Role of Affective Computing, Emotional Intelligence In Unimodal Sentiment Analysis Of Socialmedia Data

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Abstract: With microblogging being a primary tool of communication for internet users, the amount of data generated is enormous and the knowledge that can be gathered from this data is also vast. Henceforth sentiment analysis has gained a lot of interest among all categories of business for the qualitative knowledge that we gather as a result out of them. Sentiment analysis is a difficult task of natural language processing, to identify the subjective content which is having the feeling or sentiment with associated with it. With subjectivity adding on the emotional intelligence is also important as people use social media for advertising, marketing etc. Emotional Intelligence of a person is also a factor to be explored to study sentiment analysis effectively. Below in the paper we shall discuss the general problems that arise with the psycho-linguistic computation and define a generic framework to handle this scenario. Hence this paper concentrates on defining the psycho-linguistic problem and to briefly identify the area where the problem has to be dealt with.

I. INTRODUCTION:

“Opinion mining (sometimes known as sentiment analysis or emotion AI) refers to the use of natural language processing, text analysis, computational linguistics, and biometrics to systematically identify, extract, quantify, and study affective states and subjective information. Sentiment analysis is widely applied to voice of the customer materials such as reviews and survey responses, online and social media, and healthcare materials for applications that range from marketing to customer service to clinical medicine.”

Things that have to be observed in the above definition is that it is, computation task to identify the affective states and subjective information. Majorly Sentiment analysis is referred to the opinion mining because of the direct impact of the knowledge that it generates and the value of the knowledge.

Opinion mining is a computational task of classifying a piece of text or a sentence or a document into the positive, negative polarity and determining the strength of the polarity. We use various techniques lexicon based and statistical based sentiment analysis

So, the process is limited as computational linguistics which will definitely miss out the flavor of emotions. Talking on the emotions, they are the primary process which influences the process of the learning, communication, expression which also correlates to the process of decision making. Can such a big process be studied under a confined set of bags of words or the classes of sequence of reputative words. Hence psycho-linguistics give us the right path towards textual sentiment analysis

We consider Psycho-linguistic data for analysis which involves the systematic study of the mental aspects of the language expression and speech whose primary concern is to find the ways in which the language and speech are processed in human and we will try to model the same using the concepts of affective computing. Affective computing studies and models the systems that can automatically recognize, reason, process and interpret the affect states

For affective computing usually, they consider multi model data consists of various categories of the data like audio, video, image recognition of the expressions, but the data becomes so vast for the analysis, on the other hand we have Unimodal data, which is considered as per the definition since we encounter various scenarios for the improvement of the textual sentiment analysis. Further on we confine our data to only social media data since we find that user by his own knowledge shares his information freely on the social media, also the reach of the data is such that we can have a most recent dataset with reference to the context

II. CHALLENGES WITH CURRENT IMPLEMENTATION

While we go on studying the sentiment analysis, we encounter various technical issues relating to both computational and psychological challenges, we discuss

2.1 Challenge One:

Current emotional state of the user vs emotional Intelligence:
Emotions states can affect human communication, and it is the driving factor for the decision making. These days, we find social media outburst, any things that are most happening is usually updated on the social media, when there are any issues spanning across any theme, it floods the social media with data. The posts of the users are driven by their emotions state. Usually we analyze the data which is currently posted, posting pattern of the user is not read at all. Any analysis made on the previous pattern of postings and we subject the user to the Emotional Intelligence (EI) tests would give us the depth understanding of the EI, which would give the clear understanding for the sentiments of the data.

This can be illustrated by an example of below handling tweets of Elon Musk (TESLA CEO)

“Wanted again to send a note of deep gratitude to Tesla owners WW for taking a chance on a new company that all experts said would fail. So much blood, sweat & tears from the Tesla team went into creating cars that you’d truly love. I hope you do. How can we improve further?”

This is an excellent study for the EI of any person and its here in his tweet he expresses success of owner in spite of expert opinion of failure and he stands for the people at the same time. Here sentiment analysis applied at whole tweet doesn’t make it much efficient is a known fact, also the EI of the person in expressing the issue before the society will also matter much, this is an unexplored area where we consider the EI to be valuated before determining the polarity or the sentiment of any piece of text.

2.2 Challenge Two:

2.2.1 Multiple Targets:

To do a efficient sentiment analysis, defining the object which holds the sentiment is important, but the users data is not that straightforward all the time, with this regards I would like to bring the attention towards the below post:

“Restaurant’s work culture is great, but will feel annoyed at times to introduce the new dishes to the customer often and to make a dish success is equally hard.”

On the whole for the computational analysis, we may end up some where near negative, but if “Restaurant is the target then the polarity is always positive. We also need to find the targets in such a way that, the overall subjectivity of the post is not diluted.

2.3 Challenge three:

The Problem of Vocabulary (Choice of words):

Emotional Intelligence work even in the choice of words the user pick while expressing themselves on social media, one of the post on the Facebook read the following:

“While the penultimate stage of my dinner had come, I witnessed a rather disturbing scene from the Assembly sessions. A person from a X political party unfastened his belt out of anger to beat another person from a Y political party.”

2.4 Same issue was also reported like:

“There was high drama at the assembly house “while the other reported telling “There was a fight in the assembly house”

Are EI directly correlated to the usage of words is a problem which has to be analyzed, as the same situation is reported three different people with three different ranges of polarity.

III. IMPLEMENTATION:

All previous works on sentiment analysis either semi-automated or fully automated sentiment analysis accepts that the fact that it has to be a two-class classifier (positive or negative), other than this we may attribute to consider the neutral category. Perhaps most of the commercially viable applications do consider it to be two class classifiers. Various classification algorithm are used to yield the better result.

In Naive bayes algorithm is based on the probabilistic classifier based on the bayes theorem, this contains pre-trained data sets of words through which the conditional probabilities are calculated.

There are other classifiers used like Maximum entropy, Support vector machine. These classification algorithms determine whether the given piece of text belongs to.

Before applying the classifier algorithm, we have to prepare the data for the classification as these online data are prone to lot of noise. As an example: people use short forms of messaging like txt(text), u (you) etc. also, syntactically, semantically the piece of text are corrected.

Below flow charts shows us the various steps involved in sentiment analysis of data:
But the below proposed algorithm will involve to find overall flavor of the sentiment analysis by involving the psycho-linguistic factors, to yield an emotionally un-biased classes of sentiment.

This step involves in computing and scoring emotional mining for the data to find Emotion Intelligence and individual’s usage words.

Above model explains computational as well as psycho-linguistic features to compute efficient sentiment analysis.
IV. CONCLUSION

It is a beginning for the new dimension of the sentiment analysis, which adds the flavor of real sentiment to the computational linguistics. Each of the above problem would post a new challenge which will definitely strengthen the computational efficiency of the textual social media data, with the inclusion of the psycho-linguistic way of addressing the sentiment analysis problem.

Emotional intelligence way of addressing problem will bring the stability in to sentiment analysis since we will have prior knowledge of word usage pattern and his Emotional quotient, thereby authenticating the sentiment in the sentence.

V. REFERENCES: