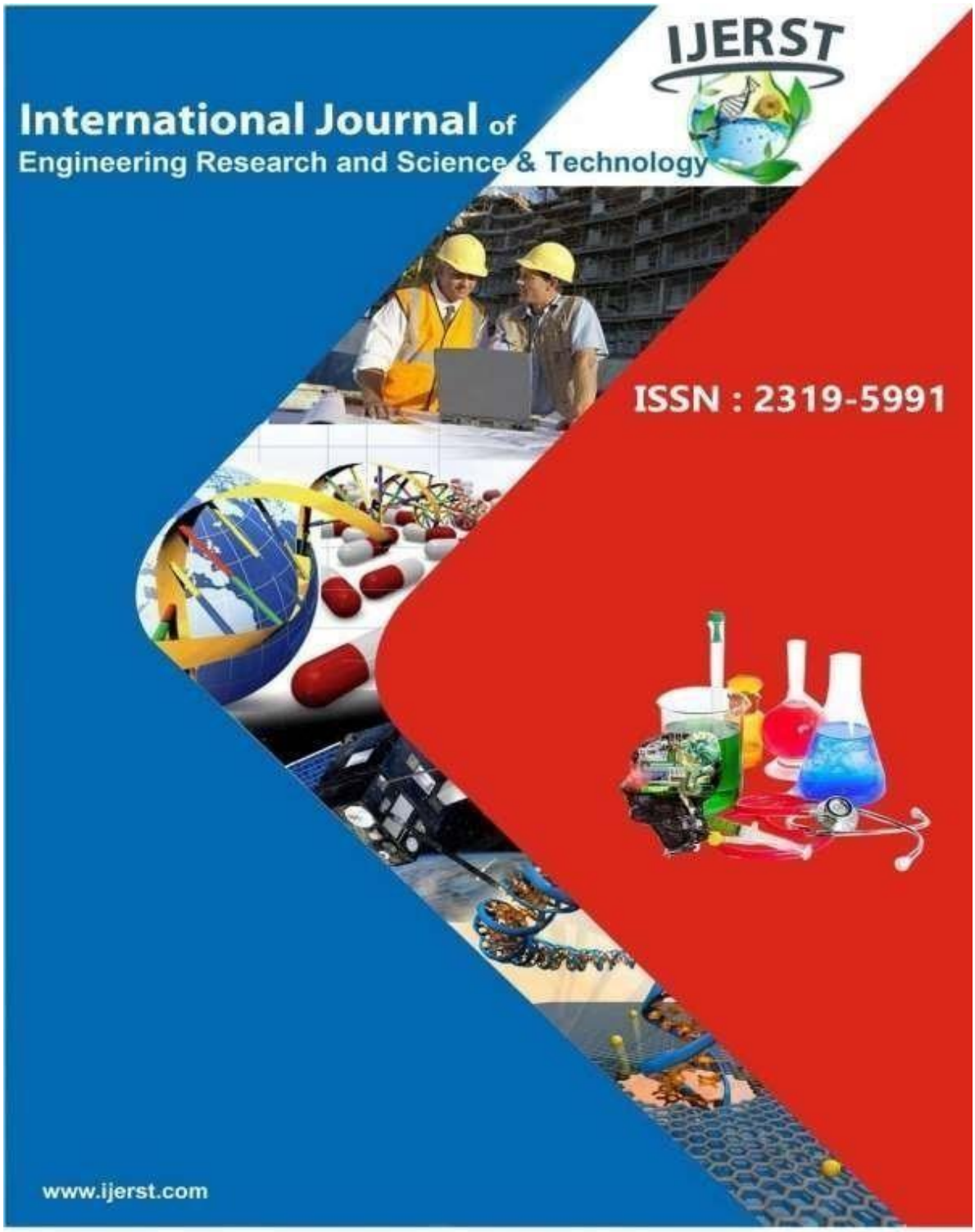


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DETECTING MENTAL DISORDERS IN SOCIAL MEDIA THROUGH EMOTIONAL PATTERNS-THE CASE OF ANOREXIA AND DEPRESSION

