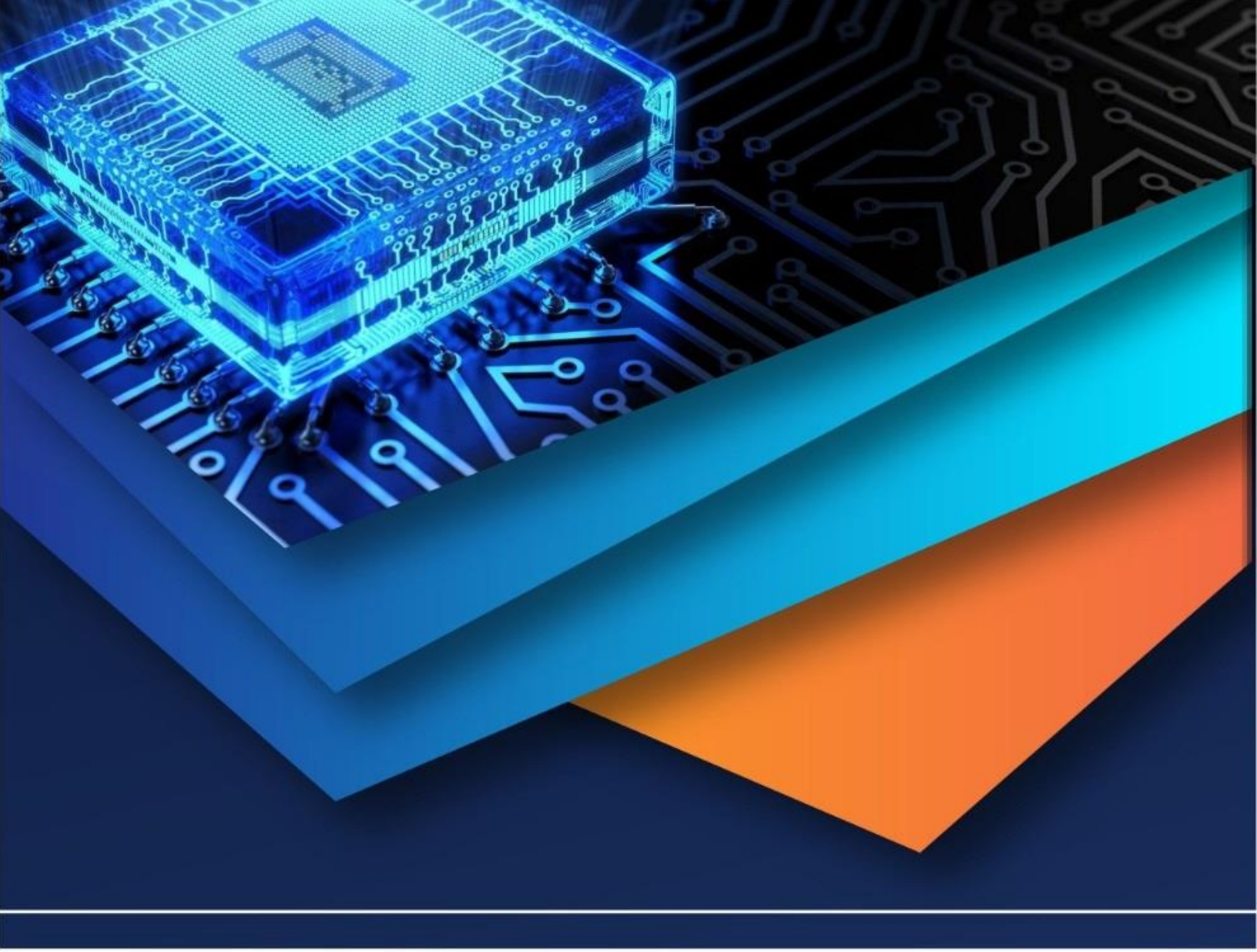
V. CONCLUSION

There is a huge need of such applications because every company wants to know how consumers feel about their products and services and those of their competitors. Sentiment analysis can be developed for new applications. The techniques and algorithms used for sentiment analysis have made good progress, but a lot of challenges in this field remain unsolved. More future research can be done for solving these challenges.

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