Stress Detection System on Social Interactions In Social Networks: A Survey

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Abstract: In the recent years Psychological stress is enhancing risk to people's health. The growth of online social media platform, so that several public are feeling stressed as well as it is not easy to detect users stress states in an previous stage to secure user also popularity of social media, people are used to share their daily activities and connecting with friends on social media sites like Facebook, twitter Sina Weibo2 etc. This paper described the detail survey of stress detection system which is based on social media platform. This system developed the framework to detect users psychological stress states. It is exactly relevant to user's friends in social media and provides an extensive dataset from real-world social platforms to methodically survey of interconnection of users stress states and social interactions. In this system initially determine a cluster of stress which is relevant to textual, visual, and social attributes. Afterwards convolutional neural network which is used for topic extraction. It performs sentiment analysis of Facebook post after formation of topic. The contribution task is detecting users stress states by using support vector machines, after classification of users are in stress or not, then K-nearest neighbors algorithm is used for recommendation of hospital on a map as well as send mail of precaution list to user for become healthy and happy in life.

Index Terms – **Factor Graph Model, Healthcare, Support Vector Method**

I. INTRODUCTION

In recent years data mining has been experiencing growing demands. There is a huge amount of data available in the information industry. Data mining is the efficient discovery of valuable and meaningful information from a vast collection of data. It is the process of extraction hidden expertise from amount of raw data through use of algorithm and techniques which are drawn from enclosure of statistics, machine learning and data base management system. Now a day's mental stress is turning into a risk to individuals. During the use of social networking sites, progressively and many persons are feeling stressed. In today's life stress is more clinical and typical in individuals as well as enormous and lifelong stresses are unsafe to people's mental and physical fitness. The progression of social media platforms which is normally expanding number of individuals will share their consistently occasions and states of mind, and collaborate with companions through the interpersonal organizations.

In stress detection system, firstly it defines a set of attributes namely, Facebook-level attributes and user-level attributes. Facebook-level attributes describes as a single post users content and user-level attributes stated as a month to month users posts. The Facebook-level attributes which are primarily consists of linguistic, visual, and social attention factors being liked, commented attributes which is extracted from a particular-post, text, image, and attention list. The user-level attributes are processed in two parts: (a) posting behavior attributes extracted from monthly posting of user's and (b) social interaction attributes which is obtained from social interactions of user's with friends. Generally, social interaction attributes can added to splitted into two parts: (i) social interaction content attributes which is extracted from the content of user's social interactions with friends; and (ii) social interaction structure attributes which is extracted from the structures of users' social interaction with friends. User level attributes contain Linguistic, Visual, and Social attributes. Linguistic incorporates Positive, Negative and neutral Emotion Words. Visual category contain five-colour scheme,warm,dull colour and social attributes composed of social interactions which is contain number of comments, likes.

In stress detection system, there are three algorithms are used such as, Convolutional neural network, Support vector machine, K-nearest neighbors. The overall steps of system are as follows: [1] It acts sentiment analysis of Facebook post afterwards formation of subject by using convolutional neural network (CNN). [2] After formation of topic It will classify user are stress or not according to positive and negative post by using support vector method (SVM). [3] Finally It classified stressed and non-stressed users then recommend hospital to stressed user on map which is located on nearest distance from current location of user as well as send precaution list through mail to non-stressed user for fend off stress to become happy and healthy life.

1.1 Motivation:

1. In today's life many people are more interacting on social networking sites like Facebook, twitter, Instagram, whatsapp etc. whereas many people are feeling frustrated, depressed, sadness, stressfulness etc. from social networking sites. So this factor motivates us to develop this project.

2. In existing system, it is not easy to detect stressed and non-stressed users due to interaction on twitter platform because there are some limitations occurred. So it develop framework of stress detection system based on Facebook platform. In which identifying users stress states from user's weekly social media knowledge then take advantage of Facebook post content and user's social interaction after it can find out user are stress or not.

3. If the users are stressed then recommend hospital on map which is located nearest distance from current location of user.

4. If the user are non-stressed then send mail of precaution list for avoid stress.

1.2 Objectives:

The essential objectives of this study are as follows:

1. To study framework of detecting user's psychological stress states.

2. To study convolutional neural network for topic extraction.

3. To propose support vector machine for classification purpose and k-nearest neighbors for recommendation of hospital and precaution list.

