DEPRESSION DETECTION VIA SOCIAL MEDIA COMMENTS USING ML APPROACH

Rushikesh Gadhave[*1], Mr. Prasad Ghodake[*2], Mr. Ashutosh Todkar[*3],

Mr. Pranit Vichare[*4], Prof. A.G. Kadam[*5]

[*1,2,3,4]Information Technology Department, TCOER, Pune, Maharashtra, India.

[*5]Assistant Professor, Department Of Information Technology, TCOER, Pune, Maharashtra, India.

ABSTRACT

Depression accounts for a large portion of the global disease burden. Doctors used to diagnose sad people in person using clinical depression criteria. The COVID-19 pandemic encapsulates huge forces such as unemployment, mortality, and loneliness, among other things. When clinicians are called upon, they must distinguish between demoralization and depression. However, more than 70% of patients do not seek medical assistance in the early stages of depression, causing their illnesses to worsen. Meanwhile, as people use social media more and more to express themselves and share their daily lives, it has shown to be a useful tool for diagnosing physical and mental problems. We use social media data to forecast depressed persons and define their depression severity in order to help raise an alarm in this paper. A supervised learning task is used to mimic this problem. We begin by weakly labeling the Twitter data in a self-supervised manner. A rich set of features, including emotional, topical, behavioral, user level, and depression-related n-gram features, are retrieved to characterize each user. We use Swish as an activation function to train a small long short-term memory (LSTM) network to predict depression intensities using these features. Extensive research is conducted to demonstrate the efficacy of our technology.

Keywords: Social Media, Machine Learning, Depression Detection, Medical.

I.   INTRODUCTION

Social media is arguably the richest source of human generated text input. Opinions, feedbacks and critiques provided by internet users reflect attitudes and sentiments towards certain topics. This paper presents a knowledge-based system, which includes an emotional health monitoring system to detect users with possible psychological disorders specially depression and stress. Symptoms Of these psychological disorder are usually observed passively. In this situation, author argue that online social behaviour extraction offers an opportunity to actively identify psychological disorder at an early stage. It is difficult to identify the disorder because the psychological factors considered in standard diagnostic criteria questionnaire cannot be observed by the registers of online social activities.

Depression and stress is one of the most common and disabling mental disorders, and has a relevant impact on society. Currently, methods for depression and stress detection and diagnosis rely on self-reporting coupled with the health care practitioners informed assessment. The provision of effective health monitoring systems and diagnostic aids could be crucial and important to improve health professional's work and lower healthcare costs. Sentiment and deep learning technology could help to tackle these objectives by providing effective tools and systems for objective assessment. Such tools and systems do not aim to replace the psychologist or psychiatrist but they could support their decisions.

Our approach, New and innovative for the practice of psychological disorder detection, it does so do not trust the self-disclosure of those psychological factors through the questionnaires. Instead, propose a machine learning technique that is detection of psychological disorder in social networks which exploits the features extracted from social network data for identify with precision possible cases of disorder detection. We perform an analysis of the characteristics and we also apply machine learning in large-scale data sets and analyse features of the two types of psychological disorders.

II.   LITERATURE SURVEY

Renata L. Rosa, Gisele M. Schwartz, Wilson V. Ruggiero, and Dem´ostenes Z. Rodr´ıguez - Online social networks (OSN) provide relevant information on users' opinion about different themes. Thus, applications, such as monitoring and recommendation systems (RS) can collect and analyze this data. This paper presents a

Knowledge-Based Recommendation System (KBRS), which includes an emotional health monitoring system to detect users with potential psychological disturbances, specifically, depression and stress.

Guang Yang, Haibo He, Fellow, IEEE, and Qian Chen - Sentiment analysis on microblog posts has been studied in depth, sentiment analysis of posts is still challenging because of the limited contextual information that they normally contain. In microblog environments, emoticons are frequently used and they have clear emotional meanings. They are important emotional signals for microblog sentimental analysis. They address this issue by constructing an emotional space as a feature representation matrix and projecting emoticons and words into the emotional space based on the semantic composition.

M. Al-Qurishi, M. S. Hossain, M. Alrubaian, S. M. M. Rahman, and A. Alamri - In this paper, author propose an integrated social media content analysis platform that leverages three levels of features, i.e., user-generated content, social graph connections, and user profile activities, to analyze and detect anomalous behaviors that deviate significantly from the norm in large-scale social networks. Several types of analyses have been conducted for a better understanding of the different user behaviors in the detection of highly adaptive malicious users.

Huijie Lin, JiaJia, JiezhonQiu, Yongfeng Zhang, LexingXie, Jie Tang, Ling Feng, and Tat-Seng Chua - In this paper, we find that users stress state is closely related to that of his/her friends in social media, and we employ a large-scale dataset from real-world social platforms to systematically study the correlation of users' stress states and social interactions. We first define a set of stress-related textual, visual, and social attributes from various aspects, and then propose a novel hybrid model - a factor graph model combined with Convolutional Neural Network to leverage tweet content and social interaction information for stress detection.

