

## DEPRESSION DETECTION BY ANALYZING SOCIAL MEDIA POST IN MACHINE LEARNING USING BERT ALGORITHM

Durga Solse<sup>\*1</sup>, Anuja Magar<sup>\*2</sup>, Priyanka Harde<sup>\*3</sup>,

Neeta Palve<sup>\*4</sup>, Prof. M.T. Jagatap<sup>\*5</sup>

<sup>\*1,2,3,4</sup>Department Of Computer Technology Engineering, Pune Vidyarthi Griha's Colleg Of Engineering And S.S Dhamankar Institute Of Management, Nashik, Maharashtra, India.

<sup>\*5</sup>Guide Department of Computer Engineering Pune Vidyarthi Griha's Colleg Of Engineering And S.S Dhamankar Institute Of Management, Nashik, Maharashtra, India.

### ABSTRACT

Nowadays the matter of early depression detection is one of the foremost importance in the field. psychology mental state issues are unit-wide accepted as one of the foremost prominent health challenges in the world, with over three hundred million people presently suffering from depression alone. With huge volumes of user-generated data on social networking platforms, researchers area unit increasingly using machine learning to work out whether or not this content may be wont to observe mental health problems in users. Social networks analysis is widely applied to address this drawback. in this paper, we have proposed a depression analysis and suicidal ideation detection system, for predicting the suicidal acts supported the extent of depression. this study aims to use machine learning techniques for detective work on a probable depressed Social Media user/Posts. For this purpose, we have a tendency to train and tested classifiers to differentiate whether or not a user is depressed or not mistreatment options extracted from his/her activities at intervals the posts, during this analysis, machine learning is used to method the scrapped data collected from social media user's posts. natural language processing (NLP), classified mistreatment BERT formula to observe depression potentially in a more convenient and efficient way.

**Keywords:** Machine Learning, NLP, BERT Formula, Depression, Classification, Social Media Post.

### I. INTRODUCTION

Now a days the matter of early depression detection is one among the foremost vital in the field of psychology. Depression is in addition a typical mental issue. In today's world, the stresses of existence events in one's life could increase potentialities of depression. Over 350 million folks worldwide suffer from depression, that is about 5-hitter of the overall population. close to 800 000 folks die due to suicide every year and it's statistically the second leading reason for death among people in 15-29 years old. At the same time, the major variety of suicides the major depression. Recent researches reveal that depression is also the main cause of disability and a variety of somatic diseases. The proliferations of internet and communication technologies, especially the online social networks have rejuvenated how people interact and communicate with each other electronically. The applications such as Facebook, Twitter, Instagram and alike not only host the written and multimedia contents but also offer their users to express their feelings, emotions and sentiments about a topic, subject or an issue online. On one hand, this is great for users of social networking site to openly and freely contribute and respond to any topic online; on the other hand, it creates opportunities for people working in the health sector to get insight of what might be happening at mental state of someone who reacted to a topic in a specific manner. In order to provide such insight, machine learning techniques could potentially offer some unique features that can assist in examining the unique patterns hidden in online communication and process them to reveal the mental state among social networks' users. In this project, we aim to analyze Social Media Post to detect any factors that may reflect the depression of relevant Social Media users. Various machine learning techniques are employed for such purpose. Considering the key objective of this study, the following are subsequent research challenges addressed in paper. We have a tendency to tend to tend to aim to utilize machine learning techniques and algorithms for depression detection on social media posts of users.

## II. METHODOLOGY

- First you must define the problem. This step sounds obvious, but often, you can notice that something is a miss in project or process without really knowing where the core problem lies. The most challenging part of the problem solving process is uncovering where the problem originated.
- Second, you work to generate alternatives to address the problem directly. This should be a collaborative process to ensure you're considering every angle of the issue.
- Third, you evaluate and test potential solutions to your problem. This step helps you fully understand the complexity of the issue and arrive at the best possible solution. Finally, fourth, you select and implement the solution that best addresses the problem. Efficiency issue in problem solving Many time number of processor is less than input of problem. Speedup is greater then processing elements. Size of problem is greater than processing element.
- User Identification: Each user will have separate authentication & functionality based on business logic & user type.
- Data Preprocessing: Cleaning of data if any data is missing.
- Algorithm: Algorithm will be used for generating efficient & optimal output.
- Evaluation of result: Result will be evaluated as efficiency of algorithm.

### Internal software data structure

Operation Layer components are Trusted Information, Decentralized operation, faster Derumourization, Recommend propagation. Contract layer components are business logic execution & getting the result of application.

or not.

