

Using Social interactions on social networks detecting Users In Stress

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Abstract -Mental stress is becoming a threat to people's health now a days. With the rapid pace of life, more and more people are feeling stressed. It is not easy to detect users stress in an early time to protect user. With the fame of web-based social networking, individuals are used it for sharing their day by day activities and interacting with friends, via web-based networking media stages, making it possible to use online social network data for stress detection. Facebook application contains different posts which shows different emotions. Conventional neural network(CNN) is used for topic extraction. Using Support Vector Method(SVM) we can classified users are in stress or not. After classification users are in stress or not ,k-nearest neighbours algorithm (KNN) is used for recommendation of hospital on a map. This system is proposed for users healthy mental state.

Keywords—Stress Detection, Factor Graph Model, Microblog, Social media, Healthcare, Social Interaction

I. INTRODUCTION

Mental stress is turning into a risk to individual's well-being these days. With the fast pace of life, progressively and more individuals are feeling stressed. Though stress itself is non-clinical and common in our life, excessive and chronic stress can be rather harmful to people's physical and mental health. Users social interactions on social networks contain useful cues for stress detection. Social psychological studies have made two interesting observations. The first is mood contagions: a bad mood can be transferred from one person to another during social interaction. The second Social Interaction: people are known to social interaction of user. The advancement of social networks like Twitter, Facebook and Sina Weibo², an ever increasing number of people will share their every day events and moods, and interact with friends through the social networks. We can classify using support vector method users are in stress or not. After getting stress level, system can recommended user hospital for further treatment, We can show that hospital on map and system also recommended to take precaution for avoid stress. We can show which age category persons are in stress.

In this paper, Section I contains the introduction of mental stress issue and our proposed cure, Section II contain the related work of stress detection, Section III contain the some measures of architecture of proposed system for stress detection and its methodology, Section IV describes results and discussion related stressed user and non stressed user, Section V describes future scope of system.

II. RELATED WORK

Yuan Zhang, Jie Tang, Jimeng Sun, Yiran Chen, and JinghaiRao have introduced study a novel problem of emotion prediction in social networks. A method referred to as Moodcast for modeling and predicting emotion dynamics in the social network. The proposed approach can adequately display every client's feeling status and the expectation execution is superior to a few benchmark strategies for feeling forecast. It is utilized to because of the set number of members. For display learning, it utilizes a Metropolis-Hastings calculation to get a rough arrangement. Trial comes about on two diverse genuine informal communities exhibit that the proposed approach can successfully display every client's feeling status and the forecast execution is superior to a few standard strategies for feeling expectation. [1]

Liqiang Nie, Yi-Liang Zhao, Mohammad Akbari, JialieShen, and Tat-SengChua. have proposed about Bridging the vocabulary hole between wellbeing searchers and human services information with a worldwide learning approach .A therapeutic phrasing task plan to connect the vocabulary hole between wellbeing searchers and social insurance information. The plan includes two segments, neighborhood mining and worldwide learning .Extensive assessments on a true dataset show that our plan can create promising execution when contrasted with the overarching coding techniques. Liqiang Nie will explore how to adaptably compose the unstructured restorative substance into client

needs-mindful cosmology by utilizing the suggested therapeutic wordings.[2]

Brendan J. Frey have introduced about generic message-passing algorithm, the sum-product algorithm, that operates in a factor graph Factor graphs provide a natural graphical description of the factorization of a global function into a product of local functions.It can generate Factor Graphs and the Sum-Product Algorithm.Further exploration of the modeling power of factor graphs and applications of the sum-product algorithm will prove to be fruitful.[3]

Xiao jun Chang, Yi Yang¹, Alexander G. Hauptmann, Eric P. Xing and Yao-Liang Yu have introduced about an detecting complex events in unconstrained Internet videos.Xiao jun Chang propose an efficient, highly scalable algorithm that is an order of magnitude faster than existing alternatives better performance cannot always be guaranteed by more concepts.Yi Yang¹concentrate on identifying complex occasions in unconstrained Web recordings. While most existing works depend on the wealth of named preparing information, Alexander G. Hauptmann consider a more troublesome zero-shot setting where no preparation information is provided. Eric P. Xing first pre-prepare a number of idea classifiers utilizing information from other sources.The atomic standard rank total structure is embraced to look for agreement.To address the testing improvement definition, Yao-Liang Yu propose an effective, profoundly adaptable calculation that is a request of size speedier than existing choices. Trials on late TRECVID datasets confirm the predominance of the proposed approach.[4]

