Detecting Stress Based On Social Interactions On Social Networks

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Abstract-With the increase in the pace of life, it can be safely said the stress level amongst people is rapidly increasing. Timely help, if not provided to the stress problems of any individual, can cause dire results. In the last few decades, social media has turned out to be the most powerful means of communication. With the growing use of social media, the amount of emotions which an average person shares online has also risen swiftly. So, it would be right to assume that the person's stress level can be very well be deduced from his social media account. The way to do this would be through Sentiment Analysis. By analyzing a person's social media feed, i.e., going through the posts (and emoticons attached in the post) which a person shares, this can identify the state of mind of the person while updating those posts.

Keywords-Stress, Emotions, Social Media, Sentiment Analysis.

I. INTRODUCTION

Nowadays, mental stress is one of the main causes of danger to people's health. Humans are suffering from this stress due to today's stressful life. According to a worldwide survey reported by New business in 2010, over half of the population have experienced an appreciable rise in stress over the last two years. Although such stress is common to us in daily life, over-stressing can be a serious cause for people's health.

Many factors have shown that increasing stress is a major challenge for our health and for life in generation .For this reason it is extremely important to find a person suffering from stress, Earlier, with the help of a psychologist, it was used to find out if a person is under stress by asking specific questions face to face and now it is often used in the same way For traditional methods, it may actually cost somebody, But there are creative ways to detect this stress, but it is often not used. The rise of social media is

II. AIMS AND OBJECTIVE

a) Aim

The aim of this system is to make sure that the vast majority of people who use this medium collectively estimate how many of them are under stress, so that it can follow the root cause of which people are under stress at the same time. Helps to reduce user's stress per year by tracking the social site like twitter or others. Those user's who post on twitter about investigation by incorporating follow-up social interactions like comments and

Looking to change human lives. Social media is also responsible for some bad things. There are many social networks like Twitter that are developing fast, Is done. Because of this, most people are expressing their views through these media. Through this, they communicate with their friends from inside. Social media is one of the quintessential human traits and traits. By doing this, it can certainly help at the right time to understand the connection of most people's emotions to their life. The information contained in this medium, the psychology of the common man, can bring about a revolution in the field of psychological research. With the detection of social media, people are used to giving their daily movements and collaborate with friends on social media platforms, making it attainable to leverage online social network data for stress detection. Psychological stress is monishing people's health. It is non-trivial to detect stress timely for aggressive care [4].

retweeting activities in user's stress detection , it is to identify the suspect.

b) Objective

The basic purpose of the system is to identify the attributes set by using the tweet-level and User-level aspects of the detection of stress respectively:

1) tweet-level attributes obtain from fulfilled part of user's single tweet, and

2) user-level attributes obtain from user's weekly tweets.The user-level attributes however are collected

of:(a) posting behavior attributes as encapsulated from a user's weekly tweet postings; and (b) social interaction attributes excerpted from a user's social[5].

III. LITERATURE SURVEY

Paper 1: Sentiment analysis in twitter using machine learning techniques-M. S. Neethu,R. Rajshri:

Sentiment analysis deals with obtaining and distributing opinions or sentiments published in source text. Social media is creating a huge amount of attitude rich data in the way of tweets, status updates, blog posts etc. Sentiment analysis of this user achieved data is useful in knowing the opinion of the mass. Twitter sentiment analysis is complex compared to general sentiment due to the presence of argot words and misspelling [1]. **Paper 2: Detecting Emotions in Social Media: A Constrained Optimization Approach-Yichen Wang, Aditya Pal:**

Emotion detection can many intensify our understanding of users' affecting states. Understanding users' emotions especially in a real-time setting can be thesaurus in improving user interactions and understanding their relations. In this paper, It propose a constraint development framework to discover emotions from social media content of the users[2].

Paper 3: Twitter sentiment analysis-Aliza Sarlan, Chayanit Nadam, Shuib Basri:

Social media have accepted more attention nowadays. Public and private belief about a wide difference of subjects are articulated and spread continually via abudant

social media. Twitter offers arrangement fast and effective way to analyze customers' perspectives toward the critical to success in the marketplace[3].

IV. EXISTINGSYSTEM

•   In the existing system, the research on user-level emotion detection in social networks has been studied. While tweet-level emotion disovery reflects the instant emotion signified in a single tweet, people's emotion or psychological stress declares are usually more lasting, changeful over different time periods.