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ABSTRACT

Millions of people around the world are affected by one or more mental disorders that interfere in their thinking and behavior. A timely detection of these issues is challenging but crucial, since it could open the possibility to offer help to people before the illness gets worse. One alternative to accomplish this is to monitor how people express themselves, that is for example what and how they write, or even a step further, what emotions they express in their social media communications. In this study, we analyze two computational representations that aim to model the presence and changes of the emotions expressed by social media users. In our evaluation we use two recent public data sets for two important mental disorders: Depression and Anorexia. The obtained results suggest that the presence and variability of emotions, captured by the proposed representations, allow to highlight important information about social media users suffering from depression or anorexia. Furthermore, the fusion of both representations can boost the performance, equaling the best reported approach for depression and barely behind the top performer for anorexia by only 1%. Moreover, these representations open the possibility to add some interpretability to the results.

I.INTRODUCTION

The project "Detecting Mental Disorders in Social Media Through Emotional Patterns - The Case of Anorexia and Depression" addresses a pressing need in mental health research and intervention. Mental disorders, such as anorexia nervosa and depression, pose

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significant challenges to individuals and healthcare systems worldwide. With the pervasive use of social media platforms, there exists an opportunity to leverage digital data to detect early signs of mental health disorders and provide timely support and intervention. This project focuses on analyzing emotional patterns in social media posts to identify indicators of anorexia and depression. By employing advanced machine learning and natural language processing techniques, the project aims to develop a robust framework for automated detection of mental health disorders in social media content. Ultimately, the goal is to enhance mental health screening and intervention efforts, offering individuals at-risk early support and facilitating access to appropriate mental health services.

II. EXISITNG SYSTEM

Depression is a mental health disorder characterized by persistent loss of interest in activities, which can cause significant difficulties in everyday life [1], [17]. Studies focusing on the automatic detection of this disorder have used crowdsourcing as their main strategy to collect data from users who expressly have reported being diagnosed with clinical depression [18], [19]. Among these studies, the most popular approach considers words and word n-grams as features and employs traditional classification algorithms [13], [20], [21]. The main idea is to capture the most frequent words used by individuals suffering from depression and compare them against the most frequent words used by healthy users. This approach suffers because there is usually a high overlap in the vocabulary of users with and without depression.

Another group of works used a LIWC-based representation [22], aiming to represent users' posts by a set of psychologically meaningful categories like social relationships, thinking styles, or individual differences [18], [23]. These works have allowed a better characterization of the mental disorder conditions, nevertheless, they have only obtained moderately better results than using only the words. Recent works have considered ensemble approaches, which combine word and LIWC based representations with deep neural models such as LSTM and CNN networks [24], [25]. For example, in [25], [26], the combination of these models with features like the frequencies of words,

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user-level linguistic metadata, and neural word embeddings offered the best-reported result in the eRisk- 2018 shared task on depression detection [27].

These works show that in social media texts exist useful information to determine if a person suffers from depression, but the results are sometimes hard to interpret. This is an important limitation since these types of tools are naturally aimed to support health professionals and not to take the final decisions. In [28] [29], the authors conduct studies to tackle this problem. They characterize users affected by mental disorders and provide methods for visualizing the data in order to provide useful insights to psychologists.

Disadvantages

1) The system doesn't implement Converting text to sub-emotions sequences techniques.

2) The system doesn't implement emotion based detection of mental disorders.

