Predicting Mental Health Disorder On Twitter Using Machine Learning Techniques

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Abstract—**Social media gives young people a place to voice their difficulties and trade opinions on current events in the digital era. Therefore, it is possible to analyze human behavior using internet media. However, the illness of mental disorder is common yet often ignored. Social media makes it possible to identify mental health disorders in large populations. Many efforts have been made to evaluate individual postings using machine learning techniques to identify people with mental health conditions on social media. This study attempted to predict mental health disorders among Twitter users using machine learning techniques. Support Vector Machine (SVM), Decision Tree, and Naive Bayes are three examples of machine learning approaches applied in this study. To assess the algorithms, the performance and accuracy of these three algorithms are compared.**

Keywords—Twitter, mental health, machine learning, prediction, accuracy

I. INTRODUCTION

Social networks have altered how people communicate their thoughts and points of view. This change is made available through written publications, internet discussion boards, product review websites, etc. This user-generated content is significantly relied upon by people. Social networks provide a sizable volume of user-generated content, which is crucial for research. They also offer additional services tailored to users' demands [1]. The most widely used source of information for user opinions and feelings expressed on this platform is Twitter, which can be retrieved and examined. Social networking sites are altering people's lives and why they communicate or connect with the rest of the world. According to recent studies, many people use social networking sites like Facebook and Twitter for various activities, including finding and sharing information, making new friends, joining existing ones, and simply having [2].

More research is being done on social media and mental health, connecting social media use and behavior with stress, anxiety, depression, suicidality, and other mental diseases [3]. The majority of this study is focused on mental illness. Being balanced inside oneself explains why mental health is a critical and fundamental component of total health. Additionally, the ability to form and maintain emotional attachments with other people, engage in social activities and cultural obligations, and recognize and accept emotions and sentiments like happiness or sadness are all

indications of a person's mental health. It is referred to as mental illness when this essential functioning is absent. Numerous social, biological, and psychological factors can impact mental illness, just like they do mental wellness. According to experts, internal issues ranging from a lack of emotional resilience to low social standing and solitude make mental health susceptible [15]. Mental health may be defined more simply as a person's thinking about themselves and their lives. It is essential not to ignore one's mental health because its vital role in maintaining one's health [4].

Sentiment analysis will be used in this study to identify people with mental health disorders by focusing entirely on tweets on such conditions on Twitter. Text mining, machine learning (ML), and natural language processing are all used in sentiment analysis (NLP). The goal is to extract sentiment and private information from the text. Additionally, it aids in concluding disorganized and poorly structured content. Finding patterns in large amounts of textual data is a technique called text mining. NLP processes the underlying metadata, whereas text mining processes the text itself. Machine learning will forecast the future based on historical data. Computers can now learn without explicit programming thanks to machine learning (ML). It tries to create updates computer programs in response to new information. The processes of teaching and forecasting prohibit the usage of specific algorithms. Instead, an algorithm is fed the training set of data, and that algorithm uses that data to make predictions about a fresh collection of test data [5]. Python's Natural Language Toolkit (NLTK) will be used for this study [16]. Since there are numerous terms in a tweet, and it is hard to read every tweet and identify the ones individually connected to a mental health issue, dealing with a wide variety of data sources is challenging. Therefore, it is vital to employ the keywords technique to crawl mental health disorder tweets to ascertain which textual information is significant in the study's planned sentiment approach to detect mental health condition tweets based on the Twitter dataset.

II. PROBLEM STATEMENT

A mental ailment that impairs cognition, emotion control and behavior is a mental disorder. Effects of various mental disease range from the severe rejection of social interaction to constant sorrow. Patients may display different symptoms, including an accelerated heart rate,