2581-4575
International Journal For Recent Developments in Science & Technology
Crossref
A Peer Reviewed Research Journal

DETECTION OF EMPLOYEE STRESS USING MACHINE LEARNING

SUMIT KUMAR[1], CHERKUTHOTA VIGNATHA RAO[2], GAJAREDDY SUSWARA[3], MOHAMMED ADNAN SAMI[4], M KARTHEEK[5]

[1]Assistent Professor, Department of CSE, Malla Reddy College of Engineering Hyderabad, TS, India.

[2,3,4,5] UG students, Department of ITE, Malla Reddy College of Engineering Hyderabad, TS, India.

ABSTRACT :The main motive of our project is to detect stress in the IT professionals using vivid Machine learning and Image processing techniques .Our system is an upgraded version of the old stress detection systems which excluded the live detection and the personal counseling but this system comprises of live detection and periodic analysis of employees and detecting physical as well as mental stress levels in his/her by providing them with proper remedies for managing stress by providing survey form periodically. Our system mainly focuses on managing stress and making the working environment healthy and spontaneous for the employees and to get the best out of them during working hours.

Index Terms—Stress detection, micro-blog, social media, social interaction , factor graph model.

I. INTRODUCTION Nowadays as IT industries are setting a new peek in the market by bringing new technologies and products in the market. In this study, the stress levels in employees are also noticed to raise the bar high. Though there are many organizations who provide mental health related schemes for their employees but the issue is far from control. In this paper we try to go in the depth of this problem by trying to detect the stress patterns in the working employee in the companies we would like to apply image processing and machine learning techniques to analyze stress patterns and to narrow down the factors that strongly determine the stress levels. Machine Learning algorithms like KNN classifiers are applied to classify stress. Image Processing is used at the initial stage for detection, the employee's image is clicked by the camera which serves as input. In order to get an enhanced image or to extract some useful information from it image processing is used by converting image into digital form and performing some operations on it. By taking input as an image from video frames and output may be image or characteristics

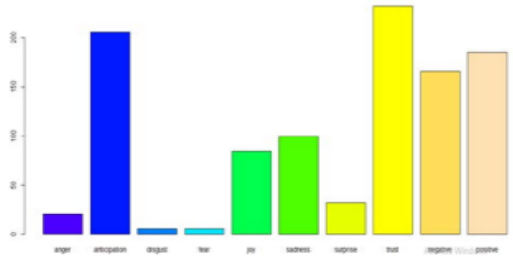
International Journal For Recent Developments in Science & Technology
2581-4575
Crossref
A Peer Reviewed Research Journal

associated with that image. Image processing basically includes the following three steps:

- Importing the image via image acquisition tools.
- Analyzing and manipulating the image.
- Output in which result is altered image or report that is based on image analysis.

System gets the ability to automatically learn and improve from self-experiences without being explicitly programmed using Machine learning which is an application of artificial intelligence (AI). Computer programs are developed by Machine Learning that can access data and use it to learn for themselves. Explicit programming to perform the task based on predictions or decisions builds a mathematical model based on "training data" by using Machine Learning. The extraction of hidden data, association of image data and additional pattern which are unclearly visible in image is done using Image Mining. It's an interrelated field that involves, Image Processing, Data Mining, Machine Learning and Datasets. According to conservative estimates in medical books, 50- 80% of all physical diseases are caused by stress. Stress is believed to be the principal cause in cardiovascular diseases. Stress can place one at higher risk for diabetes, ulcers, asthma, migraine headaches, skin disorders, epilepsy, and sexual dysfunction. Each of these diseases, and host of others, is psychosomatic (i.e., either caused or exaggerated by mental conditions such as stress) in nature. Stress has three prong effects:

- Subjective effects of stress include feelings of guilt, shame, anxiety, aggression or frustration. Individuals also feel tired, tense, nervous, irritable, moody, or lonely.
- Visible changes in a person's behavior are represented by Behavioral effects of stress. Effects of behavioral stress are seen such as increased accidents, use of drugs or alcohol, laughter out of context, outlandish or argumentative behavior, very excitable moods, and/or eating or drinking to excess
- Diminishing mental ability, impaired judgment, rash decisions, forgetfulness and/or hypersensitivity to criticism are some of the effects of Cognitive stress



