

AN EFFICIENT CLUSTERING TECHNIQUE FOR CLASSIFICATION OF TWITTER DATA FOR DATA ACCURACY USING SENTIMENTAL ANALYSIS

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ABSTRACT

The explosive growth of social media on the Web, individuals and organizations are increasingly using the content in these media for their decision making. Twitter is a highly popular social networking and micro-blogging service used by millions worldwide. Each status or tweet is a maximum of 140-160 character text messages. Registered users can read and post tweets, but unregistered users can only view them. Human beings express their feelings with the help of words, in the form of speech or comments on any social media. Analyzing customer reviews and Sentiment is most important, we Classify the customer's reviews into three classes: Neutral, Positive and Negative Sentiment. An efficient clustering technique is proposed by using Wards method to get accurate dendrograms. This method removes duplicate attributes and lead to best classification for data accuracy.

Keyword: Big Data, Sentiment Analysis, Twitter

I. INTRODUCTION

The increasing popularity of social media (such as online communities) has spawned huge amount of information in the society today. Analytics of social media data helps to maximize its utility, which plays a significant role in the exploration of data. Sentiment analysis plays a vital role in the analysis of the real time using natural language processing technique. This technique can be applied for analyzing real time data generated by various social Medias. Twitter is a highly popular social networking and micro-blogging service used by millions worldwide. Each status or tweet is a maximum of 140-160 character text messages.

Registered users can read and post tweets, but unregistered users can only view them. Human beings express their feelings with the help of words, in the form of speech or comments on any social media. To understand what people need or think about the particular object is very important in this society. Analyzing customer review is most important, by doing that we tend to rate the Product and provide opinions for it which is been a challenging problem today.

II. BACKGROUND WORK

In [1], Nasukawa and Yi. illustrate a sentiment analysis approach to extract sentiments associated with polarities of positive or negative for specific subjects from a document, instead of classifying the whole document into positive or negative. The essential issues in sentiment analysis are to identify how sentiments are expressed in texts and whether the expressions indicate positive (favorable) or negative (unfavorable) opinions toward the subject. Powerful functionality for these kinds of issues is used.

In [8], Ding et al. proposed an effective method for identifying semantic orientations of opinions expressed by reviewers on product features. It is able to deal with two major problems with the existing methods, (1) opinion words whose semantic orientations are context dependent, and (2) aggregating multiple opinion words in the same sentence. For (1), a holistic approach is proposed that can accurately infer the semantic orientation of an opinion word based on the review context. For (2), a new function to combine multiple opinion words in the same sentence is proposed.

Taylor et al. [9] presented a generic design of a tourism opinion mining system that aims to be useful in many industries. They also used their proposals to successfully implement the system and solve a specific problem in the Lake District tourism industry.

In Zhu et al [10] an aspect-based opinion polling system takes as input a set of textual reviews and some predefined aspects, and identifies the polarity of each aspect from each review to produce an opinion poll.

In [11] Haddi, Lui and Shi investigated the sentiment of online movie reviews. They used a combination of different pre-processing methods to reduce the noise in the text in addition to using chi-squared method to remove irrelevant features that do not affect its orientation. Authors have reported extensive experimental results, showing that, appropriate text pre-processing accuracy achieved on the two data sets is comparable to the sort of accuracy that can be achieved in topic categorization, a much easier problem.

In Moraes, Valiati & Neto [12] they have focused on comparing SVM and ANN in terms of the requirements to achieve better classification accuracies. In this, experiments evaluated both methods as a function of selected terms in a bag-of-words (unigrams) approach. Regarding the sentiment learning literature, the main findings/contributions are in the two points. First point is in terms of classification accuracy on the benchmark dataset of Movies reviews and second point as an overall comparison in the context of balanced data.

III. DIFFERENT LEVELS OF SENTIMENT ANALYSIS

3.1 Document level

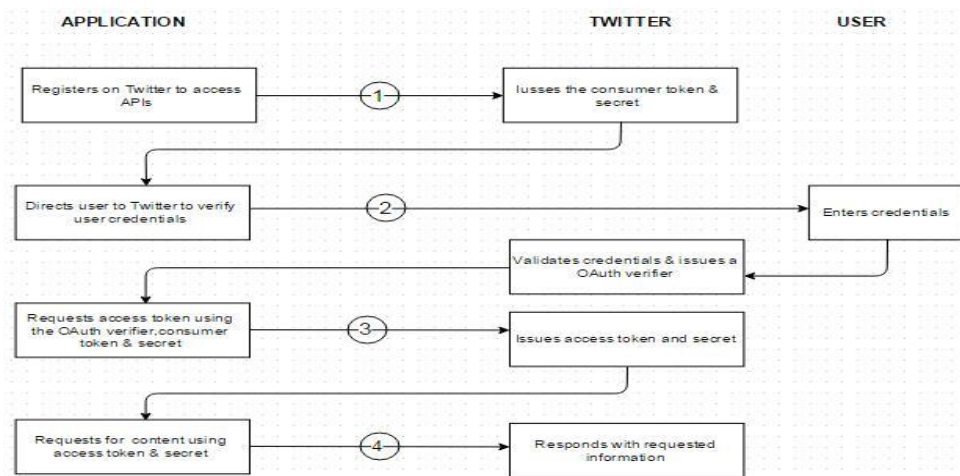
The task at this level is to classify whether a whole opinion document expresses a positive or negative sentiment. For example, given a product review, the system determines whether the review expresses an overall positive or negative opinion about the product. This task is commonly known as document-level sentiment classification.

3.2 Sentence level

The task at this level goes to the sentences and determines whether each sentence expressed a positive, negative, or neutral opinion. Neutral usually means no opinion. This level of analysis is closely related to subjectivity classification which distinguishes sentences (called objective sentences) that express factual information from sentences (called subjective sentences) that express subjective views and opinions.

3.3 Entity and Aspect level

Both the document level and the sentence level analyses do not discover what exactly people liked and did not like. Aspect level performs finer-grained analysis. Aspect level was earlier called feature level (feature-based opinion mining and summarization), aspect level directly looks at the opinion itself. It is based on the idea that an opinion consists of a sentiment (positive or negative) and a target (of opinion).



[1]The Architecture diagram of OAuth

Applications are also known as consumers and all applications are required to register themselves with Twitter. Through this process the application is issued a consumer key and secret which the application must use to authenticate itself to Twitter. The application uses the consumer key and secret to create a unique Twitter link to which a user is directed for authentication. The user authorizes the application by authenticating himself to Twitter. Twitter verifies the user’s identity and issues a OAuth verifier also called a PIN. The user provides this PIN to the application. The application uses the PIN to request an “Access Token” and “Access Secret” unique to the user. Using the “Access Token” and “Access Secret”, the application authenticates the user on Twitter and issues API calls on behalf of the user.

IV. DIVISIVE METHOD

In this method we assign all of the observations to a single cluster and then partition the cluster to two least similar clusters. Finally, we proceed recursively on each cluster until there is one cluster for each observation.

4.1 Dendograms

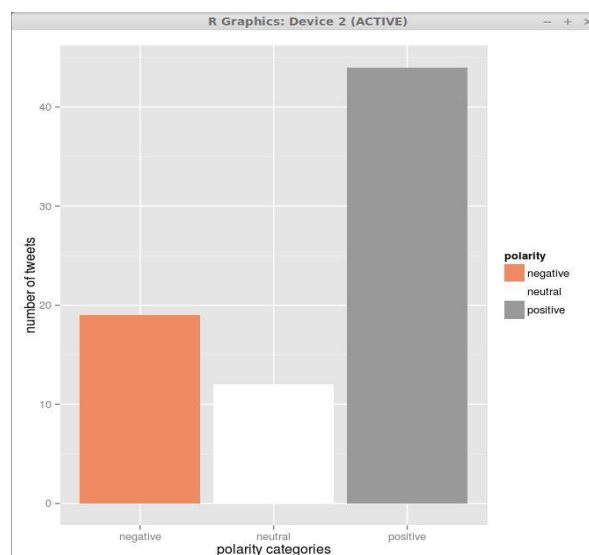
The dendograms are created to visualize the result of a hierarchical clustering calculation. To Count the frequency of the word and create from the tweets after cleaning the data. It also counts the word by plotting word frequency. Clustering algorithm is used for dendograms by using Ward’s method.