### Global data structure

Getting results based on input gathered from the user, input can follow any data structure like arraylist, stack, queue, linkedlist, hashmap, etc.

### Temporary data structure

In this application, results showed using temporary structures if we don't want results for future preferences.

## III. MODELING AND ANALYSIS

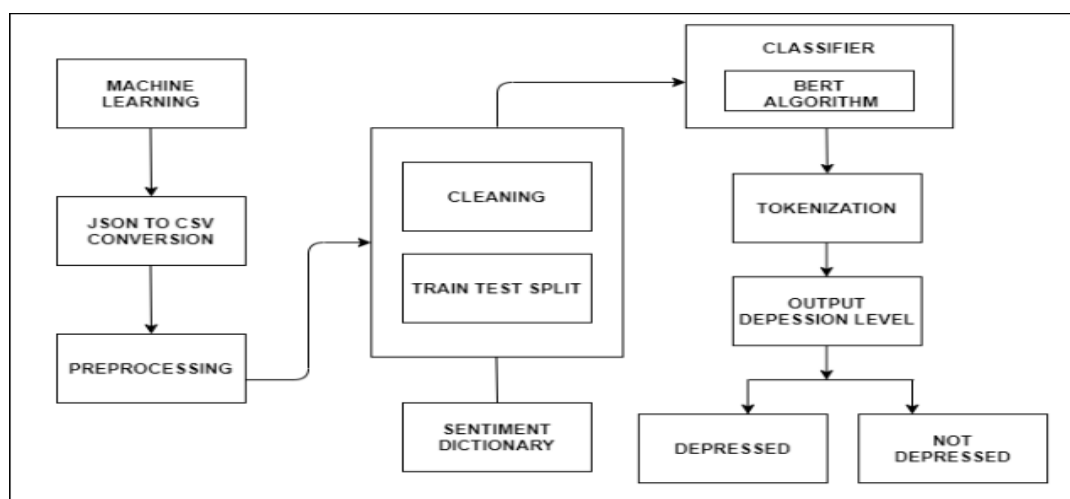


Figure 1: System Architecture

Depression is a serious challenge to personal and public health. One of the major solutions to this problem is a detailed study of an individual's behavior attributes. These attributes are available on various social networking sites such as Facebook, Twitter, Instagram, etc. Social networking platform is the best way to know a person's behavior, thinking style, mood, egoistic networks, opinions, etc. The use of social networking sites is increasing especially by the young generation. The people on social media express their feelings, daily activities, opinions about various topics, etc. So social networking sites are used as screening tools to predict depression

levels. These social networking platforms give a person's experiences, opinions, socialization, and personality. The earlier method of diagnosis of a patient is not so relevant but using user-generated content on social media posts helps to predict the mental health levels and depression of a particular individual. Our project aim is to extract information from social media posts and by having a clear understanding of a person's behavioral attributes and attempted questionnaires, the depression levels of the user are predicted. A quantitative study is conducted to train and test various machine learning classifiers to determine whether a social media post of the user is depressed, from posts initiated by the user or his/her activities on Social media. The following figure illustrates depression detection using the activity and content features classification model. First, all tweets for depressed and non-depressed accounts, as well as information on user accounts and activities such as number of followers, number of following, time of posts, number of mentions, and number of reposts, are retrieved. Next, all posts of an account are assembled in one document. Text pre-processing is applied to all documents. First, a corpus is created and posts in each document are tokenized. BERT Classification Algorithm can be used.

#### IV. ALGORITHM

##### BERT Algorithm: -

BERT is bidirectional Encoder Representations from Transformers. it's designed to pre-train deep bidirectional representations from the untagged text by jointly learning on both left and right contexts. As a result, the pre-trained BERT model are often fine-tuned with only one additional output layer to make state-of-the-art models for a large vary of NLP tasks."We developed a duplex Encoder Representations from Transformers (BERT)-based model, that could be a new language illustration model as described in. because the name suggests, it was designed to pre-train deep bidirectional representations that may be fine-tuned with a further output layer. For this project, this output layer - a pooled output - was used for the binary classification of the comments. From the numerous pre-trained models out there, we tend to selected the English-language uncased (all minuscule before tokenization) model of BERT, as case data isn't notably necessary to the task of social media comment classification.

#### V. RESULTS AND DISCUSSION

##### System Features:

The statistical results like accuracy, sensitivity, specificity, precision is in a better range for classification . performance in this case.

1. Enables the recommendation and suggestion from the doctors for time Saving treatments from where they are.
2. Decting Mental Disorders in Social Media Through Emotional Patterns
3. Easy interaction with patients and better – quality healthcare provided.
4. This application is to Automate the task of Doctors in diagnosing their Patients so that they can avoid hectic queues.

