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Depression Level Detection through YouTube Video's using NLP

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ABSTRACT-Depression (major depressive disorder) is a common and serious medical illness that negatively affects how you feel, the way you think and how you act. In India, the National Mental Health Survey 2015-16 reveals that nearly 15 percent Indian adults need active intervention for one or more mental health issues and one in 20 Indians suffers from depression. This survey motives us to work on it. It is estimated that in 2012, India had over 258,000 suicides, with the age-group of 15-49 years being most affected. As this age group spend most time with social media and share their view on it. by using this we can provide a solution to detect depression state of user and provide social support to user. To reduce the percentage of death due to depression the system will be beneficial. it will provide social support to user by automatically detecting depression. This system will use emotions of user recognized from videos watched by the user. The title of video describes about content or category of video with help of this we can find mood and depression state of user to expelled out from depression.

KEYWORDS - Effective computing emotion detection automatic data processing data collection expressed emotion data, YouTube, big data, artificial intelligence.

I. INTRODUCTION

In India, the National Mental Health Survey 2015-16 reveals that nearly 15 percent of Indian adults need active intervention for one or more mental health issues and one in 20 Indians suffers from depression. The 10th Revision of International Classification of Diseases ICD-10, which is the basis for diagnosing mental disorders in the Czech Republic, classifies depression as an affective disorder (mood disorder). The disorder can have three forms: mild, moderate and severe forms of depression. One of the first symptoms is a change in mood toward the negative pole: the individual feels sad, needless, and/or unimportant. It is estimated that in 2012, India had over 258,000 suicides, with the age-group of 15-49 years being most affected. Automatic techniques for understanding the emotions in diverse user-generated videos on the Web are helpful for many applications. For example, Governments can also utilize this function to better understand people's reactions about what events or new policies. In this paper, we present a comprehensive computational approach for predicting emotions purely based on video title analysis. While significant progress has been made on the computational inference of emotions in images (Joshi et al. 2011), previous research on video emotions has mostly been conducted on movie data (Wang and Cheong 2006). To the best of our knowledge, there is no existing work investigating this problem on user-generated videos, which have more diversified contents with little quality control and post-editing. One important issue that has limited the needed potentially helpful clues for emotion recognition on this dataset, which are important for the design of a good computational model.

II. LITERATURE REVIEW

In [1] author presents, a machine learning approach is used for detecting depression level by analysing the social media posts of user. Facebook and Twitter posts have been considered to convey the model. Firstly, Beautiful Soup is applied to collect tweets. With the permission of some users Facebook posts are collected manually. Collected data is processed and then read into the machine learning model. Then collected data is uncluttered by using NLP. The machine learning model is trained with signature keywords. SVM algorithm is applied to vectorize the SNS posts and Naive Bayes algorithm is applied to determine whether the posts are positive, negative or neutral.

The [2] proposed method can significantly improve performance accuracy. According to the study, better performance improvement can be achieved by proper feature selections and their multiple feature combinations. Fully structured or a semi-structured interview method (SDI) is standard method of detecting depression of a person. These methods need a huge amount of data from the person. Microblogging sites like Twitter and Facebook have become much popular

places to express peoples' activity and thoughts. The data screening from tweets and posts shows the manifestation of depressive disorder symptoms of the user. Machine learning is used to process the scrapped data collected from SNS users. Natural Language Processing (NLP) which is classified using Support Vector Machine (SVM) and Naive Bayes algorithm is used to detect depression potentially in a more convenient and efficient way.

In [3] chosen architectures are used to detect users with signs of mental illnesses (depression in this case) given limited unstructured text data extracted from the Twitter social media platform. Our primary objective was to detect depression using the most effective deep neural architecture from two of the most popular deep learning approaches in the field of natural language processing: Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs), even though the task is comprised of three subtasks: detecting Post-Traumatic Stress Disorder (PTSD) vs. control, depression vs. control and PTSD vs. depression.

In [4] this research, the aim is to investigate how SNS user's posts are used to classify users according to mental health levels. We propose a system that uses SNS as a source of data and screening tool that classify the user with the help of artificial intelligence according to the UGC on SNS. We created a model that classify the UGC using two different classifiers: Support Vector Machine (SVM), and Naive Bayes.

The [5] goal of this article is to investigate the depressive emotion and the process of evolution in social network data by outlining research inquiries from existing exploration, giving cases of new procedures and applications, and lighting up future research bearings. NCapture was applied to collect data and KNN approach for extracting paraphrases to detect emotions from user comments. The focus was on three basic emotions emotional process, temporal process, and linguistic analysis.

This [6] paper proposed two global feature extraction methods such as the statistic method and the CNN method. The results of depression detection and severity estimation experiments conducted on the AVEC 2016 DAIC-WOZ database show that 12 both methods achieved significant improvement compared to the previous state of the art in terms of the depression severity estimation.

In [7] author presents, collected Bangla data from Twitter, Facebook and other sources. Four hyper-parameters were selected, namely, number of Gated Recurrent Unit (GRU) layers, layer size, batch size and number of epochs. The step-by-step tuning for these Hyper-parameters were selected. The results show the effects of these tuning steps and how the steps can be beneficial in configuring GRU models for gaining high accuracy on a significantly smaller data set.

