A Comprehensive Study on Social Network Mental Disorders Detection via Online Social Media Mining

ABSTRACT

The explosive growth in popularity of social networking leads to the problematic usage. An increasing number of social network mental disorders (SNMDs), such as Cyber-Relationship Addiction, Information Overload, and Net Compulsion, have been recently noted. Symptoms of these mental disorders are usually observed passively today, resulting in delayed clinical intervention. In this paper, we argue that mining online social behavior provides an opportunity to actively identify SNMDs at an early stage. It is challenging to detect SNMDs because the mental status cannot be directly observed from online social activity logs. Our approach, new and innovative to the practice of SNMD detection, does not rely on self-revealing of those mental factors via questionnaires in Psychology. Instead, we propose a machine learning framework, namely, Social Network Mental Disorder Detection (SNMDD), that exploits features extracted from social network data to accurately identify potential cases of SNMDs. We also exploit multi-source learning in SNMDD and propose a new SNMD-based Tensor Model (STM) to improve the accuracy. To increase the scalability of STM, we further improve the efficiency with performance guarantee. Our framework is evaluated via a user study with 3126 online social network users. We conduct a feature analysis, and also apply SNMDD on large-scale datasets and analyze the characteristics of the three SNMD types. The results manifest that SNMDD is promising for identifying online social network users with potential SNMDs.

**EXISTING SYSTEM**

* King et al. [40] investigate the problem of simulated gambling via digital and social media to analyze the correlation of different factors, e.g., grade, ethnicity. Baumer et al. [10] report the Internet user behavior to investigate the reason of addiction. Li et al. [41] examine the risk factors related to Internet addiction.
* Kim et al. [42] investigate the association of sleep quality and suicide attempt of Internet addicts. On the other hand, recent research in Psychology and Sociology reports a number of mental factors related to social network mental disorders. Research indicates that young people with narcissistic tendencies and shyness are particularly vulnerable to addiction with OSNs. However, the above research explores various negative impacts and discusses potential reasons for Internet addiction. By contrast, this paper proposes to automatically identify SNMD patients at the early stage according to their OSN data with a novel tensor model that efficiently integrate heterogeneous data from different OSNs.
* Chang et. al [43] employ an NLP-based approach to collect and extract linguistic and content-based features from online social media to identify Borderline Personality Disorder and Bipolar Disorder patients. Saha et al. [44] extract the topical and linguistic features from online social media for depression patients to analyze their patterns.
* Choudhury et al. [45] analyze emotion and linguistic styles of social media data for Major Depressive Disorder (MDD). However, most previous research focuses on individual behaviors and their generated textual contents but do not carefully examine the structure of social networks and potential Psychological features.

**Disadvantages**

* There is no temporal behavior features to trace Mental Disorders.
* There are no techniques for offline interaction.

**PROPOSED SYSTEM**

* In the proposed system, the system aims to explore data mining techniques to detect three types of SNMDs [1]: 1) Cyber-Relationship (CR) Addiction, which includes the addiction to social networking, 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), which includes compulsive online social gaming or gambling, often resulting in financial and job-related problems; and 3) Information Overload (IO), which includes addictive surfing of user status and news feeds, leading to lower work productivity and fewer social interactions with families and friends offline.
* Accordingly, the system formulates the detection of SNMD cases as a classification problem. We detect each type of SNMDs with a binary SVM. In this study, the system proposes a two-phase framework, called Social Network Mental Disorder Detection (SNMDD). The first phase extracts various discriminative features of users, while the second phase presents a new SNMD-based tensor model to derive latent factors for training and use of classifiers built upon Transductive SVM (TSVM).
* Two key challenges exist in design of SNMDD: i) we are not able to directly extract mental factors like what have been done via questionnaires in Psychology and thus need new features for learning the classification models;4 ii) we aim to exploit user data logs from multiple OSNs and thus need new techniques for integrating multi-source data based on SNMD characteristics.

**Advantages**

* The system develops a machine learning framework to detect SNMDs, called Social Network Mental Disorder Detection(SNMDD).
* Social diversity based features (SDiv) Researchers have observed that diversity improves the depth of people thinking for both majority or minority

**SYSTEM REQUIREMENTS**

➢ **H/W System Configuration:-**

➢ Processor - Pentium –IV

➢ RAM - 4 GB (min)

➢ Hard Disk - 20 GB

➢ Key Board - Standard Windows Keyboard

➢ Mouse - Two or Three Button Mouse

➢ Monitor - SVGA

**Software Requirements:**

* Operating System - Windows XP
* Coding Language - Java/J2EE(JSP,Servlet)
* Front End - J2EE
* Back End - MySQL