•   Though some user level emotion detection studies have been done, the role that social relationships plays in one's psychological stress states, and how it can incorporate such information into stress detection have not been examined yet[7].
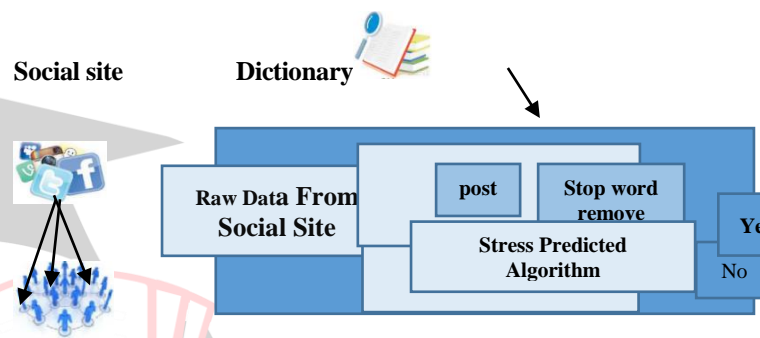

Fig: 4.1 Architecture of the Existing System

V. COMPARTIVE STUDY

Table.5.1: comparative study of Existing System

SR NO.	PAPER TITLE	AUTHOR NAME	METHOD	ADVANTAGE	DISADVANTAGE
1.	Detecting Stress Based on Social Interactions in Social Networks	Huijie Lin, Jia Jia*, Jiezhong Qiu / IEEE(2010, May)	Support Vector Machine, Random Forest, Deep Neural Network	Discover valuable information, better algorithm scalability and accuracy.	
2.	Sentiment analysis in twitter using machine learning techniques	M. S. Neethu,R. Rajshri/ IEEE(2013)	Symbolic Techniques, Machine Learning Techniques	Minimizing overall prediction error.	Insufficiency of information, co-occurrence of item selection of different user.
3.	Detecting Emotions in Social Media: A Constrained Optimization Approach	Yichen Wang ,Aditya InternationaJoint Conference on Artificial Intelligence. 2015.	Sentiment Analysis Emotion Detection	This method is effective and efficient on Detecting psychological stress from micro blog data.	There is only Low level Semantics in detecting Stress.
4	Twitter sentiment Analysis	Aliza Sarlan, Chayanit Nadam,Shuib Basri/ IEEE(2014)	Naive Bayes, Maximum	It is used to generate Entropy	It can analyze only Single behavior tweets.

VI. PROBLEM STATEMENT

Moreover user's tweeting contents, the system evaluate the correlation of users' stress states and their social interactions on the networks, and address the complications from the standpoints of:

(1) social interaction content, by fact-finding the content distinctness between accentuated and non-stressed users' social interactions; and (2) social interaction structure, by fact-finding the structure distinctness in terms of structural variety, social authority, and strong/weak tie[6].

VII. PROPOSED SYSTEM

•   In the proposed system, the system finds that users stress state is closely linked to that of his/her friends in social media, and The engage a large-scale dataset from real-world social platforms to orderly study the equating of users' stress states and social interplay.

• The system first specifies a set of stress-related textual, visual, and social attributes from various aspects, and then proposes a novel hybrid model - a factor graph model combined with Spiral Neural Network to influence tweet content and social interplay facts for stress detection.

• Experimental results show that the projected model can improve the discover accomplishment by 6-9% in F1-score. By additional examining the social interaction data.

• It also discover several interesting phenomena, i.e. the number of social structures of inadequate connections of stressed users is circumference 14% higher than that of non-accentuate users, By further analyzing the social interaction data indicating that the social structure of stressed users' friends tend to be less related and less difficult than that of non-accentuate users.

VIII. ALGORITHM

Algorithm 1: SVM Algorithm.
Step-1:Data Preprocessing.

1. Import Dataset or add used already stored dataset values.

2. Extract Independent and dependent variable from dataset.

3.Split dataset into training and testing set.

Step-2:Create support vector classifier.

#classifier = SVC(kernel='linear', random_state=0) It is used **kernel='linear'**, as here creating SVM for linearly separable data

Step-3:Predicting the test result.

Model is first fitted to the training set,   for predicting the test result from the available dataset.

#y_prediction= classifier.predict(test_data)

Above prediction vector and test set real vector can be used to determine the incorrect predictions done by the classifier.

Step-4: Repeat Step 1 & 2.
Step-5:Segregate the data elements into minimum identified sub classes with best matching.

Algorithm 2: Training Algorithm.
Prerequisite: Values of M, N
M: Set of Documents (Training dataset)
N: class of the document positive ,negative
Step-1: V= Extract of features Vector (A)
Step-2: D = Total Number of training documents
Step-3: C= Distinguished class
Step-4: for c in C do
Step-5: Dc= Number of documents with class c
Step-6: prior[c] = Dc/ D
Step-7: for w in V do
Step-8:likelihood[w][c]=(count(w,c)+k)/(
       (k+1)*Dumber of words in class c)
Step-9: return prior, likelihood

Algorithm 3: Testing Algorithm.
Require: Testing dataset t
Step-1: V = Extract Feature Vector(t)
Step-2: for k in K do //k-Value of   likelihood
Step-3: score[k] = prior[k]
Step-4: for w in V do
Step-5: score[k]= score[k] * likelihood[w][c]
Step-6: end for
Step-7: return argmax(score[c])

IX. MATHEMATICAL MODEL

1.Linear Kernel Calculation:-It can be used as a dot product between any two observations. The formula of linear kernel is as under

$$-K(x,xi)=sum(x*xi)$$

It implies that the product between two vectors says x & xi is the sum of the multiplication of each pair of input values. The dot product is the parallel measure used for linear SVM or a linear kernel because the distance is a linear sequence of the inputs.