BudhadityaSaha, Thin Nguyen, DinhPhung, SvethaVenkatesh - Mental illness has a deep impact on individuals, families, and by extension, society as a whole. Social networks allow individuals with mental disorders to communicate with others sufferers via online communities, providing an invaluable resource for studies on textualsigns of psychological health problems. Mental disorders often occur in combinations, e.g.

Chun-Hao Chang, Elvis Saravia, Yi-Shin Chen - In this paper, aim at building predictive models that leverage language and behavioral patterns, used particularly in social media, to determine whether a user is suffering from two cases of mental disorder. These predictive models are made possible by employing a novel data collection process, coined as Subconscious Crowdsourcing, which helps to collect a faster and more reliable dataset of patients. Our experiments suggest that extracting specific language patterns and social interaction features from reliable patient datasets can greatly contribute to further analysis and detection of mental disorders.

AndreyBogomolov, Bruno Lepri, MichelaFerron, Fabio Pianesi, Alex (Sandy) Pentland- In our paper, propose an alternative approach providing evidence that daily stress can be reliably recognized based on behavioral metrics, derived from the user's mobile phone activity and from additional indicators, such as the weather conditions (data pertaining to transitory properties of the environment) and the personality traits (data concerning permanent dispositions of individuals). Our multifactorial statistical model, which is person independent, obtains the accuracy score of 72.28% for a 2-class daily stress recognition problem. The model is e_cient to implement for most of multimedia applications due to highly reduced low dimensional feature space (32d). Moreover, we identify and discuss the indicators which have strong predictive power.

BimalViswanath† Alan MisloveMeeyoung Cha Krishna P. Gummadi – In this paper, study the evolution of activity between users in the Facebook social network to capture this notion. Also find that linksin the activity network tend to come and go rapidly over time, and the strength of ties exhibits a general decreasing trend of activity as the social network link ages. For example, only 30% of Facebook user pairs interact consistently from one month to the next. Interestingly, and find that even though the links of the activity network change rapidly over time, many graph-theoretic properties of the activity network remain unchanged. I.-R. Glavan, A. Mirica, and B. Firtescu - Social media tools are wide spread in web communication and are gaining popularity in the communication process between public institutions and citizens. This study conducts an analysis on how social media is used by Official Statistical Institutes to interact with citizens and disseminate information. A linear regression technique is performed to examine which social media platforms (Twitter or Facebook) is a more effective tool in the communication process in the official statistics area. Our study suggests that Twitter

is a more powerful tool than Facebook in enhancing the relationship between off network characteristics discussing "official statistics" using NodeXL that revealed the unexploited potential of this network by official statistical agencies.

A. E. U. Berbano, H. N. V. Pengson, C. G. V. Razon, K. C. G. Tungcul, and S. V. Prado - The paper presents further research on neural engineering that focuses on the classification of emotional, mental, physical and no stress through the use of Electroencephalography (EEG) signal analysis. Stress is one of the leading causes of several health-related problems and diseases. Therefore, it becomes necessary for people to monitor their stress. The human body acquires and responds to stress in different ways resulting to two classifications of stress namely, mental and emotional stress. Traditional methods in classifying stress such as through questionnaires and self-assessment tests are said to be subjective since they rely on personal judgment. Thus, in this study, stress is classified through an objective measure which is EEG signal analysis. The features of the EEG recordings are then pre-processed, extracted, and selected using Discrete Wavelet Transform (DWT). These features are then ussed as inputs to classify stress using Artificial Neural Network (ANN) and validated using K-fold Cross Validation Method. Lastly, the results from the software assisted method is compared to the results of the traditional method.

III.   EXISTING SYSTEM

They had previously shown that the COVID-19 pandemic had the potential to harm the mental health of healthcare workers in earlier studies. Further research is needed on HCW mental health effects of the COVID-19 pandemic, as all of the studies included in our meta-analysis were cross-sectional. In any problem where a system must quickly analyse a series of elements connected to an object and make a prediction about the object's class, flatency is an all-encompassing measure. Flatency is only considered in the context of identifying early signs of depression on social media. Wilcoxon's Signed Rank significance test was used as before to compare each model to the baseline (vanilla BS). Affective word embeddings as input, affective loss functions, and affectively diverse decoding were compared in this study, which also demonstrated how they could be combined. Clinical depression and online social media activities are covered by MDL. Determining whether or not a user is depressed is a binary classification problem for their multimodal depressive dictionary learning model. MDL is used in conjunction with our labelling method to measure depression intensity.

IV.   CONCLUSION

In this proposed system, automatically identifying potential online users with depression and stress is threatening people's health. Thus users suffering from depression can be identified and they might be helped before they take any drastic steps which might have a long lasting impact. Using the data of the social networks of the real world as a basis, we study the correlation between the states of psychological disorder of users and their social interaction behaviour we recommend the user for health precautions to send by mail for user interaction

V.   REFERENCES

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