Jennifer Golbeck, Cristina Robles, Michon Edmondson, and Karen Turner are introduced an interested in the identity of clients. Identity has been appeared to be applicable to many sorts of cooperations. Jennifer Golbeck are interested in the identity of clients. Identity has been appeared to be applicable to many sorts of cooperations; it has been appeared to be helpful in anticipating work fulfillment, relationship achievement, and even inclination . Cristina Robles are intrigued in the identity of clients. Identity has been appeared to be applicable to many sorts of communications; it has been appeared to be valuable in foreseeing work fulfilment, expert and sentimental relationship achievement, and even inclination for various interfaces. Michon Edmondson can begin to answer more sophisticated questions about how to present trusted, socially-relevant, and well-presented information to users. [5]

Sepandar D. Kamvar have introduced an studies about wheany person feel fine and searching the emotional web . On the usage of Sepandar D. Kamvar have Feel Fine to suggest a class of visualizations called Experiential Data Visualization, which focus on immersive item-level

interaction with data.The implications of such visualizations for crowdsourcing qualitative research in the social sciences. Repeated information in relevant answers requires the user to browse through a huge number of answers in order to actually obtain information.To date, most research in assessment examination has been engaged on calculations to extricate, order, and condense conclusion.[6]

Dan C Cirean, Ueli Meier, Jonathan Masci, Luca Maria Gambardella, furgen Schmidhuber have introduced an new deep CNN architecture, MaxMin-CNN, to better encode both positive and negative filter detections in the net. Dan C Cirean propose to adjust the standard convolutional square of CNN keeping in mind the end goal to exchange more data layer after layer while keeping some invariance inside the system.Our fundamental thought is to abuse both positive and negative high scores got in the convolution maps.This conduct is acquired by altering the customary enactment work venture before pooling¹.Time required for this is more. It is time consuming process.[7]

Chi Wang, Jie Tang, Jimeng Sun, and Jiawei Han have introduced an To find out around an impact boost issue, which expects to locate a little subset of hubs (clients) in an interpersonal organization that could expand the spread of impact. A Pairwise Factor Graph (PFG) model to formalize the problem in probabilistic model, and Chi Wang extend it by incorporating the time information, which results in the Dynamic Factor Graph (DFG) mode.The proposed approach can effectively discover the dynamic social influences. Parallelization of our algorithm can be done in future work to scale it up further.[8]

Andrey Bogomolov, Bruno Lepri, Michela Ferron, Fabio Pianesi, and Alex Pentland have introduced Studies about Daily stress recognition from mobile phone data, weather conditions and individual traits. That day by day stress can be dependably perceived in view of behavioural measurements, got from the client's cell phone action what's more, from extra markers, for example, the climate conditions (information relating to short lived properties of the condition) and the identity attributes.In work environments, where stress has become a serious problem affecting productivity, leading to occupational issues and causing health diseases.Our system could be extended and employed for early detection of stress-related conflicts and stress contagion, and for supporting balanced workloads.[9]

H. Lin, J. Jia, Q. Guo, Y. Xue, J. Huang, L. Cai, and L. Feng have introduced the about a an automatic stress detection method from cross-media microblog data.Three-level framework for stress detection from cross-media microblog data. By combining a Deep Sparse Neural Network to incorporate different features from cross-media microblog data, the framework is quite feasible and efficient for stress

detection. The proposed method can help to automatically detect psychological stress from social networks. H. Lin plan to investigate the social correlations in psychological stress to further improve the detection performance. [10]

LexingXie and Xuming He have introduced about Picture tags and world knowledge: learning tag relations from visual semantic sources studies the use of everyday words to describe images. The proposed tagging algorithm generalizes to unseen tags, and is further improved upon incorporating tag-relation features obtained via ICR techniques to better incorporate multi-word terms and out-of-vocabulary words; advanced NLP techniques for learning word relations from free-form text; evaluation of latent concept relation suggestion, and predicting the type of relations. [11]

