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Detecting Users Stress Based on Social Interactions in Social Networks

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ABSTRACT

Stress is your body's way of reaction to any kind of requisition or damage when it psychological stress it causes damage to people full body. It is necessary to detect stress on time for obstructive care. There are many Social Media are available where people are very much interested to share their routine activities. These activities grasp the online information, and that will be used for stress diagnosis. The states of stress related to friend on social media, we will study stress states and interactions by using large scale data set by correlating it. We proposed a model to from various points of views textual, visual and social to form a graph model for finding information to stress detection. By examining the people social interactions, find the stressed user, and the stressed user is less active on social media.

Keywords : Emotion Reorganization, Stress detection, social media, sentiment analysis, neural network.

I. INTRODUCTION

Large amounts of stress may cause tension, pressure and pain. According to the surveys the half amount of peoples experienced stressed and rise in the stress last few years. Stress can produce heart attacks and mental disease such as depression. Stress can be outed and related to the domain, but may also be caused by internal perceptions that cause health issues. Many times it may affect the person's life, and it may result in death. Now a day that is the challenge of stress. The sight of a stress is required and a few ways in which to detect with the stress by in face to face interview and wearable sensors. These ways in which are required labour efforts and time overwhelming. Currently, a day's far more than social media in people's life rises within the researches and well-being. On the social interaction peoples are sharing their routine activities, and experiences with their friends. The interaction reveals their emotions regarding something. This information will analyse, modelled and detects the activity patterns of emotions through data processing. There is some knowledge given to sight a stress type social media tweets. That influence online networking for tending, and particularly stress discovery, is conceivable. They need developed several methods to live psychological stress, together with a mental survey based meetings and physiological sign based measures. In any case, these systems have their restrictions in a few

perspectives. Mental surveys commonly contain a spread of questions structured by clinicians. People are regularly reluctant to attempt to these polls except if they have to. Physiological techniques normally need gifted gadgets to live clients' physiological and natural science properties and need authorities to break down the non-heritable learning. Along these lines, it's significant and valuable to look out the best approach to locating client's pressure state dependably, and non-invasive.

II. OVERVIEW/BACKGROUND

Computer helped identification, examination, and use of inclination, especially in informal organizations; a few endeavors are devoted to creating advantageous devices for individual pressure location late years. With the expedient spread of interpersonal organizations, inquires about on utilizing web-based life data for physical, mental, and state care are likewise continuously developing influence tweeter postings to recognize the unfurl of respiratory sickness side effects. Feeling investigation is at the tweeter level; abuse content based etymological alternatives and order approaches. Apply the evil Topic side Model to over 1.5 million well-being associated tweets and discover relationships between's social hazard factors and aliments individual post tweets containing content and pictures on smaller scale blog stages to impart insights, explicit feelings, record day by day schedules and speak with companions and negative feelings may unfurl extra rapidly and freely inside the system, and to a great extent thought of pressure. Existing pressured identification methodologies normally have a confidence in mental scales or physiological gadgets, making recognition modern and costly.

To improve processing task of system we implement a neural network. In classifier has n number of inputs available, these all inputs calculate multiple neutron option to find out a perfect match solution. In neural has multi-processing classifier which performs multiple tasks at a time.