Limitations in existing system is that stress analysis is a crucial tool for designing

International Journal For Recent Developments in Science & Technology
2581-4575
Crossref
A Peer Reviewed Research Journal

structurally sound shapes. However, the expensive computational cost has hampered its use in interactive shape editing tasks.We augment the existing

example-based shape editing tools, and propose a fast subspace stress analysis method to enable stress-aware shape editing. In particular it is constructed by a reduced stress basis from a small set of shape exemplars and possible external forces. This stress basis is automatically adapted to the current user edited shape on the fly, and thereby offers reliable stress estimation. We then introduce a new finite element discretization scheme to use the reduced basis for fast stress analysis. Some Limitations exist in tweeting content based stress detection Firstly, tweets are limited to a maximum of 140 characters on social platforms like Twitter and users do not always express their stressful states directly in tweets. Secondly, users with high psychological stress may exhibit low activeness on social networks. These phenomena incur the inherent data sparsity and ambiguity problem, which may hurt the performance of tweeting content based stress detection performance

NEED OF WORK Stress is called as an initial stage of depression. stress can be related to finance, work, relationships etc. In corporate world employees are unaware of stress leading conditions while working. It is always observed mostly in It employees chronic stress is often ignored. Companies use to give a survey form to the employees to fill and then use to predict stress based on that form. It was not only time consuming but needed whole lot of efforts as forms where distributed manually. Stress Detection System enables employees with coping up with their issues leading to stress by preventative stress management solutions which is concerned with eliminating stress and improving employee health. In our work we have designed a system which will capture images of the employee based on the regular intervals and then the tradition survey forms will be given to the employee. This will reduce the manual efforts and time. This organizational technique can be used to help improve employee stress by diagnosis through our specially designed Questionnaires.

RELATED WORK Psychological stress detection is related to the topics of sentiment analysis and emotion detection. Research on tweet-level emotion detection in social networks. Computer-aided detection, analysis, and application of emotion,

especially in social networks, have drawn much attention in recent years [8], [9], [28], [41], [52], [53]. Relationships between psychological stress and personality traits can be an interesting issue to consider [11], [16], [43]. For example, [1] providing evidence that daily stress can be reliably recognized based on behavioral metrics from users mobile phone activity. Many studies on social media based emotion analysis are at the tweet level, using text-based linguistic features and classic classification approaches. [53] proposed a system called MoodLens to perform emotion analysis on the Chinese micro-blog platform Weibo, classifying the emotion categories into four types, i.e., angry, disgusting, joyful, and sad. [9] studied the emotion propagation problem in social networks, and found that anger has a stronger correlation among different users than joy, indicating that negative emotions could spread more quickly and broadly in the network. As stress is mostly considered as a negative emotion, this conclusion can help us in combining the social influence of users for stress detection. However, these work mainly leverage the textual contents in social networks. In reality, data in social networks is usually composed of sequential and inter-connected items from diverse sources and modalities, making it be actually crossmedia data. Research on user-level emotion detection in social networks. While tweet-level emotion detection reflects the instant emotion expressed in a single tweet, people's emotion or psychological stress states are usually more enduring, changing over different time periods. In recent years, extensive research starts to focus on user-level emotion detection in social networks [29], [36], [38], [50]. Our recent work [29] proposed to detect users psychological stress states from social media by learning user-level presentation via a deep convolution network on sequential tweet series in a certain time period. Motivated by the principle of homophily, [38] incorporated social relationships to improve user-level sentiment analysis in Twitter. Though some userlevel emotion detection studies have been done, the role that social relationships plays in one's psychological stress states, and how we can incorporate such information into stress detection have not been examined yet. Research on leveraging social interactions for social media analysis. Social interaction is one of the most important features of social media platforms. Now many researchers are focusing on leveraging social interaction information to help

improve the effectiveness of social media analysis. [12] analyzed the relationships between social interactions and users' thinking and behaviors, and found out that Twitter-based interaction can trigger effectual cognitions. [49] leveraged comments on Flickr to help predict emotions expressed by images posted on Flickr. However, these work mainly focused on the content of social interactions, e.g., textual comment content, while ignoring the inherent structural information like how users are connected.

