Title- Emotional Influence in Social Networks

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“Emotions drive behavior and behavior expresses sentiments”

Sentiment analysis is the calculative treatment of opinions, through which sentiment on the subjective text can be determined. It is a study in which emotions and attitude of people towards an entity is computed. The target of Sentiment Analysis is to find opinions, identify the sentiments they express, and then classify their polarity. Our research makes an effort to capture people’s emotions and polarity of their views towards a domain, by analyzing their answers to various questions related to that domain. Emotion detection aims to extract and analyze emotions, while the emotions could be explicit or implicit in the sentences. Let’s take an example of questions related to education, everyone has their own views towards the topic of discussion. The users can give different opinion on different aspects of the topic under discussion like, “Studying abroad in a reputed university can enhance one’s knowledge but it depends on individual capacity” here the first part of the sentence indicates positive reaction whereas the second part has neutral deduction, and this sentence can be categorized to belong to “Trust” emotion, as there is a positivity, admiration and weaker acceptance(according to Robert Plutchik's theory of emotion classification) . We would analyze their reaction towards the question being asked with the help of Natural language processing algorithms and capture their emotions like anger, joy, disgust, sadness, fear, trust and anticipation; and range of polarity in terms of positive or negative reactions. On generalization, we can predict the behavior of people based on their reactions.

The main problem that is being addressed will be “Behavioral Analysis”. When addressing this problem if we perform sentimental analysis with the right datasets in social networks. the following the major benefits of this analysis-

A. Determine marketing strategy
B. Improve campaign success
C. Improve product messaging
D. Improve customer service
E. Test business KPIs
F. Generate leads

The data for analysis will be obtained from the discussion forums such as stackexchange, Quora, Askville by amazon.com, Yahoo answers etc. For the convenience of categorization, we would like to concentrate more on quora.com, as the data is readily available in the form of categories like education, sports, fiction etc.

They are many algorithms that have been proposed over the years.To decide on the metrics and to maintain the accuracy of the analysis we will be using the below mentioned algorithms:

1. Clustering based NLP algorithms – To decide the accuracy of datasets and to decide on the emotion rating.
2. Support Vector machine algorithms – To classify the datasets on their emotional co-efficient on the entity under study and for regression analysis.
3. Lexicon based algorithms - To detect certain words in the user comments and reviews to analyze the emotional content and thus polarity towards the entity under study.

We have decided to modify the dictionary or the words that justify the score in these algorithms to suit our analysis. So, this way we will measure the results of our proposed/ modified algorithm to the existing algorithms to yield better results. The procedure involves extraction of the valuable information on the entity (set of questions about the domain under discussion) to form the dataset and choosing appropriate algorithms and modify them to suit our expectation. The modified algorithms will then be applied on the prepared datasets to yield desired results. These results that are the outcome of our algorithm are measured with the existing results. Then we wish to analyze future possible datasets and predict the outcomes of these data.

Our analysis can help solve a lot of existing problems in various fields/domains. Some of the major applications where our proposed algorithm could be used is given below-

I. Prediction of the reaction of group of people in given situations.
II. Understanding the perception of the topics and questions being answered related to those topics, based on emotional quotient of people.
III. Deriving the polarity (Negative / Positive) of the entity based the queries/answers of the people under study. In other words, deriving the truth metric of the topic under discussion.
IV. Clustering people under different emotional categories based on their reactions towards an entity that is being discussed.
V. Analyzing how metrics that are being studied balance each other for the entity under discussion.
VI. The method can be extended to analyze reviews on products, stocks etc helping the business holders to take important business decisions.

By the end of our project, we wish to come up with an algorithm that will be able to categorize people in social media based on various emotional metrics and the emotions they hold into different emotional groups. With this we will be able to predict how future performance of these people will be in the social network and how they will react in certain situations.