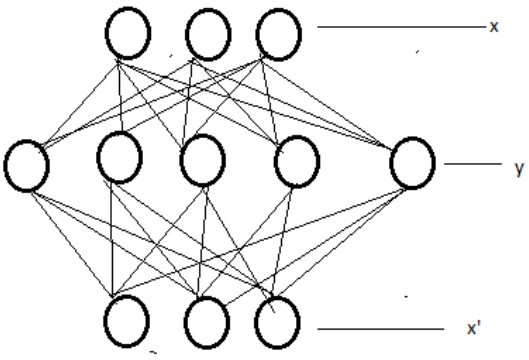

Fig 1. Neural Network

III. PROPOSED SYSTEM

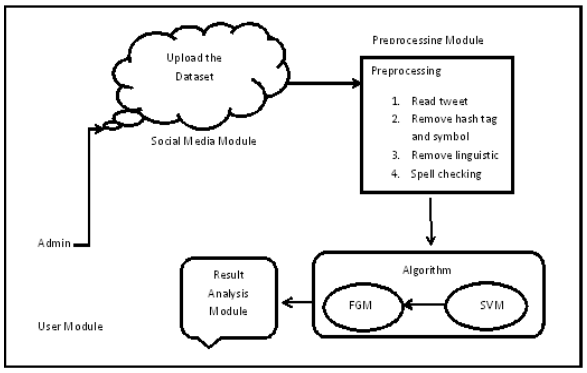

Fig 2. System Architecture

Stress analysis system depends upon the textual data. We collect the twitter train and test datasets for analysis. User can upload the textual basis social network tweet datasets.

1. Pre Processing:

Preprocessing is changing the raw data into standard data. The test raw data have available unwanted content in a different phase. Stress analysis, concept is actually working with text data mean its words spelling is always correct format. Following are some steps of preprocessing.

A) Read Tweet:

First system can read all tweet line by line in the system. The tweet is getting unwanted data, meaningless words, including symbol.

b) **Remove Hash tag and symbol:**

In tweet has gotten different types of hash tag available. These are categorized tweet but not getting the stress related information. As well as special symbol is removed from tweets

c) **Remove Linguistic:**

Linguistic is a way of expressing our emotions in words. If users are very cool, then in the tweet, they write "coooool". Here "coooool" has no meaning in the dictionary, but human express our emotions. So must challenge converting linguistic word to normal meaning full word

d) **Spelling checker**:

Tweeter site has only 140 characters available for express user emotion. So some time means always user use lots of shortcuts in writing a tweet. These all shortcut are not available in a Standard English dictionary. So, we must generate own dictionary to implement spelling checker.

2. Support vector machine:

Support Vector Machine (SVM) is one of the kind of supervised machine learning algorithms. It can be applying for both classification and regression difficulties. It for the most part works with order issues. In this calculation, we plot every datum thing as a point in n-dimensional space with the estimation of each component being the estimation of a specific facilitate.

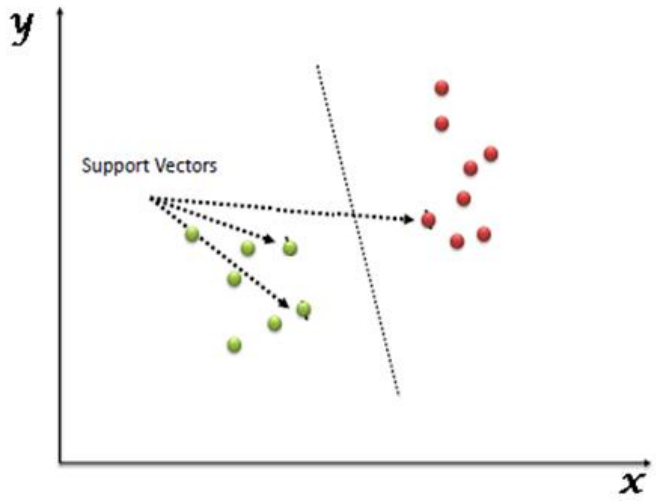

Fig 3. SVM

Algorithm Steps:

1. Start
2. Load the dataset Train and Test
3. Get the features of datasets
4. For i=0 to test.length
5. Sort out the line as attribute wise
6. $ax = \sum_{i}^{n} \text{attribute(line)}$
7. $cax = \text{compare}(ax, \text{train}[i])$
8. Generate matrix to store data.
9. Stop

