

SOCIAL NETWORK MENTAL DISORDERS DETECTION

Siripireddy Keerthi[1], Tiriveedhi Venkata Sushmitha[1], Vinjam Prathyush Lakshmi[1], Miss L.Raji[2], Dr.K.Vijaya[3]

[1] Student, Department of Computer Science, R.M.K. College of Engineering

[2] Assistant Professor, Department of Computer Science, R.M.K. college of Engineering

[3] Head of Department, Information Technology, R.M.K Engineering College

Abstract

The rise of social network creates an impact among the users. The social media platform provides many benefits and at the same time, it affects mental health also. In our proposed system we found that the social network can create mental disorders to the people. Nowadays there are many mental disorders are emerging among the users, we concentrate on Cyber-Relationship Addiction, Information Overload, and Net Compulsion. We tried to evaluate this disorder at an early stage. The social network mental disorder detection (SNMDD) can't be detected directly by seeing the status or log data. It is quite a bit tough to analyze and predict these problems among the users. In existing methodologies they tried to analyze this addiction through questionnaires but it won't give an accurate result for detecting the SNMDD. These questions deal with the person and they have self-revealed the data through they predict the possibilities of addiction. We examine an innovative approach to detect the SNMDD where features of the social network data get retrieved and examine the level of SNMDDs. Those features are extracted from multiple sources which are learned and subjected to training purpose, in order to improve the accuracy of result the tensor model is implemented in the system. In our proposed system we took 3126 online social network user data as input which processed and trained after that result get evaluated. Due to this large dataset, this system provides better accuracy and can believe its performance. Cyber-Relationship Addiction, Information Overload, and Net Compulsion are the three possible addictions among the user. By analyzing the large dataset the system provides value for each addiction. From this, it is understood that SNMDD is a promising solution for identifying online addiction problems. In our proposed system we can check addiction of individual by updating the dataset of that individual. Through this we can investigate the type of addiction he/she has through OSN.

Keywords— *Cyber Relationship Addiction, Information Overload, Net Compulsion, Tensor Model,*

1. INTRODUCTION

Online social networks became a global phenomenon, this causes an enormous economic impact within a few

years. Alone, the most popular online social network, Facebook, counts currently more than 850 million users worldwide. The online network presents their look in more attractive ways which leads to a great deal of attention among practitioners as well as researchers. Nowadays, many people's lives are addicted to the OSNs due to its explosive growth of popularity. As some people use the OSN for 24 hours which result in phubbing (Phone Snubbing) and Nomophobia (No Mobile Phone Phobia). These people can't stop the usage of the social networking apps. Some studies state that 1 in 10 Americans are suffering from Net Compulsion due to internet usage, it may severely affect physical and social environment of the user. A world-wide survey (Reuters, 1996) found that two thirds of managers suffer from increased tension and one third from ill-health because of information overload. These impacts only add to the pressure brought about by the need to continually adjust to an evolving circumstance.

Many researchers found that SNMDDs based people may attempt suicide due to this addiction toward the social network. The risk of suicidal inclination is much higher than non-addictive people. Therefore, there is a need to develop new approaches for detecting SNMDD cases of users. We tried to analyze the individual data from social network as a complementary alternative to the conventional psychological approaches provides an excellent opportunity to actively identify those cases at an early stage. In this paper, we develop a machine learning framework for detecting SNMDDs, which we call Social Network Mental Disorder Detection. In an online network, the people who are affected by SNMDD are usually treated at a late stage addiction of OSN. To actively identify potential SNMDD cases, we propose an innovative approach, new to

the current practice of SNMD detection, by mining data logs of OSN users as an early detection system.

2. RELATED WORKS

In this section, we are going to see about works related to social network mental disorders.

2.1 Internet Addiction Disorder (IAD)

Web enslavement issue (IAD), otherwise called hazardous Web use or obsessive Web use, is unreasonable Web utilize that meddles with everyday life. It is a sort of conduct enslavement with

the patients dependent on the Web, much the same as those compelling to medications or liquor. Many research works in Brain research and Psychiatry have examined the essential components, conceivable outcomes, what's more, connections of IAD. If any immature has a Web habit issue at their young age, it will be important to screen the suicide chance among youths with Web enslavement. The scientist investigation numerous examinations looking at the relationship among sociality and Web enslavement in teenagers. It is important to additionally consider the relationship among sociality and Web dependence in young people utilizing in light of the fact that it can make an extraordinary effect in the pre-adult populace.

2.2 Advent of Social Network Sites (SNSs)

The SNS relationship is classified into two categories they are social and parasocial. Social relationships based on reciprocity between a user and his/her friends, and parasocial relationships in which an ordinary user can know the celebrity activity through social media (e.g., famous actors, athletes, and others) but not vice versa. People can efficiently maintain preexisting social relationships and make online friendships without offline encounters. While such technological features of SNSs hold a variety of potential for individual and collective benefits, and at the same time it can affect the user in a negative way. Some

scholars consider that this SSN can make a user to get addict, feel loneliness and isolate from the society. In the advent of SSN paper, distinguishes types of SNS relationships, and investigates their Social relationships with others.