II. LITERATURE REVIEW

In this section, the various analysis and research made in the field of psychological stress detection is described. In existing research work, detecting users psychological stress states on twitter platform with the help of unified hybrid model which is integrating convolutional neural network with factor graph model to take advantage of both tweeting post content attributes also to enlarge social interactions of stress detection. But existing work remains incapable of detecting users stress states on twitter platform because there are some drawbacks occur in tweeting text content which is based on stress detection. First drawback is tweets are controlled in maximum of 140 alphabets on social platforms like twitter, sina weibo etc. therefore user do not always explicit their stressful states directly in tweets. Second is a user in high psychological stress which shows that minor activeness on social networks so that the stress is not recognized from the twitter comment itself as well as from the influence of collective reviews which is made by user and user's friends then discovers that because of workload, user is stressed. Thus conclude that user's content of twitter comment for stress detection is unsatisfactory, so stress detection performance is low. The contribution work is detecting users psychological stress states on Facebook platform. In this section, related works is described, which can be categorized into the following research areas: Twitter content, convolutional neural network, medical terminology, mood cast method, Support vector machine, natural language processing, pairwise factor graph model. These are described below:

2.1 Existing Technologies:

Jimeng Sun, Yuan Zhang, Jie Tang, Jinghai Rao, Yiran Chen[1], this paper described MoodCast method which is expanded for designing and predicting user's emotions in social media. MoodCast process situated on a dynamic continuous factor graph model for designing and forecasting of users emotions in social networking sites. This paper tackles problem of MoodCast method, which is transferred towards a dynamic continuous factor graph model. Hence it decides three forms of key components to gaining the various types of instructions in the social media platform. First factor is temporal correlation, which described as ones user feeling at present time is extremely correspond to user's emotion in the recent ago. Second factor is social correlation; it is defined as emotion of user is connected with the emotion condition of her friends. Last one is attribute correlation; it defines environment and activities of person can also influence on user's feelings. In this study, the technique of for model learning, using Metropolis-Hastings algorithm obtain relative result. The MH-based learning algorithm made by two factors: first is proposal distribution, which describes new conditional configuration should be accepted likely. Second is parameter update followed by training error. The advantage of metropolis hasting technique can evolve a global gradient update for every components thus obtaining optimal performance.

Y.Xue, Q. Guo, J. Jia, L.Feng, L. cai, H. Lin, J.Huang[2], This paper tackles problem of traditional psychological stress detection, it is created single person participation and which builds detection is labor-consuming, time-costing and hysteretic. Fast growth of social networking sites, so many people are willing to sharing everyday activities through microblog platforms. To overcome these problems, by using framework of automatic stress detection from cross-media microblog data. In this system, it develops three-tier architecture to solve the problem. Initially obtains cluster of small features from the twitter comments. Then decide and extract inner-stage design which is builds psychological and art concepts that involves linguistic attributes from user review as well as visual attributes extracted from tweets images, and social attributes contains people's reviews, twitter comments, retweets and favorites. Finally, a Deep Sparse Neural Network is modeling to study the stress category. It incorporates various features of cross-media microblog data, so that the structure of automatic stress detection is very important. The advantage of this system is deep sparse neural network is important and efficient for detecting psychological stress from microblog data.

Guangyao Shen, Quan Guo, Lianhong Cai, Jia Jia, Lei Zhang, Zhang Yi [3], In this paper cross-media social network is very essential platform. It has two levels namely, element and aggregative subject. So it develops the ideas and functions of learning uniform and robust features for these two levels. Element is consists of text, pictures, voice, or any combinations of techniques and another level is aggregative subject is the set of time-series social factors and it is contributing the similar semantics such as, collection of twitter comments, snaps, blogs, and highlights of emergency events. This paper found the obstacle of feature learning for cross-media social data at the layers of element and aggregative subject and aspect of the learned features occurs in the background of classification. Hence to overcome these problems, by using a cross auto encoders techniques. This method learns that constant features from cross-media social elements for distinct methods which are divided into two parts in unsupervised manner. There are two types of training strategy, first is augmented training, it uses information of all modalities that learn basic cross-modality association. Next is Partial training involving all other information with insufficient modalities. Finally applying cross auto encoders act as filters to manage cross-media elements and it provides a convolutional neural network framework. It is using for social aggregative subject to learn features. The Convolutional neural network framework maintains array of time in social aggregative subject and reduces contact of dissimilar in the social data. The techniques of convolutional

neural network and convolutional cross auto encoder which is covered in vast range of social media applications, like as friend recommendations on Weibo and Twitter and photo album retrieval by using keywords.

Jimeng Sun, Chi Wang, Jie Tang, Jiawei Han[4], Social influence is actions of user can indicate her/his friends to act like same way and plays an important role in online social media platforms.. In this paper, it discovers issue of dynamic social influence analysis is minor change from existing works on social network analysis. Hence this paper focused on that problem of dynamic social influence analysis. To cover these problems by using an efficient learning algorithm has been proposed. So it presents a pairwise factor graph model to design the pairwise influence. Another technique is time-dependent factor graph model that include time information. Thus influence is presented over social media of different time windows. In future work apply the inferred social influence to help influence maximization. Parallelization algorithm is used.