The [8] approach presented in this paper is applied to the methods of fuzzy cross recurrence plots of time series of depression and tensor decomposition of the recurrences to visualize the causality of depression and dynamics of the spatial correlations of several mental states in different drug trial phases.

The [9] goal of this study is to see how posts on social media sites can be used to categorise users based on their mental health. We present a method that leverages SNS as a data source and screening tool to identify users based on UGC on SNS via artificial intelligence. We developed a strategy that uses two separate classifiers to categorize UGC: Support Vector Machine (SVM) and Nave Bayes.They developed a web programme which can be used by psychiatrists, family members, and friends of depressed patients to classify SNS users into one of four depression levels. The performance of the three results, the sentiment results, the SVM results, and the Nave Bayes findings, has been calculated.

The [10] goal of this research is to find the best effective deep neural network architecture out of a few that have been effectively used in natural language processing applications.CLPsych2015 and Bell Let's Talk, both freely available datasets, were used in this research. Their investigations revealed that CNN-based models outperform RNN-based models. Models with improved embeddings were able to preserve performance while still having the ability to generalise.
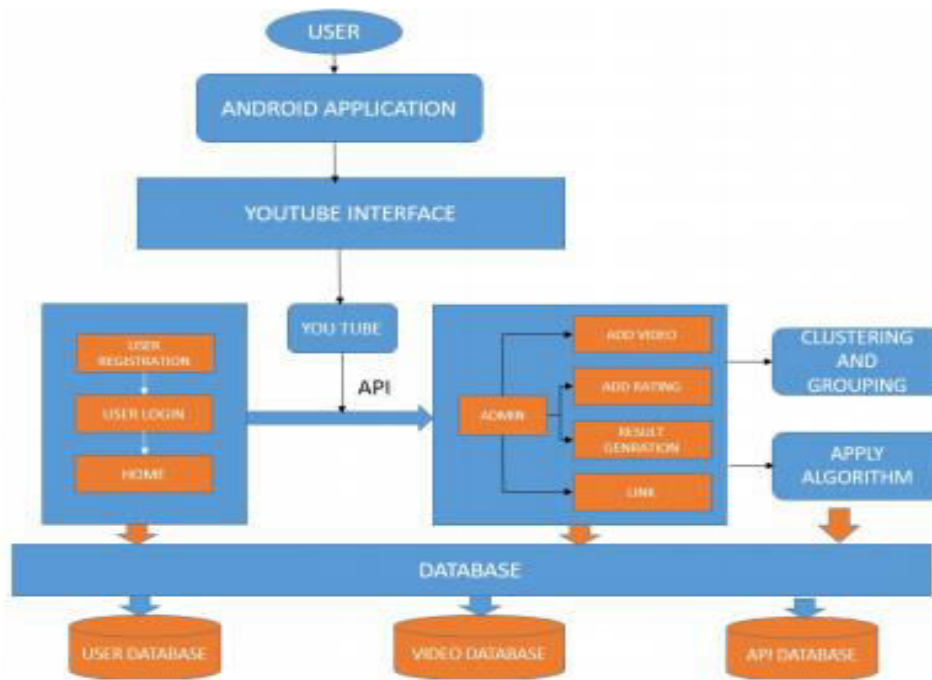
III. PROPOSED SYSTEM

Fig 3.1. Architecture Diagram of proposed work

This system architecture represents with space and elements to create a coherent and functional structure. From this observe in mentioned architecture, user can register with our application, we can save You Tube videos link in database, with the help of clustering and grouping algorithm we can add rating on that video. With the help of weight factor, we decide whether video is positive or negative.

Our proposed method for detecting depression and providing social assistance was created for people who are depressed but have lost their lives owing to a lack of help. We provide a social platform in the suggested system that assists the user in exiting it. We use social media sites like YouTube to detect stress in our suggested system because we know that mobile users are more connected to social media with the help of the things, we implemented in our research. Depression is identified in the current system in a variety of ways, including facial expressions, visual-audio aspects, and so on. We'd collect YouTube videos using the YouTube Official API, and then manually apply a Depression Factor to each one. We will preserve the Depression Factor of Video and the official video link in our database.

Following are some modules and their information in architecture diagram:

You Tube Interface: A YouTube interface is an entity to help to store video link data on social media sites to save in a database. The interfacing is done via You Tube API.

User Login/Registration: The Login and Registration form is basic form for register new users and login form used for providing login details to user for open main form or application.

Add video: The admin can add new video data in application with the help of API. You Tube can gives 80,000 points for all user to share their video. Admin have authority like add/update/delete video.

Add rating: There is various type of video present in social networking, we have to add rating on it to find the video is positive or negative. With the help of rating, we can have clustered all watch video and calculate the mean value to find depression level.

Result Generation: The result generation is a task to shows the user is in depression or not, when we apply K- means algorithm to the watch video by user that time result will be generated and that result shows on dashboard to the user on Android application.

Database: In database we can save all video link present on You Tube, as well as user registration login details save in database. We can save history data in database and use clustering techniques on it to manipulate the rating data.