Data: sent_df	
	polarity
	positive
	neutral
	neutral
Freya Fatema Rehman\tIndia has won	positive
DBunkd\tWho cares what you want India has taken its decisionrejected you Its time you>	neutral
Karthik\tkarakaidy not in this case but for supporting Jayas action on Govens arrestT>	positive
K P Ganesh\tThis is the kind of tonguetied sputtering that Modibhacts have been reduc>	positive
Nile Rodgers\tBeef politicscommunalism will never win and therefore will never divid>	positive
spabbi\tCaste and Bihar are inseparable WritingOnTheWall ShekharGupta	positive
Rakesh Sasidharan\tKherCo can sing Raag Darbari as much as they like Bihar has sung t>	positive
Ratheesh Baskar\tIndias leader Modi fronted his partys campaign in a crucial state ei>	negative
Sanjoy K Roy\tIndia is essentially a secular and tolerant democracy The intolerant an>	negative
Bhava\tIf OROP had come year agowould have led to massive celebrations all over India>	neutral
Rizvi Sahab\tIndias rightwing is the gift that keeps giving httpstcojJGHPKJFEFN	positive
Bramha Kanai\tGuided by Mantra of Sabka Saath Sabka Vikas our Govt is ensuring that t>	positive
SeemonRaj S\tWhatever the resultThere is only one man who has ability to lead IndiaWh>	neutral
Jayasinha K\tBiharVerdict This is victory of tolerance over intolerance India is save>	neutral
CrowdfundingTT\tBeccaMei Pleasure to connect Would you share our campaign to build a >	positive
shohag mia\tBihar result places Lalu Yadav centrestage again httpstcojJFkcqZXB htptst>	positive
shohag mia\tBihar results live updates httpstcofDssHeE httpstcowIEwCSI	positive
oscarlswai\tKama ulikuwa mtumishi wa serekali na haukusafiri miakailiyopita basi pass>	positive
Vamsi Krishna\tFirst Delhi and now Bihar two pole fight BJP is bound to loose Sad to >	negative
murali\tIndia has won	positive
ReadJalal\tCanada ge defence ministerakah India ge sikhunge meeheh httpstcoQIESVMMHX >	positive
Sajeet Kesav Manghat\tNow scathing from TVMohandasPaisays PM has time to meet Zuckerb>	neutral

[2]Figure shows the data analysis page which contains the tweets classified into different polarity class.

V. RESULTS AND DISCUSSIONS

The twitter sentiment analysis gives the result based on the tweets, retweets for a particular keyword. The positive and negative words are matched with data collected after mining [12]. The process of sentiment analysis contains two text files named positive.txt and negative.txt. The positive file and contains the general positive words in English like accurate, better, calm, decent, glad, honest etc. The negative file contains the general negative words in English like abort, danger, pain, refuse, sad, waste etc. name, time, date, score, results. Later the tables are connected to analyse the data.



[3] Figure of statistics of tweets classified into three categories namely positive, negative and neutral in the form of bar chart

Data dictionary with two separate files containing positive and negative words. The sentiment analysis applies to the tweets. The positive file and contains the general positive words in English like accurate, better, calm, decent, glad, honest etc. The negative file contains the general negative words in English like abort, danger, pain, refuse, sad, waste etc [18]. Arrange them in alphabetical order. Count the number of positive and negative words find differences between them check whether it is >0 or <0 . If the result is positive, the people are talking, tweeting good things on that topic. If the result is negative, the people are talking, tweeting bad things on that topic

VI. CONCLUSION

Sentiment analysis system hence analyses the data collected from twitter on word basis and classifies into positive, negative and neutral. The number of positive and negative words in the data dictionary may increase, which are present in the files with the accurate meaning. This classification Analyzes customer review of a product and helps in decision making.

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