

Detecting Stress Based on Social Interactions in Social Networks

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Abstract: Psychological stress is threatening people's health. It's non-trivial to discover stress timely for proactive care. With the recognition of social media, folks are wont to sharing their daily activities and interacting with friends on social media platforms, creating it possible to leverage on-line social network knowledge for stress detection. During this paper, we discover that users stress state is closely associated with that of his/her friends in social media, and that we use a large-scale dataset from real-world social platforms to consistently study the correlation of users' stress states and social interactions. We tend to 1st outline a group of stress-related matter, visual, and social attributes from numerous aspects, then propose a completely unique hybrid model - an element graph model combined with Convolutional Neural Network to leverage tweet content and social interaction data for stress detection. Experimental results show that the projected model will improve the detection performance by 6-9% in F1-score. By any analyzing the social interaction knowledge, we tend to conjointly discover many intriguing phenomena, i.e. the amount of social structures of thin connections (i.e. with no delta connections) of stressed users is around 14 July beyond that of non-stressed users, indicating that the social system of stressed users' friends tend to be less connected and fewer sophisticated than that of non-stressed users.

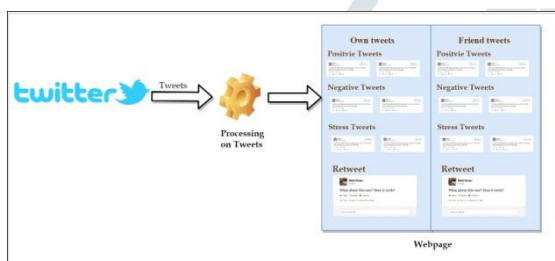
Keywords: Stress detection, factor graph model, micro-blog, social media, healthcare, social interaction.

Introduction: Psychological stress is changing into a threat to people's health today. With the fast pace of life, additional and additional folks are feeling stressed. in keeping with a worldwide survey rumoured by Newbusiness in 20101, over 1/2 the population have full-fledged AN considerable rise in stress over the last 2 years. Those stress itself is non-clinical and customary in our life, excessive and chronic stress may be rather harmful to people's physical and psychological state. in keeping with existing analysis works, long-run stress has been found to be associated with several diseases, e.g., clinical depressions, sleep disorder etc.. Moreover, in keeping with Chinese Centre for illness management and bar, suicide has become the highest explanation for death among Chinese youth, and excessive stress is taken into account to be a serious issue of suicide. Of these reveal that the fast increase of stress has become an excellent challenge to human health and life quality. Thus, there's

important importance to sight stress before it turns into severe issues. Ancient psychological stress detection is principally supported face-to face interviews, self-report questionnaires or wearable sensors. However, ancient strategies are literally reactive, that are typically labor-consuming, time-costing and hysteretic. Are there any timely and proactive strategies for stress detection? the increase of social media is ever-changing people's life, also as analysis in aid and eudemonia. With the event of social networks like Twitter and Sina Weibo2 additional and additional folks are willing to share their daily events and moods, and act with friends through the social networks. As these social media information timely replicate users' real-life states and emotions in a very timely manner, it offers new opportunities for representing, measuring, modeling, and mining users behavior patterns through the large-scale social networks, and such social info will notice its theoretical basis in science analysis. As an example, found that stressed users are additional

seemingly to be socially less active, and additional recently, there are analysis efforts on harnessing social media information for developing mental and physical aid tools. as an example, projected to leverage Twitter information for time period illness surveillance; whereas tried to bridge the vocabulary gaps between health seekers and suppliers victimisation the community generated health information. There are some analysis works victimisation user tweeting contents on social media platforms to sight users' psychological stress. Existing works incontestable that leverage social media for aid, and especially stress detection, is possible.

Architecture Diagram:



Literature Survey:

Paper(1): Semantic Concept Discovery for Large-Scale Zero-Shot Event Detection (2015)

We focus on detecting complex events in unconstrained Internet videos. While most existing works rely on the abundance of labeled training data, we consider a more difficult zero-shot setting where no training data is supplied. We first pre-train a number of concept classifiers using data from other Sources. Then we evaluate the semantic correlation of each concept w.r.t. the event of interest. After further refinement to take prediction inaccuracy and discriminative power into account, we apply the discovered concept classifiers on all test videos and obtain multiple score vectors.

Paper(2): Modeling Paying Behavior in Game Social Networks (2016)

In this paper, employing two large online games as the basis, we study how a user becomes a new paying user in the games. In particular, we examine how users paying behavior influences each other in the game social network. We study this problem from various sociological perspectives including strong/weak ties, social structural diversity and social influence. Based on the discovered patterns, we propose a learning framework to predict potential new payers. The framework can learn a model using features associated with users and then use the social relationships between users to refine the learned model

Paper(3): Predicting Personality from Twitter (2011)

In this paper, we present a method by which a users personality can be accurately predicted through the publicly available information on their Twitter profile. We will describe the type of data collected, our methods of analysis, and the machine learning techniques that allow us to successfully predict personality. We then discuss the implications this has for social media design, interface design, And broader domains.

Paper(4): Learning robust uniform features for cross-media social data by using cross auto encoders (2016)

In this study, our goal is to obtain robust features for cross- media social elements and simultaneously extract the uniform features for AS. The problem is non-trivial and poses a set of unique challenges. First, the elements are under a cross-modality setting. They can contain more than one modality. Moreover, their modalities can differ from each other. How do you obtain the modality- invariant

representations Second, the elements in AS are created over time and in time-series. Each of them has a specified context. How do you maximize the use of the time series and context information Third, there are outliers among the elements of AS. Moreover, there are naturally occurring noise factors among the elements.