##### 1. Software Requirements:

1. Operating System:- windows xp and later versions.
2. Language: - Python.
3. Domain :- Machine learning
4. Dataset:- Social media post
5. Algorithm:- BERT algorithm

##### 2. Hardware Requirements:

1. Processor: Minimum i3 and above.
2. RAM: 1 GB.
3. Hard disk : 5GB

#### VI. CONCLUSION

we have a tendency to square measure aiming to establish depressed traits of the person mistreatment machine learning algorithmic program and Send some psychological feature post to user supported the

amount of his/her depression The proposed system would help suspected user to save his/her life, by knowing in advance whether the user is depressed and even system will send some motivational post to the user based on the level his depression. We conclude the system will be very useful in today's world where most of us don't have time to meet our friends, share their thoughts and feelings like we used in older days due to busy schedules. So, our system plays a vital role over here to avoid any unwanted human loss. The system will inform to their family members or relatives regarding the situation of depressed person. So that family or friend circle will help the person to come out of depression.

## VII. FUTURE WORK

The collection of tweets from a geographical area, and comparing it with other areas is conceivable, in case the tweet locations too considered and analyzed. These studies will help in identifying the psychological effect of the people while in natural calamities like fire, earthquake, and floods.

## ACKNOWLEDGEMENTS

We are profoundly grateful to **Prof. J.Y.Kapadnis** for his expert guidance And continuous encouragement throughout the project from its commencement till the completion.

We would like to express deepest appreciation towards **Dr. A. R. Rasane**, In-charge Principal, PVG's College of Engineering, Nashik and **Prof. J. Y. Kapadnis**, In-charge Head of Department of Computer Engineering whose Invaluable guidance supported us in completing this project.

At last we must express our sincere heartfelt gratitude to all the staff members Of Computer Engineering Department who helped us directly or indirectly during this course of work.

## VIII. REFERENCES

- [1] A. Assad, M. A. Mahmud Pronto, S. Afreen and M. M. Islam, "Depression Detection by Analyzing Social Media Posts of User," 2019 IEEE International Conference on Signal Processing, Information, Communication & Systems (SPICSCON), Dhaka, Bangladesh, 2019, pp. 13- 17, doi: 10.1109/SPICSCON48833.2019.9065101.
- [2] K. Katchapakirin, K. Wongpatikaseree, P. Yomaboot and Y. Kaewpitakkun, "Facebook Social Media for Depression Detection in the Thai Community," 2018 15th International Joint Conference on Computer Science and Software Engineering (JCSSE), Nakhonpathom, 2018, pp. 1-6, doi: 10.1109/JCSSE.2018.8457362.
- [3] P. Arora and P. Arora, "Mining Twitter Data for Depression Detection," 2019 International Conference on Signal Processing and Communication (ICSC), NOIDA, India, 2019, pp. 186-189, doi: 10.1109/ICSC45622.2019.8938353.
- [4] A. U. Hassan, J. Hussain, M. Hussain, M. Sadiq and S. Lee, "Sentiment analysis of social networking sites (SNS) data using machine learning approach for the measurement of depression," 2017 International Conference on Information and Communication Technology Convergence (ICTC), Jeju, 2017, pp. 138-140, doi: 10.1109/ICTC.2017.8190959.
- [5] M. Deshpande and V. Rao, "Depression detection using emotion artificial intelligence," 2017 International Conference on Intelligent Sustainable Systems (ICISS), Palladam, 2017, pp. 858-862, doi: 10.1109/ISS1.2017.8389299.
- [6] Sudha Tushara S. and Y. Zhang, "Finding a Depressive Twitter User by Analyzing Time Series Tweets", 2020 IEEE India Council International Subsections' Conference (INDISCON) Oct 3-4, 2020, 978-1-7281-8734-1/20/©2020 IEEE (Accepted)
- [7] Sudha Tushara S. and Y. Zhang, "Finding a Depressive Twitter User by Analyzing Depress and Antidepressant Tweets", 2020 IEEE India Council International Subsections' Conference (INDISCON) Oct 3-4, 2020, 978-1-7281-8734-1/20/©2020 IEEE (Accepted)
- [8] Kelly, Y., Zilanawala, A., Booker, C., & Sacker, A. "Social media use and adolescent mental health: Findings from the UK Millennium Cohort Study". Eclinical Medicine. 2019.
- [9] Twenge, J. M., & Campbell, W. K. "Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study". Preventative Medicine Reports, 12, 271-283. 2018.