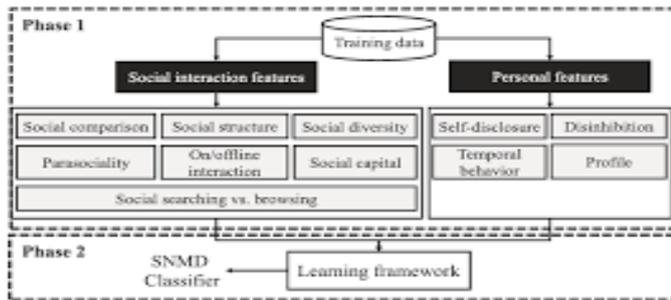
2.3 Psychosomatic Confusion of Internet Craving

The novel psychosomatic confusion of Internet craving are fast accrue both fashionable and professional recognition. The past studies state that social media has represented itself in a different format to attract users towards itself. This can make them feel alone, shyness, nervousness, depression, and self-consciousness, but here become visible to be reserved agreement about Internet infatuation disorder. Nowadays data also available in an efficient way to access the internet which creates a convenient environment to utilize social media.

2.4 Generalized Linear Dynamic Models

A scheme to energetically approximation the likelihood of humanity inside the Intensive Care Unit (ICU) by combining heterogeneous data. In advice, a method based on Generalized Linear Dynamic Models those models the probability of mortality as a latent state that evolves over time. This construction allows us to join different types of skin texture (lab results, vital signs readings, doctor and nurse notes, etc) into a single state, which is updated each time new patient data is observed. Based on phrase extraction and Statistical Topic Models the existing system extracts the text features from the users. But cannot capture the numerical words in the text. Among them, content-based textual features are extracted from user-generated information (such as blog, social media) for sentiment analysis and topic detection.

3. ARCHITECTURE DIAGRAM



4. PROPOSED WORK

In social network mental disorder detection, we detect the three type of SNMDs through data Mining 1) Cyber-Relationship, 2) Net Compulsion (NC), 3) Information Overload (IO).

1) Cyber-Relationship (CR) Addiction : It means completely addict to social network, checking and messaging to the point where social relationships to virtual and online friends become more important than real-life ones with friends and families

2) Net Compulsion (NC) : It includes compulsive online gaming or gambling with their friends, often resulting in financial and job-related problems

3) Information Overload (IO) : Here the user is addicted to surfing in internet like checking the status and news feeds, leading to lower work productivity and less interaction with the families and friend who are in offline

Accordingly, we formulate the detection of SNMD cases as a classification problem. We detect each type of SNMDs with a binary SVM. In this study, we propose a two-phase framework, called Social Network Mental Disorder Detection (SNMDD), as shown in Figure 1. In the first zone, the system extracts the various discriminative features of users, while the second zone presents a new SNMD-based tensor model to derive latent factors for training and use of classifiers built upon Transductive SVM (TSVM).

4.1 METHODOLOGIES

Social Interaction Features:

In social interaction feature we first capture user behavior on social media. Social comparison based features (SComp) although most literature indicates that the majority of the newsfeed updates is positive, recent studies manifest that users who are exposed to positive posts from others on Facebook are inclined to feel envy and depressed due to social comparison.

4.1.1 Social structure based features (SS):

In Sociology, each person in a social network belongs to one of the following three types of social roles: influential users, structural holes, and normal users. An influential user is the one with a huge degree and many mentions and shares. On the other hand, weaker connecting paths between groups are structure holes in OSNs, and researchers have demonstrated that structural holes usually have timely access to important information, e.g., trade trend, job opportunities, which usually leads to social success. Therefore, the users with their roles as structural holes are more inclined to suffer from information overload for news feeds because they enjoy finding and sharing new and interesting information to various friends.

4.1.2 Social diversity based features (SDiv):

Researchers have observed that diversity improves the depth of people thinking for both majority or minority . For example, a person with a more diverse background and many friends is less inclined to suffer from SNMDs because she is often supported by friends and thereby rarely feels lonely and isolated (two important factors correlated to SNMDs). Therefore, the impact of social network diversity is increasingly important and inspires us to incorporate them for effective SNMD detection.

4.1.3 Parasocial Relationship (PR):

Research shows that the mental factor of loneliness is one of the primary reasons why the users with SNMDs excessively access online social media. As the loneliness of

an OSN user is hard to measure, we exploit the parasocial relationship, an asymmetric interpersonal relationship between two people where one party cares more about the other but the other does not, to capture loneliness.