Paper(5): PSYCHOLOGICAL STRESS DETECTION FROM CROSS-MEDIA MICROBLOG DATA USING DEEP SPARSE NEURAL NETWORK (2013)

In this paper, we propose an automatic stress detection method from cross-media micro blog data. We construct a three-level framework to formulate the problem. We first obtain a set of low-level features from the tweets. Then we define and extract middle-level representations based on psychological and art theories: linguistic attributes from tweets texts, visual attributes from tweets images, and social attributes from tweets comments, retweets and favourites. Finally, a Deep Sparse Neural Network is designed to learn the stress categories incorporating the cross-media attribute.

Paper (6): User-Level Psychological Stress Detection from Social Media Using Deep Neural Network (2014)

In this paper, we explore to automatically detect individuals psychological stress via social media. Employing real online micro-blog data, we first investigate the correlations between users stress and their tweeting content, social engagement and behavior patterns. Then we define two types of stress-related attributes: 1) low-level content attributes from a single tweet, including text, images and social interactions; 2) user-scope statistical attributes through their weekly micro-blog postings, leveraging information of tweeting time, tweeting types and linguistic styles. To combine content attributes with statistical attributes, we further design a convolutional neural network (CNN) with cross autoencoders to generate user-scope

content attributes from low-level content attributes. Finally, we propose a deep neural network (DNN) model to incorporate the two types of user-scope attributes to detect users psychological stress.

System

S=I, P, O, U, A

Where,

S=System

I=Input

P=Procedure

O=Output

U=User

A=Admin

Input of the System

I= Up,dt, pt,ng,st

Where

Up = Upload Post

dt = Detect post

pt = Positive

ng = Negative

st = stress

Procedure:

p = Upload Post, Detect Post= Pt, Detect

Post=Ng, Detect Post: St

Where,

pt= Count the number of words which are positive

ng= Count the number of words which are negative

st= Count the number of words which are stressed detect post,

Step 1: get the post

Upload post: delete the stop words from post

Step 2: classify the post delete words: post classified positive, negative,

Stressed, Unspecified

Step 3: Find the result

Result: positive, negative, stressed

Step 4: Admin get the result

Step 5: Give feedback to the user personally.

Output:

O= Finding the number of each user stressed and detect the graphical representation of user.

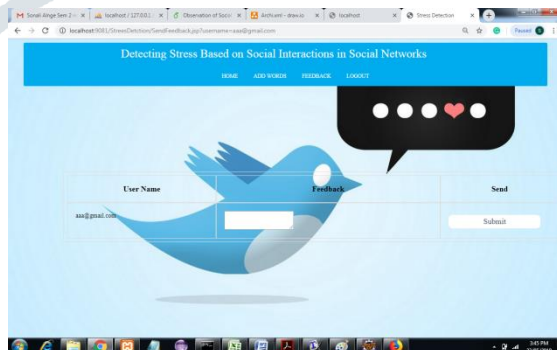
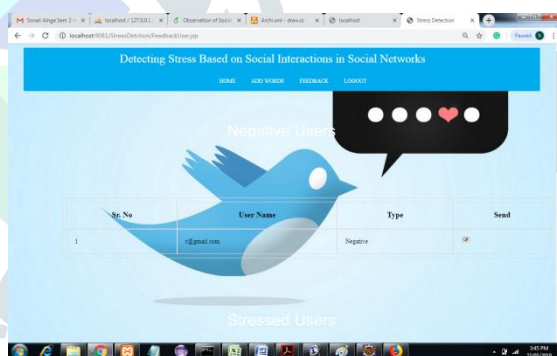
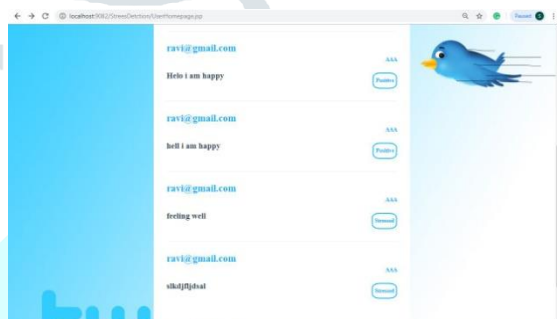
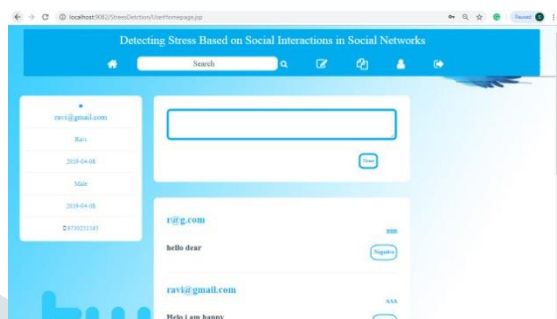
Conclusion:

In this paper, we have a tendency to given a framework for police work users’ psychological stress states from users’ weekly social media information, leverage tweets’ content in addition as users’ social interactions. Using real-world social media information because the basis, we have a tendency to studied the correlation between user’ psychological stress states and their social interaction behaviors. to completely leverage each content and social interaction data of users’ tweets, we have a tendency to planned a hybrid model which mixes the issue graph model (FGM) with a convolutional neural network (CNN). During this work, we have a tendency to additionally discover many intriguing phenomena of stress. we have a tendency to found that the quantity of social structures of distributed affiliation (i.e. with no delta connections) of stressed users is around 14 July more than that of nonstressed users, indicating that the social system of stressed users’ friends tend to be less connected and fewer sophisticated than that of non-stressed users. These phenomena may well be helpful references for future connected studies.

Future Scope:-

- Here implementing our application as real time social media like Facebook.
- We also implement for the Android application in future.

Result:



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