A Survey of Predicting Depression Levels Using Social Media Posts

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---**Abstract**---

The use of Social Network Sites (SNS) is increasing nowadays especially by the younger generations. The availability of SNS allows users to express their interests, feelings and share daily routine. Using user-generated content (UGC) in a correct way may help determine people's mental health levels. Mining the UGC could help to predict the mental health levels and depression. Depression is a serious medical illness, which interferes most with the ability to work, study, eat, sleep and having fun. However, from the user profile in SNS, there is a collection all the information that relates to person's mood, and negativism. To investigate how SNS user's posts can help classify users according to mental health levels. This system uses SNS as a source of data and screening tool to classify the user using artificial intelligence according to the UGC on SNS.

I. INTRODUCTION

Depression is a common mental illness. It is one of the most concerning public health problems worldwide. In 2015, over 300 millions world population have suffered from this mental problem.Depressioniascharacterizedbyhavingapersistent feeling of sadness, hopelessness, low energy level, low self- esteem, empty mood, anxious mood, reduced or increased appetite, sleeping problems, guilty feeling, self harm as well as suicidal thoughts. This emotional disturbance affects daily functions as it also disturbs one's memory and an ability to concentrate . Not only it affects one's ability to live normally, it also is a burden to the society in general.

Depression also put the patients at risk of heart disease by 67% and an increase in a risk of cancer by 50% . Moreover, this mental illness is also a burden to family, friends, care givers and other relationship in form of stress, marital breakdown, or homelessness . Thus, it is reasonable to make an effort and investment in depression prevention and medication

Depression is a curable disease. An early detection and intervention would shorten the treatment course . Unfortunately, the rate of accessibility to treatment is surprisingly low. It was reported that less than 50% of those who have this mental illness gained access to mental health service. The barriers include a lack of knowledge and awareness in depression, having negative perception about mental health services and a limit numbers of mental health professions . To help increase the rate of accessibility to mental health service, it is necessary that an advanced technology and proactive technique should be used. More importantly,to encourage people to beaware of their emotional well-being including depression, there should be a valid depression detection system available on the internet. where most of the people are able to do their work.

II. DEPRESSION-SCORE PREDICTION MODEL

For our initial experiments, we used support vector regression (SVR) [38] for predicting depression scores (in the Beck depression rating scale) from speech. The SVR training was performed by using the scikit-learn Python package; where the SVR had a polynomial kernel of order 20. Our initial exploration with different SVR kernels [37] revealed that the polynomial kernel was the optimal kernel for the given task, and hence we used it as the default kernel for all reported experiments. In addition to SVRs, we trained separate artificial neural networks (ANNs) for each feature type and training condition. The nets were trained using back-propagation with a scaled conjugate gradient algorithm, where the inputs were the 30D i-vectors, and the targets were the Beck depression rating scores. Note that the ANNs had linear activation for the input and output layers, with tan-sigmoid activation between the hidden layers. The performance of the ANNs was evaluated with Pearson's product moment correlation (PPMC) coefficient, mean absolute error (MAE), and root mean squared error (RMSE), as these were the performance metrics used in AVEC-2014 [27]. For the cross-corpus analysis, we trained ANN models by using the AVEC-2014 training data, and then employed the trained models to predict the depression scores for the VU-PTU dataset. We report the PPMC between the model-predicted depression scores and the HAM-D depression scores of the VU-PTU dataset.

S.NO	TITLE	CONENT	AUTHOR	YEAR
1.	A framework for depression dataset to build automatic diagnoses in clinically depressed Saudi patients	Depression is a public health problem that has high effects on a person's functional and social relationships. Depression is a growing problem in the society. It causes pain and suffering not only to patients, but also to those who care about them. Depression disorder is hard to diagnose, because its symptoms could be confused with other disorders and has different cross-cultural symptoms. This paper proposes a framework that would best solve the problem of automatic depression detection in depressed Saudi patients. This paper particularly focuses on designing the collection of Saudi depression dataset using multiple modalities.	Lubana Yusuf	2016

S.NO	TITLE	CONTENT	AUTHOR	YEAR
2.	Detection of Clinical Depression in Adolescents' Speech During Family Interactions	The properties of acoustic speech have previously been investigated as possible cues for depression in adults. However, these studies were restricted to small populations of patients and the speech recordings were made during patients' clinical interviews or fixed-text reading sessions. Symptoms of depression often first appear during adolescence at a time when the voice is changing, in both males and females, suggesting that specific studies of these phenomena in adolescent populations are warranted. This study investigated acoustic correlates of depression in a large sample of 139 adolescents (68 clinically depressed and 71 controls).	Nammana C Madague	2010
3.	An improved model for depression detection in micro blog social network	Social networks contain a tremendous amount of node and linkage data, providing unprecedented opportunities for a wide variety of fields. As the world's fourth largest disease, depression has become one of the most significant research subjects. Previously, a depression classifier has been proposed to classify the users in online social networks to be depressed or not, however, the classifier takes only node features into account and neglects the influence of linkages. This paper proposes an improved model to calculate the probability of a user being depressed, which is based on both node and linkage features. The linkage features are measured in two aspects: tie strength and interaction content analysis. Moreover, the propagation rule of depression is considered for improving the prediction accuracy.	Xingu wang	2013

4.	Toward the development of cost effective e-depression effective system.	Diagnosis and prevention of depressive disorders at any scale have been attracting considerable attention of the public healthcare in Japan because depression is one of the most rapidly pervasive mental disorders in the country. A major issue that hinders the feasibility of depression screening for its prevention is the availability of some simple and cost-effective methods for depression detection and monitoring. Here in this paper, we present the development of a computerized tool for depression detection. The tool utilizes the theory of chaos and systems complexity to extract robust dynamically statistical features of physiological signals provided by the low-cost technology of photoplethysmography.	Taun D Pham	2012

III. CONCLUSION

The experiments results show that the use of behavioral information on Facebook both in form of message and activities could predict depression. Collection of more data to get relevant and valid information. Manual annotating all complex attributes using croud sourcing and deeper dimensions should also be analysed in order to create a better depression detection algorithm

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