III. PROPOSED SYSTEM

The proposed static and dynamic representations, named as BoSE and _-BoSE respectively, are inspired in two hypotheses. The first one is that words assigned to coarse emotions in lexicons cannot capture subtle emotional differences, which in fact are what provide the most important insights into the mental health condition of users. For example, the lexicon associated with the anger emotion includes words such as furious, angry and upset that represent different degrees of anger, however, they are tagged with the same emotion. Thus, our proposal is to represent each user by a histogram of sub emotions, which are discovered by clustering the embeddings

of words inside coarse emotions. The second hypothesis is that people with depression and anorexia tend to expose greater emotional variability than a healthy person. In this case, the idea is to represent each user by a set of statistical values that describe the frequency changes of the sub-emotions over time.

Advantages

1) The system further explores the BoSE representation and proposes a new representation based on sub-emotions that allow capturing the emotional variability of social media users over time.

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2) The system proposes an approach to combine both static and dynamic representations using early and late fusion strategies to improve the detection of depression.

3) The system extends the use of these representations based on fine grained emotions for the task of anorexia detection and contrast the discovered emotional patterns with those obtained from the task of depression detection.

IV. MODULES

Service Provider

In this module, the Service Provider has to login by using valid user name and password.



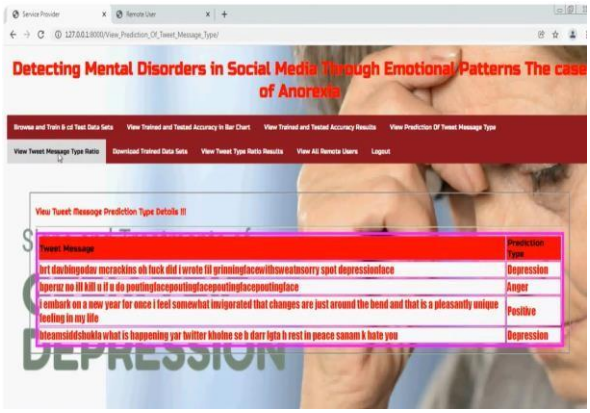
After login successful he can do some operations such as Browse Datasets and Train & Test Data Sets, View Trained and Tested Accuracy in Bar Chart,



View Trained and Tested Accuracy Results,



View Predicted Type, View Type Ratio, Download Predicted Data Sets, View Type Ratio Results,



View All Remote Users.

View and Authorize Users

In this module, the admin can view the list of users who all registered. In this,

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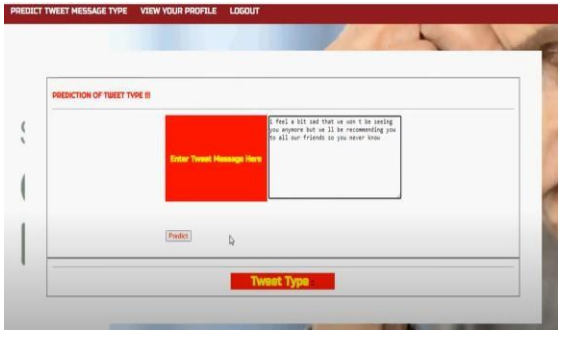
the admin can view the user's details such as, user name, email, address and admin authorizes the users.

Remote User

In this module, . User should register before doing any operations.



Once user registers, their details will be stored to the database. After registration successful, he has to login by using authorized user name and password. Once Login is successful user will do some operations like REGISTER AND LOGIN, after login we have to Predict Type,



VIEW YOUR PROFILE.

V. CONCLUSION

In conclusion, the project "Detecting Mental Disorders in Social Media Through Emotional Patterns - The Case of Anorexia and Depression" holds immense promise for advancing mental health research and intervention strategies. By leveraging emotional patterns in social media data, this project offers a novel approach to early detection of anorexia and depression, two prevalent mental health disorders. Through the development of sophisticated machine learning models, the project aims to enable automated screening of social media content for signs of mental health disorders, thereby facilitating timely intervention and support for individuals at-risk. Ultimately, the outcomes of this project have the potential to revolutionize mental health care delivery, improving access to services and enhancing outcomes for individuals affected by anorexia, depression, and other mental health conditions.

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