Personal Features:

4.1.4 Temporal Behavior Features(TEMP):

Relapse is the state that a person is inclined to quickly revert back to the excessive usage of social media after an abstinence period, while tolerance is the state that the time spent by a person with SNMDs tends to increase due to the mood modification effect. It is worth noting that the above two mental state have been exploited to evaluate clinical addictions. We aim to use them to distinguish heavy users and addictive users because heavy users do not suffer from relapse and tolerance in use of OSNs. An issue arising here is how to assess relapse and tolerance quantitatively. It is observed that the use of social media by an SNMD patient is usually in the form of intermittent bursts

5. CONCLUSION

In our proposed work, we attempt to detect the SNMD disorder automatically. We propose an SNMDD framework that explores various features from data logs of OSNs and a new tensor technique for deriving latent features from multiple OSNs for SNMD detection. The combined work of computer scientists and mental healthcare researchers put forth this problem before the society to address emerging issues in SNMDs. The next approach for the analysis, we plan to study the features extracted from multimedia contents by techniques on NLP and computer vision.

6. FUTURE WORK

We also plan to further explore new issues from the perspective of a social network service provider, e.g., Facebook or Instagram, to improve the well-beings of OSN users without compromising the user engagement.

REFERENCES

- [1] J. Block. Issues of DSM-V: internet addiction. *American Journal of Psychiatry*, 2008
- [2] I.-H. Lin, C.-H. Ko, Y.-P. Chang, T.-L. Liu, P.-W. Wang, H.-C. Lin, M.-F. Huang, Y.-C. Yeh, W.-J. Chou, and C.-F. Yen. The association between suicidality and Internet addiction and activities in Taiwanese adolescents. *Compr. Psychiat.*, 2014.
- [3] Y. Baek, Y. Bae, and H. Jang. Social and parasocial relationships on social network sites and their differential relationships with users' psychological well-being. *Cyberpsychol. Behav. Soc. Netw.*, 2013.
- [4] D. La Barbera, F. La Paglia, and R. Valsavoia. Social network and addiction. *Cyberpsychol. Behav.*, 2009.
- [5] K. Chak and L. Leung. Shyness and locus of control as predictors of internet addiction and internet use. *Cyberpsychol. Behav.*, 2004.
- [6] C. Tan, L. Lee, J. Tang, L. Jiang, M. Zhou, and P. Li. User-level sentiment analysis incorporating social networks. *KDD*, 2011.
- [7] J. Kleinberg. Bursty and hierarchical structure in streams. *KDD*, 2002.
- [8] K.-L. Liu, W.-J. Li, and M. Guo. Emoticon smoothed language models for twitter sentiment analysis. *AAAI*, 2012.
- [9] M. Saar-Tsechansky and F. Provost. Handling missing values when applying classification models. *JMLR*, 2007.
- [10] C.-C. Chang and C.-J. Lin. LIBSVM: a library for support vector machines, 2001.
- [11] F. Chang, C.-Y. Guo, X.-R. Lin, and C.-J. Lu. Tree decomposition for large-scale SVM problems. *JLMR*, 2010.
- [12] B. Kågström and P. Poromaa. Distributed and shared memory block algorithms for the triangular Sylvester equation with sep-1 estimators. *SIAM Journal on Matrix Analysis and Applications*, 1992.
- [13] L. R. Tucker. Some mathematical notes on three-mode factor analysis. *Psychometrika*, 1966.
- [14] R.A. Harshman. Foundations of the PARAFAC procedure: Models and conditions for an explanatory

- multimodal factor analysis. UCLA Working Papers in Phonetics, 1970.
- [15] H. Appel, J. Crusius, and Alexander L. Gerla. Social comparison, envy, and depression on facebook: a study looking at the effects of high comparison standards on depressed individuals. *Journal of Social and Clinical Psychology*, 2015.
- [16] J. B. White, E. J. Langer, L. Yariv, and J. C. Welch IV. Frequent social comparisons and destructive emotions and behaviors: the dark side of social comparisons. *Journal of Adult Development*, 2006.
- [17] D. Li, X. Li, L. Zhao, Y. Zhou, W. Sun, and Y. Wang. Linking multiple risk exposure profiles with adolescent Internet addiction: insights from the person-centered approach. *Computers in Human Behavior*, 2017.
- [18] J. M. Ortega and W. C. Rheinboldt. *Iterative Solution of Nonlinear Equations in Several Variables*. Academic Press, NY, 1970. K. Young, M. Pistner, J. O'Mara, and J. Buchanan. Cyber-disorders: The mental health concern for the new millennium. *Cyberpsychol. Behav.*, 1999.
- [19] K. Young. Internet addiction: the emergence of a new clinical disorder, *Cyberpsychol. Behav.*, 1998.
- [20] I.-H. Lin, C.-H. Ko, Y.-P. Chang, T.-L. Liu, P.-W. Wang, H.-C. Lin, M.-F. Huang, Y.-C. Yeh, W.-J. Chou, and C.-F. The association between suicidality and Internet addiction and activities in Taiwanese adolescents. *Compr. Psychiat.*, 2014.