QuanGuo, JiaJia, GuangyaoShen, Lei Zhang, LianhongCai, and Zhang Yi have introduced about a Learning robust uniform features for cross-media social data by using cross autoencoders. QuanGuo propose CAE to learn uniform modality-invariant features, and JiaJia propose AT and PT phases to leverage massive crossmedia data samples and train the CAE. Learning robust uniform features for cross-media social data by using cross autoencoders take a more time. [12]

III. METHODOLOGY

In a proposed system architecture we can detect user are in stress or not due to interaction social network. In a social network contain facebook, twitter. on a facebook user are interact with other people. User can different posts on a facebook. There are three types of information that we can use as the initial inputs, i.e. facebook-level attributes, user-level posting behaviour attributes, and user-level social interaction attributes. Facebook-level attributes describe the linguistic i.e. positive and negative words and visual content like brightness, cool color, dull color, as well as social attention factors (being liked, commented,) of a single facebook post. User level posting behavior attributes as summarized from a user's monthly facebook postings, post time, post type; social interaction attributes extracted from a user's social interactions with friends. In particular, the social interaction attributes can further be broken into: (i) social interaction content attributes extracted from the content of users social interactions with friends like words and emotions; and (ii) social interaction structure attributes extracted from the structures of users social interactions with friends. On this user input post we can fetch user level facebook post. Conventional neural network (CNN) is used for topic extraction. Using CNN we can apply sentiment analysis on facebook post. After formation of topic Using Support Vector Method (SVM) we can classified users are in stress or not. After classification user are in stress or not k-nearest neighbours algorithm (KNN) is used for

recommendation of hospitals on a map. Admin can send mail of precaution list as well as recommended hospital list. We can also show age category of persons while detecting stress.

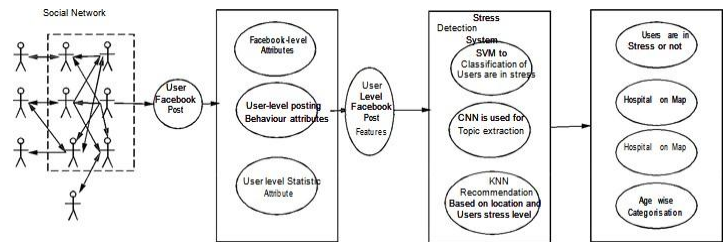


Fig.1
Architecture of Proposed System

1. Support Vector Machine Algorithm:

In machine learning, support vector machines (SVMs, also support vector networks) are supervised learning models with associated learning algorithms that analyze data used for classification and regression analysis. Given a set of training examples, each marked as belonging to one or the other of two categories, an SVM training algorithm builds a model that assigns new examples to one category or the other, making it a non-probabilistic binary linear classifier (although methods such as Platt scaling exist to use SVM in a probabilistic classification setting). Using this algorithm we can classified the positive or a negative post. After classification we predict user are in stressed or not.

Input:-User facebook post Algorithm Steps:

Step1: SVMs maximize the margin around the separating hyper plane.

Assume linear separability for now: in 2 dimensions, can separate by a line in higher dimensions, need hyperplanes. Can find separating hyperplane by linear programming (e.g. perception): separator can be expressed as $ax + by = c$

Step2: The decision function is fully specified by a subset of training samples, the support vectors.

Step3: Quadratic programming problem

Step4: Text classification method

For example, A combination of these 0s and 1s in the feature vector along with the known label will be the Training input to our SVM classifier. It should be noted that the label in the feature vector should be numeric only or the SVM classifier. Hence, we use 0 for positive, 1 for negative and 2 for neutral labels.

Output:-Classified user stress positive post or negative post.

2. KNN (K Nearest Neighbours)

In pattern recognition, the k-nearest neighbours algorithm (k-NN) is a non-parametric method used for classification and regression. In both cases, the input consists of the k closest training examples in the feature space. The output depends on whether k-NN is used for classification or regression. Using this KNN algorithm we can recommendation of hospital to user on a map also show shorted distance from a current location to that hospital on goggle map.We also recommendation of precaution according to level of user stress.