Jianping Li, Yujun Yang, Yimei Yang [5], This paper presents a boundary detection technique by using support vector method classifier method. It founds problem of structural risk of support vector method is minimum. So it improves ability of learning generalization and acquires the minor empirical risk and confidence state in the case of small statistical sample size as well as it can obtain the desired good statistical law. The experimental result using a various kernels of training set and obtains support vector method classifier, then test and verifies classifier with the test set. Finally it analysis the classifier performance with three kinds of indicators such as Sensitivity, Specificity, Time-consumption.

III. EXISTING SYSTEM METHODOLOGY

In existing system, it build the framework of users psychological stress categories and it is associated to that of user's friends in social networking sites by using a novel hybrid model- a factor graph model is mixed with Convolutional neural network. So there three problems are occurred in twitter platform. First is tweets are not more than 140 characters, second is high psychological stress of user which shows that low activeness on social networks and last one is the twitter comment accommodate only 13 characters, suppose comment like, user wished to go home for summer vacation. So that stress is not display from user comment as well as twitter comments made from user's friend. Therefore, it finds that the user is actually disturbed from work. In this way tweeting content of user for stress detection is unsatisfactory. Therefore stress detection performance is low on twitter platform.

IV.PROPOSED SYSTEM METHODOLOGY

In a proposed system architecture, develops the framework of detecting user's psychological stress states on Facebook platform. On a Facebook user are interact with other people. User can upload different posts on a Facebook. The input of stress detection system, which is three types of information, like as Facebook-level attributes, user-level posting behavior attributes, and user-level social interaction attributes.
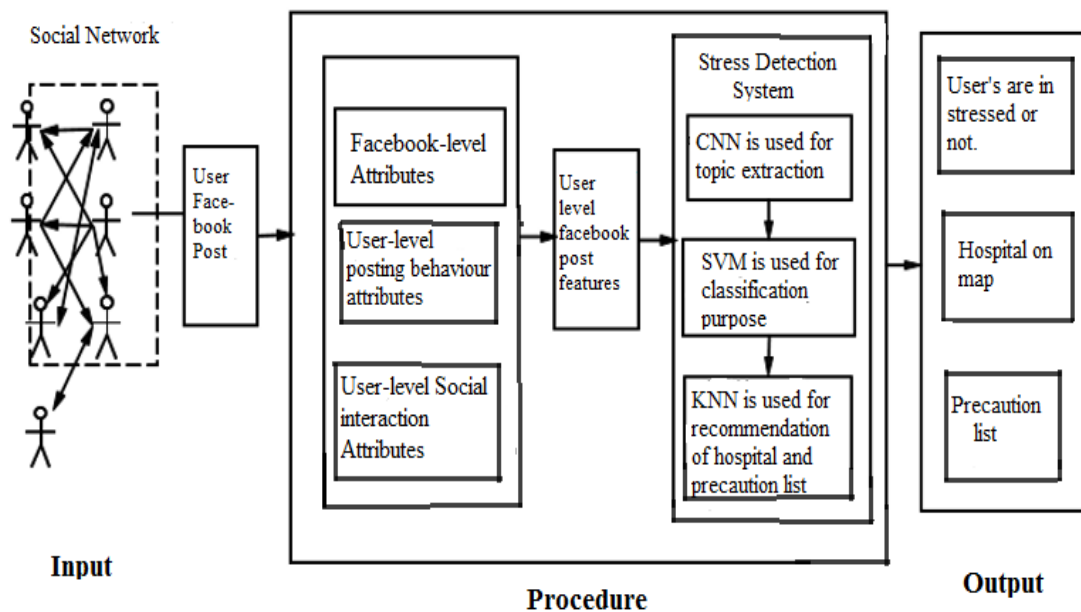

Figure 1: System Architecture

The diagram shows the proposed system architecture that describes working of the system below:

1. On this user input post, It can fetch user level Facebook post features on that input of Facebook post.

2. Conventional neural network is used for topic extraction. In which, after formation of topic, it performs sentiment analysis of Facebook post.

3. Support Vector Method is used for classification purpose. In which it classify positive, negative and neutral post. After classification It predicts users are stressed or not.

4. After distribution of user's are in stress or non-stress, then *K-nearest neighbors* algorithm is used for recommendation hospital facility to stress user on map as well as admin can send precaution list through mail to non-stress user for avoid stress so that user is healthy and happy in life.

V.CONCLUSION:

Data mining has many applications in different areas. It has been developed for detecting user's psychological stress states due to interaction of social network. This system presents the architecture of stress detection system. In existing system, It has studied the problem of stress detection performance is low on twitter platform by employing a unified hybrid model coordinating convolutional neural network with factor graph model. To overcome that problem, It develop the framework of stress detection system based on Facebook platform so, It has to introduce Convolutional neural network is used for topic extraction, Support vector method is used for classify stressed and non-stressed user's, K-nearest neighbors algorithm is used for recommendation of hospital and precaution list and It utilize real-time dataset of social media platforms. So contribution work is increasing stress detection performance.

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