

BEHAVIOUR ANALYSIS FOR MENTALLY AFFECTED PEOPLE

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ABSTRACT

Today, depression is one of the most common health hazards we see in many people throughout the world. Individuals with symptoms of severe depression will affect all aspects of their lives such as work, home, relationships, etc. An Early diagnosis of depression symptoms may help people to take care of their mental health. Social media channels, such as Facebook, Twitter, and Instagram, have changed our world forever. People are now more connected than ever and are emerging as a kind of digital person. While social media has certainly had a few notable features, corruption is also undeniable. Recent research has shown a correlation between high usage of social networking sites and an increase in depression. The current study aims to exploit machine learning strategies to find a Twitter user depressed based on his network behavior and tweets. To this end, we have trained and evaluated class classifiers to determine whether a user is depressed or not using features taken from his or her online activities and tweets.

1. INTRODUCTION

Depression is a common mental health condition and the leading cause of disability in the world, which can lead to suicide. Every year approximately more than 300 million people are suffering from depression all over the world. Depression can be diagnosed by a face-to-face clinic approach. However, in the early stages of depression, 70% of patients did not want to see a doctor, whose condition may have improved significantly. Recently, there has been a move to use social media data to detect, measure, and track potential disease changes. The proliferation of social media

platforms provides a rich opportunity for the development of data available to psychiatrists and researchers, allowing for a more informed and well-equipped mental health field. In addition, the Mysterious emotions that infiltrated social media harm people, leading to depression and other mental illnesses. Mental illness is also known as a high risk of suicide; about 80% of those who try or die by suicide are known to have some form of mental illness. Now-a-days people are more interactive with the social media when compared to person to person. People are sharing their opinions, thoughts, quotes, feelings in social media. So we are building a machine learning system so that we can use the tweets or quotes which they are sharing on social media and see whether they are depressed or they are normal.

Mental well being of a person is the state of mind of that individual and also gives an overview of his/her general nature. Mental illness is a result of imbalances in brain chemistry. The assessment of mental wellness is also very critical to understanding and suggesting treatments to be given for patients with deviated mental behavior. The mental health of an individual serves as an indicator for effectively treating the ailments of the individual. It is essential to maintain the mental health profiles of different communities in order to predict any health related anomalies. The community can be broadly classified as high school adolescents, college goers and working professionals. There is a common notion

that all categories of the population are commonly subject to stress and depression. It is a necessity to address the mental wellness of different categories at different times in order to prevent any serious illness. A executive board of World Health Organization(WHO) estimate in 2011 has predicted that by 2030, depression will be the leading cause of global disease burden. The radical shift to include the mental health profile of a patient by healthcare providers will be made mandatory in the coming years to provide better medication and also assist in faster recovery. Winters-Miner et al. [1] has discussed about the way medical predictive analytics will revolutionize the healthcare field globally.

Psychologists focus extensively on psychotherapy and treating emotional and mental suffering in patients with behavioral intervention. Psychologists are also qualified to con-duct psychological testing, which is critical in assessing a person's mental state and determining the most effective course of treatment. The developed prediction system will assist the psychologists in conducting psychological testing and in predicting the mental health of an individual. The psychologist and psychiatrist work in tandem to treat patient symptoms from both a behavioral and clinical stand point. The fields of psychology and psychiatry are both essential in researching and developing treatment for improving mental and emotional health. According to WHO, 50 million Indians are suffering from depression which is one of the prevalent outcomes of mental illness. India has a total of only 898 clinical psychologists, one for every 1.3 million people and a total of 3800 psychiatrists, one for every 3,30,000. At this juncture it is very essential to provide mental health services available to larger community of population. Several factors that affect the general mental wellbeing of an individual include globalization,

workplace pressure, competition at study place, etc. The proposed system is expected to perform behavioral profiling of individuals in an attempt to make mental healthcare more accessible. With the advancement in technology the role of a psychologist can be supplemented or even replaced with Artificial Intelligence(AI) based mental health monitoring tools ranging from smart phone applications to wearable devices. The book by Poulin et al. [2] discusses the role of AI in behavioral and mental health care. It elaborates the use of AI for decision making and its applications for assessment and treatment. Machine learning is a type of AI which makes the computer to learn by training using large amounts of data without the need to explicitly program them. These algorithms parse data, learn from it and then make a determination or prediction about something. The machine learning algorithms play a very vital role in analyzing the data collected from the mentioned devices or tools. There are wide range of functionalities provided by these algorithms makes them suitable candidates for use in predicting mental health. The emerging field of 'predictive analytics in mental health' is becoming a reality with many moving towards using machine learning for aiding in preliminary clinical decision making process. The role of predictive analytics in mental health is discussed in Hahn et al.[3]. They have reported the applications, guidelines, challenges and perspectives of predictive analytics in this domain. There are a number of factors that influence the choice of the classifier used to build the predictive model. The classifiers like support vector machines, K-nearest neighbor , naïvebayes, logistic regression could be used to build the model. The use of a ensemble of classifiers is also encouraged if the results obtained from individual classifier is not very satisfactory. This