MODEL FRAMEWORK: 3 Challenges exist in psychological stress detection. 1) How to extract users level attributes from user's tweeting series and deal with the problem of absence of modality in the tweets 2) How to fully leverage social interaction, including interaction content and structure patterns, for stress detection? To tackle these challenges, we propose a factor graph modelSentiment extraction of tweets sentence represents how to review all the datas, that are initially collected and how all the sentence are extracted using sentiments. After the extraction of sentences part-of-speech tagging is done in order to determine the sentences after phrase is identified then score has been computed for each sentiments with each of polarities has categorized and result has been categorized. • We proposed a method in which we extracted tweets from twitter and categorizes each of the data with different sentiments. • We can identify the structure of each of the tweets and class of each tweets. After classifying all of the tweets with each of the sentences it has been sentimented. • With the help of sentiment extraction it is easy to leverage each of the tweets, so that it is easy to classify each of the stress rate level.

CONCLUSION We presented a framework for detecting users psychological stress states from users' weekly social media data, leveraging tweets' content as well as users' social interactions. Employing real-world social media data as the basis, we studied the correlation between user' psychological stress states and their social interaction behaviors. In this work, we also discovered several intriguing phenomena of stress.

FUTURE WORK The future scope of the project is to develop a system that not only detecting the stress and also able to analyze people mind means that it will play as a survey system. So that it may provide a better solution on behalf of people of the society for every debatable concepts and also it will indirectly play an important role in political,

government and also social media. So we may efficiently analyze stress and also find solution to every social issue by means of polling and analyzing comments.

REFERENCES

[1] Ben Verhoeven, Walter Daelemans, and Barbara Plank. Twisty: A multilingual twitter stylometry corpus for gender and personality profiling. In Proceedings of the Tenth International Conference on Language Resources and Evaluation LREC, pages 1632–1637, 2016

[2] Andrey Bogomolov, Bruno Lepri, Michela Ferron, Fabio Pianesi, and Alex Pentland. Daily stress recognition from mobile phone data, weather conditions and individual traits. In ACM International Conference on Multimedia, pages 477–486, 2014.

[3] Chris Buckley and Ellen M Voorhees. Retrieval evaluation with incomplete information. In Proceedings of the 27th annual international ACM SIGIR conference on Research and development in information retrieval, pages 25–32, 2004.

[4] Xiaojun Chang, Yi Yang, Alexander G Hauptmann, Eric P Xing, and Yao-Liang Yu. Semantic concept discovery for large-scale zero-shot event detection. In Proceedings of International Joint Conference on Artificial Intelligence, pages 2234–2240, 2015.

[5] Wanxiang Che, Zhenghua Li, and Ting Liu. Ltp: A chinese language technology platform. In Proceedings of International Conference on Computational Linguistics, pages 13–16, 2010.

[6] Chih chung Chang and Chih-Jen Lin. Libsvm: a library for support vector machines. ACM TRANSACTIONS ON INTELLIGENT SYSTEMS AND TECHNOLOGY, 2(3):389–396, 2001. [7] Dan C Ciresan, Ueli Meier, Jonathan Masci, Luca Maria Gambardella, and Jurgen¨ Schmidhuber. Flexible, high performance convolutional neural networks for image classification. In Proceedings of International Joint Conference on Artificial Intelligence, pages 1237– 1242, 2011.

[8] Sheldon Cohen and Thomas A. W. Stress, social support, and the buffering hypothesis. Psychological Bulletin, 98(2):310–357, 1985.

[9] Glen Coppersmith, Craig Harman, and Mark Dredze. Measuring post traumatic stress disorder in twitter. In Proceedings of the International Conference on Weblogs and Social Media, pages 579–582 , 2014. [10]

Rui Fan, Jichang Zhao, Yan Chen, and Ke Xu. Anger is more influential than joy: Sentiment correlation in weibo. PLoS ONE, 2014