

# Depression Analysis using Sentiment Analysis via Social Media

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**Abstract:-** As one of the prime reason for suicides among the youths of this generation is depression. Our application helps the psychologists in identifying whether a person is depressed or not. Our application uses the data of person for (ex: social media posts, comments, articles ) posted by the him in social media. The data of the respective person has been gathered and forwarded to the machine learning model to predict the depression of the person. As the model applies sentimental analysis method to find out the type emotion for each comment and article which has been posted by the person on social media. We have used Decision Tree Algorithm for the classification of data. The purpose of using this algorithm is the accuracy and precision of results it provides for making prediction. Our application helps a person to conduct the initial test for themselves or the parents to let them know the state or level of depression.

**Keywords:-** Depression Analysis, Machine Learning Model, Sentimental Analysis, Decision Tree Algorithm.

## I. INTRODUCTION

The size of the data available on the social media websites is colossal thanks to vast majority of the world's population being a part of one or the other social media platforms. The dataset is a valuable asset to scientists, researchers and also for businessmen to analyse the patterns generated to create value of different kinds. One of the leading causes of disability in the whole world is depression. The hatred and constant mocking of others is at a large scale in social media nowadays. This contributes to the stress for the users who are at the receiving end. This constant stress leads to the cause of depression. Also, people using social media always have high expectations and want to lead a life like the celebrities. This makes them constantly to do things which basically enhances their stress levels and due to high expectations from their fellow peers which doesn't live up to their mark results in the depression. Other personal experiences may also contribute towards a person's depression. This application is created to help individuals to recognize the state of their mind and take timely decision to consult clinical psychologists for further clinical procedures. This application also serves as a preliminary analysis tool for psychologists to use it on first time consultants for quick and better assessment.

## II. EXISTING SYSTEM

In the current system, people just rely on a set of questions which has to be answered and needs to be self-evaluated. They do not have a reliable tool to check if they are affected by depression or not. These are combined with the social stigma revolving around the word depression just makes it worse for the affected people. Clinical psychologists rely on their experience of evaluating a person's mental health. But this method consumes more time for every single patient. This process follows a similar pattern i.e. the psychologist asks questions the patient that reveals the user's affinity towards depression.

## III. PROPOSED SYSTEM

These applications aim to self-assess the depression state of people. It combines finding the sentiment analysis using natural language processing along with decision tree classifier algorithm to determine if the person is depressed or not. The psychologist user trains the model by giving the dataset from social media. This dataset contains posts, comments, reviews of multiple users. The machine learning model finds out the sentiment behind every post message. Finally, it is supplied with the patient's dataset, which the machine makes its predictions on a scale of 1 to 3 (high to low).

The contributions of this project are: 1. Works as a tool for psychologists to use it for patient's initial screening. 2. Helpful for users to test themselves on their own with high accuracy. 3. Reduce time wasted for initial screening. 4. Psychologists can concentrate more on diagnosing the depression.

## IV. FEASIBILITY STUDY

Feasibility Study is done in the beginning stage of developing a project. It is done to know if the project that we are going to develop is worth building in the aspects involving the availability of resources, financial power, quality control for the application and the work force required, etc.. This study helps to see rationally in the future and helps in making an informed decision. This study focusses on getting the facts and figures for everything related to the project.

Technical Feasibility : At the initial stage, the attempt is made to find the best suitable software tools, languages and software to build the software. After identification, the best suitable settings are selected. This setting is quite strictly needs to be maintained throughout the entire development life cycle and also at the maintenance stage. This helps in keeping the unknown bugs from creeping in to the system.

Economic feasibility : provides the information on the financial resources required for the development of the project. This study directly affects the quality of the application being developed. It helps in choosing the best feasible tools and technologies that can be used for the project’s development. Effort has to be made by developers to avoid ordering tools that take up most of the amount. Alternative tools with competitive pricing must be searched for and used so as to use the project finances carefully.

Operational Feasibility : It is of highest importance for the application developed to match the requirements which were proposed by the client. There is no point for client to waste their resources on software that does not fill the requirement gaps. The software product developed also must be built to work on different types of devices with different screen resolutions. The application should be thoroughly tested for potential bugs and must be fixed before deploying to client site.