research work proposes to identify the mental health of an individual in a population using the classification algorithms. The primary objective of building a prediction model for assessing the mental health is achieved by applying clustering and classification algorithms as discussed in the following sections. A person's mental well-being is his or her state of mind and also provides an overview of his or her overall character. Mental illnesses are caused by chemical abnormalities in the brain. The assessment of mental wellbeing is also highly important in understanding and providing therapy for people with deviant mental conduct. Individuals' mental health acts as an indicator for properly addressing their disorders. Keeping up with the emotional wellness profiles of different populaces is basic to foresee any wellbeing related anomalies. The people group is generally separated into three gatherings: secondary school understudies, undergrads, and working experts. There is a boundless conviction that pressure and wretchedness influence all socioeconomics similarly. To stay away from significant ailment, dealing with the psychological prosperity of different gatherings at various periods is vital. In 2011, the World Health Organization's leader board guessed that downturn will be the biggest reason for worldwide disease trouble by 2030. In the coming years, healthcare professionals will be forced to make significant changes in order to incorporate a patient's psychological health status in order to provide better treatment and help in faster recovery. Winters-Miner and her associates The impact of medical predictive analytics on the worldwide health care profession has been debated. Psychologists devote a significant amount of their time to psychotherapy and addressing clients' emotional and mental distress through behavior therapy. Therapists also are qualified to provide

psychological exams, which are required for diagnosing mental illness and choosing the most successful course of treatment. The created prediction approach will aid psychologists in the administration of psychological tests and the predicting of an individual's personal mental health.

II. SYSTEM ANALYSIS

EXISTING SYSTEM

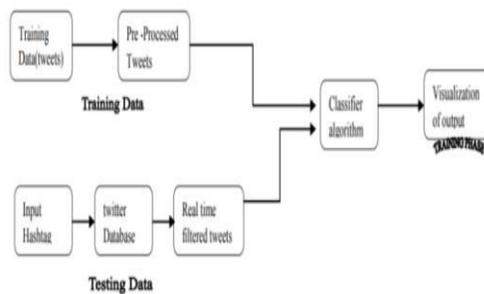
Existing system employed a dictionary-based approach to identify cyber depression on Twitter. In this research, they employed an N-gram feature engineering technique to generate the numeric vectors from the predefined dictionary of depression words. Also used a dictionary-based approach to automatically detect racism on Dutch social media. In this research, the authors relied on the distribution of words in three dictionaries. They sent the generated features to the SVM classifier. Their experimental results obtained a 0.46 F-Score.

PROPOSED SYSTEM

The proposed solutions use different feature engineering techniques and ML algorithms to differentiate content as Depression tweets and predict given text as Depression tweets or not. Machine Learning can automate process of detecting depression related tweets by training twitter data. Training , testing on dataset and accuracy calculation is done by algorithms. Here in project we are using Naïve Bayes algorithm, since it is a supervised learning algorithm, based on the vision of the Bayes and used to solve classification problems. It is widely used to classify text that includes high-quality training databases. This algorithm is widely used for text classification and multitasking problems. It is easy and quick to predict a class of test data set. It also works well in predicting multiple classes .While independent thinking still exists, the Naive Bayes category performs better compared to other models like logistic regression and requires less training data. It works best if there is a phase input variant compared to numerical variables. With the variability of the numbers, a

common distribution is considered (metal curve, which is a strong guess).

system Architecture



III. IMPLEMENTATION

Modules Description

Dataset collection: In this module depression data set is collected from Kaggle website which has depression and normal text and features and 0 and 1 as labels.

Pre-processing: In this module data set is taken as input and nltk library is used to convert text data to cleaned text data by removing stop word applying text cleaning methods. Data is converted to vectorized format.

Testing and training: In this stage cleaned data set is divided in to testing and training data and test set is stored in to train x as features and train y as labels.

Initializing Algorithm: In this stage data set features and labels are given as input to algorithm and using fit function data is trained.

Multiple algorithms: Training is done using multiple machine learning algorithms and accuracy is calculated.

IV. CONCLUSION

As we know every coin have two sides, Depression tweets Prediction analysis is great but it's a difficult task. The difficulty increases with increase in complexity of opinions expressed. In some of the fields employees, personal problems indirect expressions of opinion are more difficult. This project defines a ML classification problem as identifying whether a person is depressed, based on his tweets and Twitter profile activity. Different machine learning algorithms are exploited and different feature datasets are explored. Many preprocessing steps are performed, including data preparation and aligning, data labeling, and feature extraction and selection. The ML model has achieved optimal accuracy metric combinations; it converts an extremely nonlinear classification problem into a linearly separable problem. The great thing about social media Depression tweets Prediction analysis is that you're not looking for the needle in the hay. Depression tweets Prediction mining is looking into trends and large numbers of people. It means that you can account for some degree of fuzziness in Depression tweets Prediction classification with the raw amount of data otherwise we will come to know that trends we searching is not popular or important.

FUTURE ENHANCEMENT

The framework suggested here could also cater to a wide range of mental illness by including the concept of fuzziness in building models. When there are more categories of mental illness in the target population, naturally it will result more number of class labels. In such cases there tends to be more overlap between some class labels. This problem can be addressed by writing fuzzy rules in cases where the overlap is expected. The concept of Deep Learning can be used for very large dataset. The classification accuracy can also be improved using deep learning methods such as recursive neural networks. It also enables us to cater to much wider community which will result in more data samples

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