A REVIEW BASED ON SENTIMENT ANALYSIS TECHNIQUES

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ABSTRACT

Sentiment analysis, is known as opinion mining approaches, it is the way to analyze customer reviews on various platforms of social media sites or shopping sites, for example audit, blogs, twitter, facebook, amazon, flipcart etc, in order to predict the positive or negative sentiment arise by customer or blogger related to the particular person, article or any product. Opinion mining term is generally used by the customers to decide whether to purchase a particular product or not, also by market analyzer to forecast whether & by how much sale of a product must be increased or decreased as per the real time condition. These research can further be implemented to classify live tweets on social media sites on any topic. The basic idea is to create human decision making and the polarity of the text and classify it into positive, negative or neutral. This research paper discusses related issues of sentiment analysis techniques and challenges involved in it.

Keywords: Sentiment Analysis, Opinion Mining, Product Reviews.

I. INTRODUCTION

Process to find out extracting the experiences and emotions from the given dataset is called Sentiment Analysis [1]. Researcher Liu et al. (2009) defines a sentiment or opinion as a quintuple-“<oj, fjk, soijkl, hi, tl>”, where oj is a target object, fjk is a feature of the object oj, soijkl is the sentiment value of the opinion of the opinion holder hi on feature fjk of object oj at time tl, soijkl is +ve, -ve, or neutral, or a more granular rating, hi is an opinion holder, tl is the time when the opinion is expressed.”[2] The main aim of sentiment analysis is to predict the reaction of a writer or a speaker for a given situation. Sentiment analysis can also be applied to audio, videos and images. [3] Now a day internet has become the essential part of our daily routine life. Most of the customer or person use online blogging sites or social networking sites to express their opinions on particular situation. They also use these sites to know what other person’s opinions are. Thus opinion mining of this data and sentiment analysis has become an important part of research.

II. IMPORTANT NOTIONS

(A) Subjectivity/Objectivity- To evaluate the sentiment analysis first of all we need to identify the subjective and objective of the text. Only subjective text holds the portion of sentiments. Objective text contains only the factual information.

For example-

1.) Subjective: Sholay is a super hit movie.
(This sentence has a sentiment (super hit), thus it is subjective )

2.) Objective: Ramesh Sippy is the director of sholay movie. This sentence has no sentiment, it is a fact, thus it is objective)[4]

(B) Polarity- Further now subjective text can be classified into three major categories based on the sentiments expressed in the text.

1.) Positive: I love new MG Hector car.

2.) Negative: The price of the car is too high.

3.) Neutral: I usually get tired by evening. (In this sentence has user’s views, feelings hence it shows subjectivity but as it does not have any type of positive or negative polarity so it is neutral. This positive nature, negative nature and neutral nature of text is termed as polarity of text [4].

(C) Sentiment level- The sentiment analysis can be performed at different levels -

1) Document Level- In that particular case the whole document is given a single polarity positive, negative or objective [5].
2) Sentence Level – In that particular case the whole document is classified at sentence level. Each sentence is particularly analyzed separately and it is classified as negative, positive or objective. Thus the overall document has a number of sentences where each sentence has its own polarity.

3) Phrase Level- It involves much deeper analysis of text and deals with identification of the phrases or aspects in a sentence and analyzing the phrases and classify them as positive, negative or objective. It is also called aspect based analysis.[6]

![Figure 1: Workflow of sentiment analysis](image)

Workflow of sentiment analysis processes having following steps as such:

(A) The extraction of data/reviews: First of all collect the dataset of the entity to analyse is to be collected from the respected review site.

(B) The preprocessing: Preprocessing it involves the removal of unwanted part of text i.e stop word removal such as pronouns (she/he/it) and articles like (a, an, the) and the stemming which involves the reduction of a word to its base form for eg. Studying turns to study, eating turns to eat etc.[7]

(C) The text parsing: Text parsing involves the part of speech tagging in which every word is identifies by tagging the word as noun, pronoun, verb, adjective etc.

(D) Classification based on polarity: In this particular step sentiments which the text bears is determined and its classification is done on the basis of polarity.

(E) Result visualization processes: The achieved result can be displayed in the desired graphical format.

III. SENTIMENT ANALYSIS TECHNIQUES

(A) Machine learning based approach [8]: The Machine learning is mainly divided into two categories namely Supervised & Unsupervised learning approach.

Supervised Learning: In this type of technique the classes of the features of provided by entity are formed with the predefined labels and the classification is to be done on the basis of these particular labels. Some of the supervised learning techniques are done by naive bayes, support vector machine and maximum entropy method.

Unsupervised Learning: Unlike the supervised learning technique, in this particular techniques no predefined labels are created for the different classes. These techniques are more complex in nature and time consuming process as compared to the supervised learning techniques but are very much efficient among them. The neural networks is the type of unsupervised learning technique.

(B) Lexicon based approach [9]: Lexicon based approach is particularly focused on finding the polarity of opinion in on text. This will done after the text has been preprocessed and tokenisation has been done completely. After that each token is to be matched in the sentiment dictionary and appropriates score has to be assigned to the word which is used to classify the text as positive or negative.

Types of lexicon based approaches are:

Dictionary based approach: In dictionary based approach types of approach the similar kinds of words are to be found using a small previously defined words. The newly found words are added to the dictionary till no new word could be found.

Corpus based approach: In corpus based approach is practically not feasible because it is not easy to create the collection of each and every word of English to analyse the text. So this type of approach is not efficient as the one defined above.
Ontology based approach [10]: In the above mentioned approach, the sentiment analysis has been done on the entire text document which indicating document as positive or negative on the basis of polarity of words in it. So it doesn’t classify the text on the particular basis of the sentiment score of the feature words in the text. It is done using OWL & RDF languages. In this type of approach first the ontology is created , then the opinions are to be extracted, than the extracted opinions are tagged in the ontology, the sentiment score is assigned by creating dictionary indicating polarity of each phrase & sentiment score is calculated.

IV. CONCLUSION

Sentiment analysis apply to accumulation, automatic assortment and classification of the data into various opinions such as positive, negative or neutral. In this paper, we have discussed the core of sentiment analysis and related techniques which is address to sentiment analysis in social network data. The sentiment analysis can be classified depending upon the different factors like the techniques, text view and level of rating.

V. REFERENCES

[10] Katarzyna Wójcik, Janusz Tuchowski," Ontology Based Approach to Sentiment Analysis" June 2014, 6th International Scientific Conference Faculty of Management Cracow University of Economics, At Cracow University of Economics