V. IMPLEMENTATION

This is the phase of the project where all the previously thought of goals, features, functionalities of the projects are developed. This stage shells out the logical results, evaluation results and completes the applications with the previously recorded functionalities. The software development methodology used for this application's development is Agile methodology. This is quite flexible methodology allowing the developers to make changes to the application at any stage of the application and also is simple in implementation. This provides security to the application which enables to add new features to the application without having to worry about the working of the existing features. This application is developed for two users, admin and psychologist. They have their separate login and home pages. Both the users have their own flow of operations set, which enables in easier navigation of the application. The application is tested for correctness once the UI, business logic of the code and the machine learning model has been implemented in it. The application’s development is solely based on the requirements of the client. Any updates and changes are made available according to their needs.

VI. RESULTS

Screenshots are attached below viewing the applications user interface and flow.

➤ Dataset:

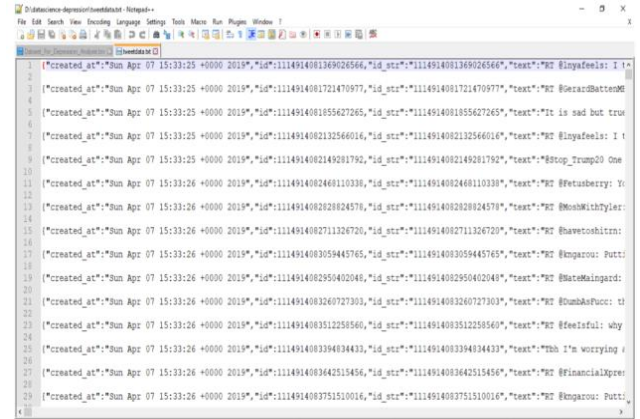


Fig 1:- Tweet Dataset for Training the Model

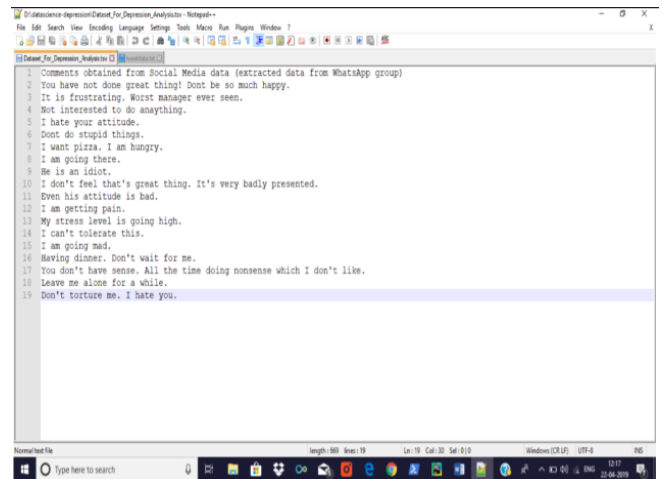


Fig 2:- Input for Predicting Depression Level

➤ Admin module:

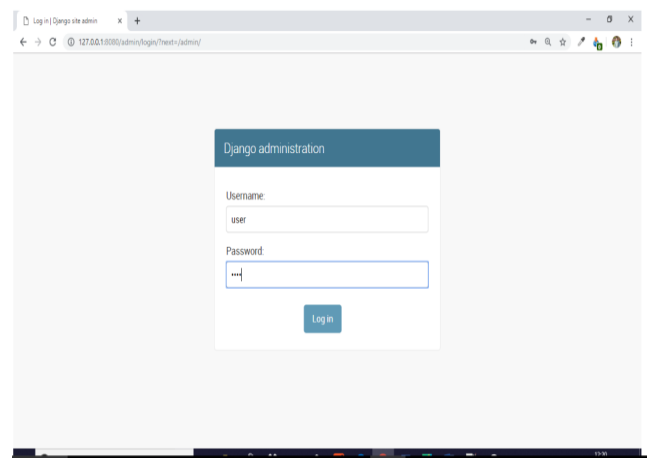


Fig 3:- Login for Admin

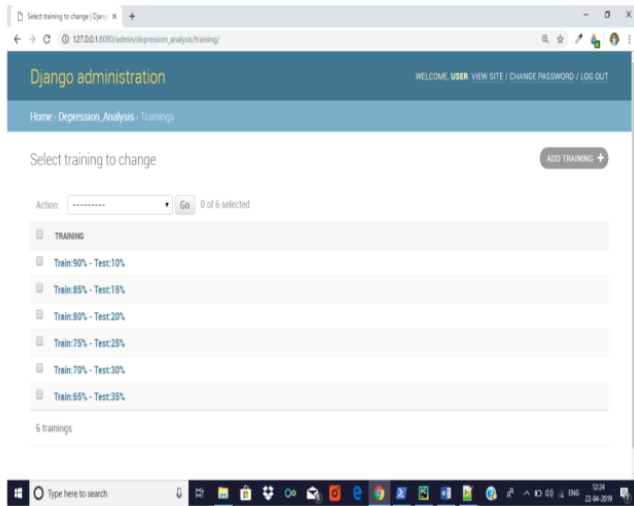


Fig 4:- Training Table for Admin

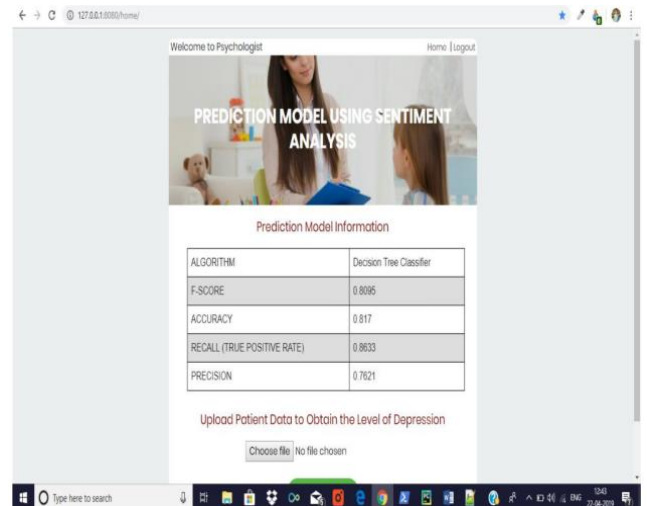


Fig 7:- Prediction Model Using Sentimental Analysis

➤ *Psychologist Module:*

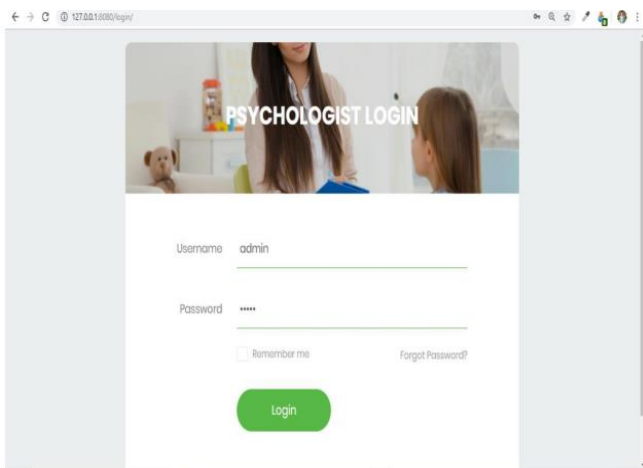


Fig 5:- Psychologist Login

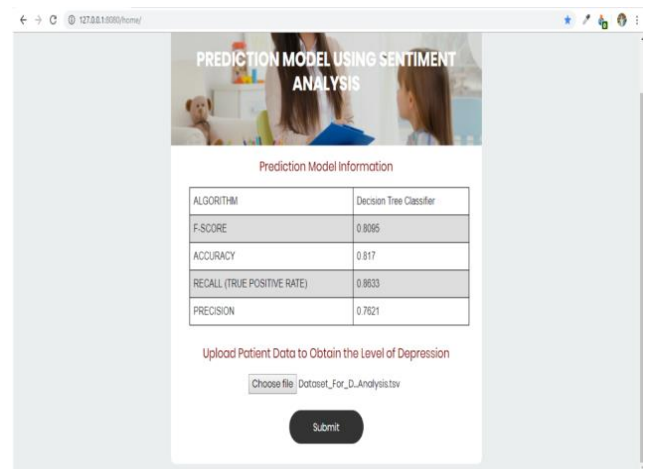


Fig 8:- Input the Patient's Dataset

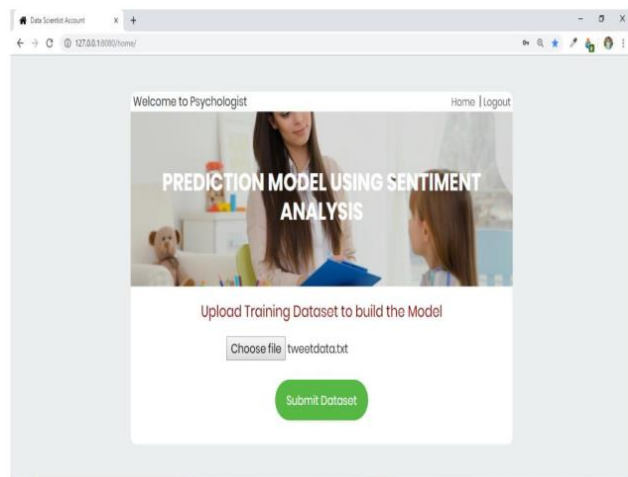


Fig 6:- Upload Dataset for Training the Model

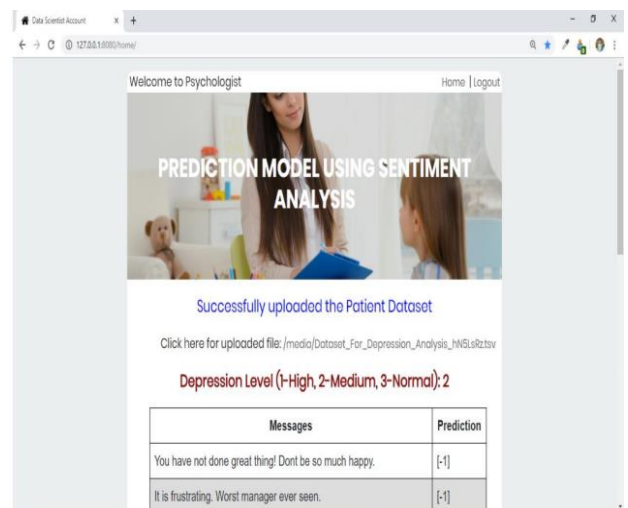


Fig 9:- Depression Level of Patient

## VII. CONCLUSION

Depression is one of the major contributors for deaths related to mental health illness. This affects the way people interact and behave with each other. This application is developed to help people to make a change in their behaviour. In this project, decision tree algorithm is used in coordination with the sentiment analysis to predict if a user is depressed or not. This is done so using the twitter dataset which includes the tweets data posted by thousands of users on twitter. This was the most important part of the application as it helps the machine learning model to increase its knowledge base. When training the model, it generates the confusion matrix on the dataset which is used by other functions to calculate the accuracy of the prediction model. The tweets sentiments were found out for each tweet. These sentiments were classified as positive, negative and neutral represented by integer values. The model was trained on various training ratios and datasets and was tuned for making correct predictions on the dataset. After training successfully, the model was fed with dataset of individuals to make predictions. It made quite satisfactory predictions and was highly accurate. It gives the depression affinity of an individual on the scale of 1-3. The results received from the model for the four subjects it was tested for proves the effectiveness, reliability and robustness of the proposed method.

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## FUTURE ENHANCEMENT

The computer science industry unlike other industry is ever changing. This industry tells us that the projects and software's created today are already considered as old technology. Every project developed always has room for improvements and changes which can be made as the time progresses. An attempt has been made to include almost all the features and functionalities required to efficiently operate on the software, but there are also some features that comes up given some time. The features to be considered for future implementations are 1. This application can be further improved for complex mental health issues detection system. 2. This was developed for initial screening of the candidates, which might be changed to provide support to psychologist's for candidates suffering with intermediate or higher levels of depression. 3. The machine learning model may further be improved in terms of its accuracy and the type of data it handles.

## REFERENCES

- [1]. Approaches, Tools and Applications for Sentiment Analysis Implementation Alessia D'Andrea Institute for Research on Population and Social Policies, National Research Council Via Palestro, 32, 00185, Rome, Italy et al.
- [2]. Opinion Mining and Sentiment Analysis - Challenges and Applications Haseena Rahmath P Dept. of Computer Science and Engineering, Al-Falah School of Engineering, Dhauj, Haryana, India
- [3]. MIDAS: Mental Illness Detection and Analysis via Social Media Elvis Saravia, Chun-Hao Chang,