2.Radial Basis Function (RBF)/ Guassian Kernel:-RBF kernel, mostly used in SVM classification, maps input space in indefinite dimensional space. Following formula explains it mathematically

$$-K(x,xi)=exp(-gamma*sum(x-xi^2))$$

Here, gamma ranges from 0 to 1. It need to manually define it in the learning algorithm. A good default value of gamma is 0.1.

3.K-Nearest Neighbor:-The k-nearest neighbor algorithm is used to test the degree of law of similarity between documents and k training data.

$$R^{x\leq} \leq R_{kNN} \leq R^x \left(2 - \frac{MR^X}{M-1} \right)$$

Euclidean distance calculation:

Euclidean:

$$d(x,y) = \sqrt{\sum_{i=1}^{m}(x_i - y_i)^2}$$

Mahattan/city-block:

$$d(x,y) = \sum_{i=1}^{m}|x_i - y_i|$$

4.Naive Bayes Algorithm:-Naive Bayes classifier is a easy probabilistic classifier based on applying Bayes Theorem with independence assumptions..Bayes theorem provides a way of calculating posterior probability P(c|x) from P(c), P(x) and P(x|c). Look at the equation below:

$$P(C|X) = \frac{P(x|c)\,P(c)}{P(x)}$$

$$P(c|X) = P(x_1|c) \times P(x_2|c) \times ... \quad \times P(x_n|c) \times P(c)$$

Above,$P(x)$ is the prior probability of predictor.
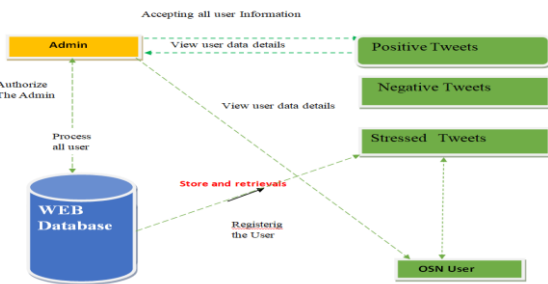
X. SYSTEM ARCHITECTURE

Fig.1: System Architecture

This is the architectural diagram of stress detection .There are two users OSN user and Admin user. Admin can view all the End users request and responses.OSN user can Register and login into the system .OSN user can search for the friends tweets and request friends, Create tweet by tweet name ,Tweet description ,Tweet image and date,View all your created Tweets and find positive, negative, Stressed emotions on your Tweets.
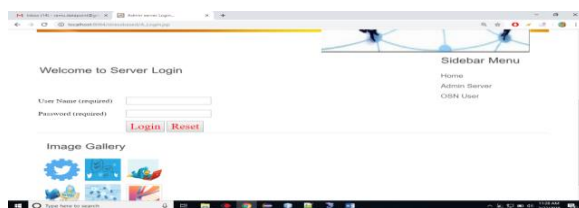
XII. DESIGN DETAILS

Login page
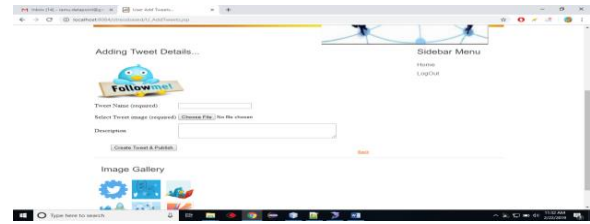

Fig:7.1.1-Login Page

User Sending Tweets

Fig:7.1.2-Tweets Details Page

It can handle this basic stages with login page. For that Must have an account. Both the pages presented show the login and the subsequent sending and receiving process.

XIII. CONCLUSION

Thus, We have tried to implement the paper "Huijie Lin, Jia Jia*, Jiezhong Qiu /

IEEE(2010, May), Fellow", "*Detecting Stress Based on Social Interactions in Social Networks*" and according to the implementation the conclusion is as follows in today's world, where mainly the youth and almost all of the population is suffering from surmounting stress, be it because of peer pressure, work load or other domestic tensions; it is very crucial to have a reality check about how stressed a person really is. This project will be very beneficial for those who are not so comfortable in opening up about their problems to others. It will help these people get a reality check and may prompt them to reach out and get medical help, just based on their social interactions. This have utilized both human as well as machine learning.

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