1. Find k most similar users (KNN).
2. Identify set of items, C, Visited by the group of user together with their frequency.
3. Recommend the top N- most frequent items in C that the active user visited or not.

3. A Convolutional Neural Network (CNN)

A Convolutional Neural Network (CNN) is comprised of one or more convolutional layers (often with a subsampling step) and then followed by one or more fully connected layers as in a standard multilayer neural network. The architecture of a CNN is designed to take advantage of the 2D structure of an input image (or other 2D input such as a speech signal). This is achieved with local connections and tied weights followed by some form of pooling which results in translation invariant features. Another benefit of CNNs is that they are easier to train and have many fewer parameters than fully connected networks with the same number of hidden units.

Input: - User facebook post.

Output:-Extraction of topic.

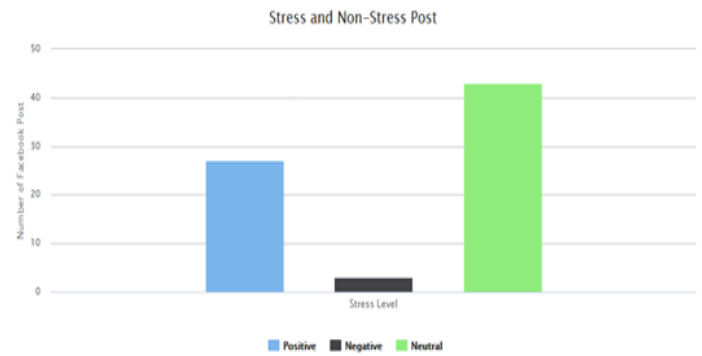
IV. RESULTS AND DISCUSSION

In our experimental setup, our system categorised particular user post into 3 categories like positive, negative and neutral. In following tables, show the users face book post categories

Sr.no	Positive	Negative	Neutral
1	27	3	43

Table1: Facebook Post Category

From above data, we can see the positive, negative, neutral facebook post of particular user in the graph; we see 27 post of user are positive ,3 posts are negative and 43 posts are neutral .which is shown is following graph.



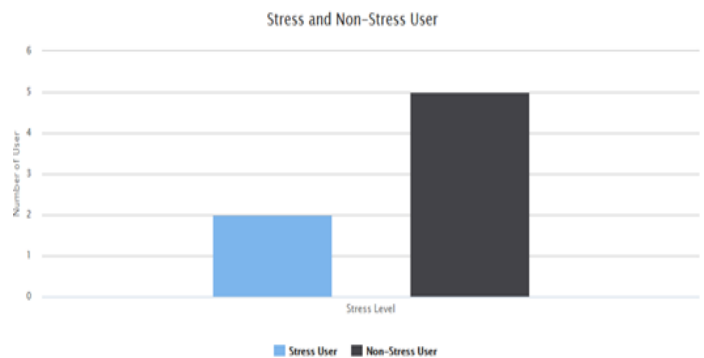
Graph 1. Category of Posts

In our next experimental setup, we are identified number of stressed user and number of non-stressed user by going through types of posts which identified in above experimental setup.

Sr.No	No. Stressed User	No.Non-Stressed User
1	2	5

Table 2: Stressed and Non-Stressed User

From above data, we can see the stressed and non-stressed user in the graph; we see 2 users are in stressed and 5 users in the non-stressed user.



Graph 2: Stressed and Non-Stressed User

V. CONCLUSION AND FUTURE SCOPE

Mental stress is threatening people’s health. It is non-trivial to detect stress timely for proactive care. Therefore we presented a framework for detecting users psychological

stress states from users monthly social media data, facebook post content as well as users social interactions. Employing real-world social media data as the basis, we studied the correlation between users psychological stress states and their social interaction behaviors. We recommended the user for health consultant or doctor. We can show the hospitals for further treatment on a graph which locate shortest path from current location of user to that hospital. We can send emails for precautions regarding stress and further hospital recommendation.

In future, we can recommend the user health precaution video and send them on mail for user interaction purpose. We also detect stress using other social interaction networks like twitter, whatsapp, instagram, etc.

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