Naive Bayes

1. Read all files for line in files
2. Apply preprocessing steps

   line = removeSymbol(line)
   line = removeNonAlphabet(line)
   line = removeSpaces(line)
   line = removeStopWords(line)
   End
3. Apply Frequency Table

   table = frequencyTable(line)
4. Convert into likelihood Table

   likelihood = getlikelihood(table)
5. According to likelihood table calculate probability

   classCount = sumOfClass(likelihood)
6. Calculate class probability

$$p(\text{class}) = \frac{\text{class}}{\text{classCount}}$$

7. Calculate Word Probability

$$p(\text{class} \mid \text{word}) = p(\text{word} \mid \text{class}) * \frac{p(\text{class})}{p(\text{word})}$$

8. P (class | word) is max probability

Logistic Regression

1. Read the input CSV File
2. Generate a binary classification rating file
3. Compare all data to Train datasets
4. Calculate binomial, multinomial, ordinal
5. Binomial has only two possibility 0 or 1 means Positive or negative
6. Multinomial has more than 2 possibility Positive, Negative and neutral
7. As per true, false result we calculate the predication.

Naive Bayes multinomial

1. Calculate train and test datasets values
   table=TrainNTest(line)
2. Calculate a Similar words Line
   Similar=checkSimilar(table)
3. According to similar calculate probability
   classCount=similarOfClass(similar)
4. Calculate class probability
   p(class)=class/class count
5. Calculate word probability
   P(class┤ |word)=p(word┤ | class)*p(class)/(p(word))

IV. RESULT AND DISCUSSION

According to preprocessing steps we finalize the pure sorted sentence where remove and replace unwanted data. We used standard Twitter data sets which includes positive, and negative sentences are available. In the first case, the test data set get to preprocessing factor, where remove apostrophe words, sang words as well as common word which known as stops words. To find out stress or relax level we have dictionary words. In dictionary total 2500 words are available which included -5 to 5 ratings data. All sentences are carrying forward result.

Algorithm	Positive	Negative	Accuracy
SVM	277.0	82.0	81%
Naive Bayes	267.0	92.0	79%
NaveBayes Multinomial	247.0	112.0	76%
Logistic Regression	257.0	102.0	77%

Table 1 : Comparison of time bases as Performance parameter

The classification and clustering of data we use different algorithms. Support vector machine is clustering algorithm to sort out the data. Naive Bayes is similar work in the clustering system. Here to get all test data sets which include 498 tweets of users. Naive Bayes Multinomial and Logistic regressions are recommendation algorithm. Both are performed to the prediction based concept.

In the above table, we performed the analysis of data sets and find out the positive and negative result. Positive result indicates to relaxation of the system and negative result indicating stress level system. By using sentiment analysis data sets on Twitter bases we develop a sample data set using JAVA. In JAVA, we add a naive Bayes classifier to find the nearest. We have available Positive Tweets and Negative Tweets are test data sets. We can compare both data set to positive words and negative word train data sets using Naive Bayes. By using prediction we calculate Negative and positive sentence format calculation. In every sentence we calculate how many words positive and how many negative words available.

	actual	
predicted	positive	negative
positive	3982	2184
negative	1603	3175

Fig 5. Sentiment analysis

According to fig. 2 we can calculate positive- positive, positive-negative, negative- positive and negative-negative ratio. To upload large data sets of system we can get the above combination result. To increase more accuracy result, we apply the different preprocessing result.

In future cases we work on word Disambiguation Sense (WSD) concept. In English, the dictionary has 60% words have multiple meaning. The Same words are used in two different conditions. For e.g. “Fine” Keyword. It indicates to punishment of anything and another meaning is a filling of the human body. To find out more accuracy result, we apply WSD techniques to sort out the data.

V. CONCLUSION

In this project studied the various techniques and methodologies for finding the stress from social media text shared by user and community-based conversations to get the mind condition and to find relationship between the persons. Classification algorithms are used to find which sentence is positive or negative. And also compare the classification algorithms to find the best accuracy algorithm. From that in future work we find out stress level of the particular user.

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