Natural language processing (NLP): Natural language processing (NLP) is a branch of linguistics, computer science, and artificial intelligence that studies how computers interact with human language, particularly how to design computers to process and analyse massive amounts of natural language data. As a result, a computer can "understand" the contents of documents, including the intricacies of the language used within them. The system can then extract appropriate information and insights from the papers, as well as categorise and organise them. Natural language processing (NLP) techniques are widely used to extrapolate people's states of mind from their posts on YouTube, Facebook, Twitter, and other social media platforms. We look at how social media as well as other sources of information are used to monitor emotions and identify individuals who may require psychological help, as well as the computational techniques used in labelling and diagnosis, and how to obtain and personalise psychological state therapies.

IV. RESULT

The previous sections have provided a brief overview of the proposed system's details, which have been presented in different sections ranging from introduction to technologies requirements. The entire system is basically divided into five different modules that is User Login/Registration, You Tube Interface, add video, Add rating, Result Generation. We would be getting YouTube videos via YouTube Official API and then we manually would assign a Depression Factor to that video. Depression Factor of Video and official video link would be saved in our database.
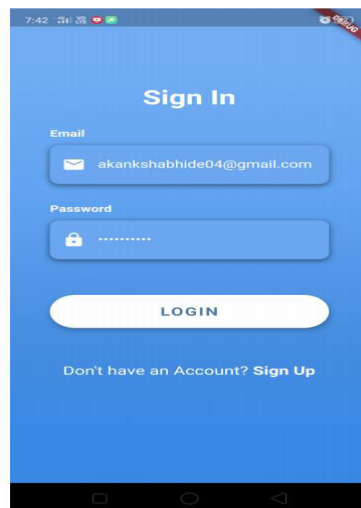

Fig 4.1. Result-1: Login/ Registration

User have to login to the application or if the new person is using then he must have to register to the application.
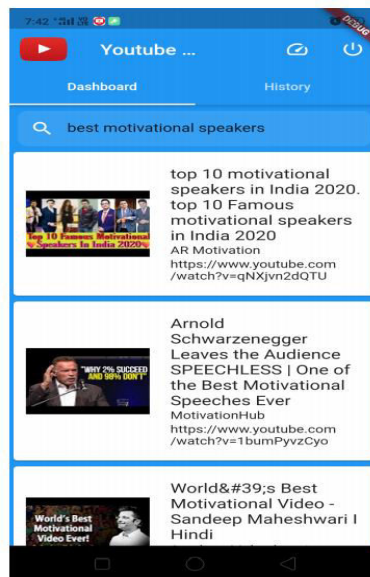
Fig 4.2. Result-2: Home Page

Here, the user can watch the videos which he likes also he can search for the video as he wants and watch the videos. Also, the add rating option for user the is available. User have to rate the video to determine the video is positive or negative.
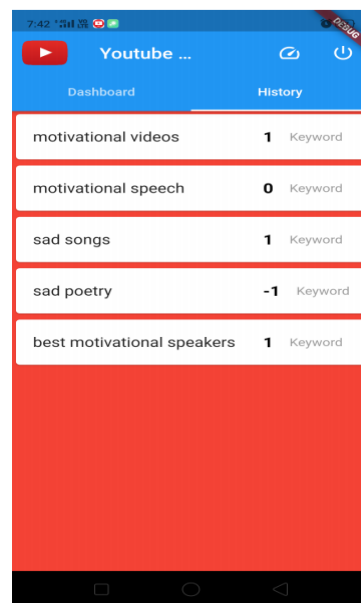

Fig 4.3. Result-3: History Details

This is the history page in which the have identified the videos watched by the user. Based on this history the depression level of the user is been identified.
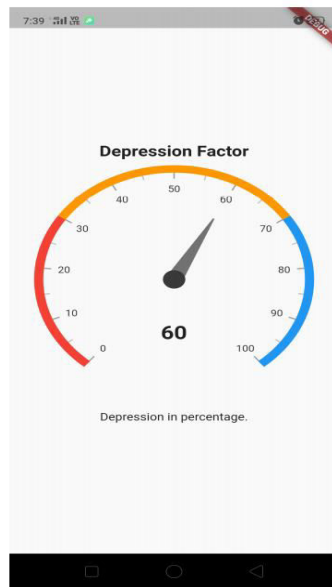
Fig 4.4. Result-4: Depression Factor

This is the actual expected result of the user depression level. This is done by applying the K-means algorithm to get output on Android application. '

V. **CONCLUSION**

By analysing video search data acquired from YouTube, we developed an NLP-based depression detection system in this study. It has been demonstrated that depression can lead to serious mental illness and even suicide, as well as how a machine learning methodology may detect depression in social media users. Microblogging social networking platforms like YouTube, Twitter, and Facebook allow users to express their daily thoughts and actions in a way that reflects their behavioural characteristics and personality features. We proposed in our proposed work that depression be detected based on a user's title or keyword search on our application. We use the YouTube API to present related videos on the app, and the NLP algorithm is utilised to detect depression. On the basis of the obtained history data, the user is classified as depressed or non-depressed.

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