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Depression Detection System Using NLP

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ABSTRACT: Depression may be common and high medical issue or problem. That negatively affects how you are feeling the way you think that and the way you act. In India the national mental health survey 2015 -16 reveals that almost 15 percent of Indian adult population has active intervention for one or more psychological state issue and one in 20 Indians suffer from the depression. This survey motivates us to work thereon it's approximate show that in 2012 India had over 2,58,000 suicides, with the age limit of 15 to 49 years. Among most of them, this age bracket spends the foremost time with social media and shows their view on it by using this we will provide a situation to detect the depression state of the user and supply social support to the user by automatically detecting depression. This technique will use the emotions of the users recognized from video watched by the user. The title of the video decreases the content or category of video with the help of this we will find the mood and depression state of the user expelled out from the depression.

KEYWORDS: YouTube sentiment analysis, natural language processing, depression level.

I. INTRODUCTION

Depression is one of the major mental health issues faced by humans of all ages and genders in the recent years. The work culture, stressful life, emotional imbalance, family distributed and social life is leading to depression. [1] Depression is becoming common and a serious medical illness and is causing negative effects on how one feels and acts upon in day to day life. [1] Usually, this mental state causes feelings of sadness. 1083 of interest things and jobs and rarely may lead to suicide. If it affects the natural ability of functioning at work as well as at home [6].

The main purpose of the work discussed in the paper is to make the depression detection using the emotions of the user recognized from user videos watched by the user [4]. The title watched by the user. The title of video described the content category of the video with help of this will find the mood & depression.

II. PROBLEM DEFINITION AND OBJECTIVE

The purpose to develop this software is to detect the depression based on emotion reorganization from titles of videos watched by the users through various social media. As in the present world, large population uses social media by using this thing we can help people to provide a social support to users to expel out users from that situation. The main goal is to provide help through social media. [1]

There are lots of parameters to be acknowledged to indicate depression of a user. Most of the users express their emotional state through posts and tweets and watch video on YouTube, videos in the proposed model, at first Beautiful Soup is applied to collect tweets. Facebook posts are collected manually with the permission of some users. Collected data are processed and read into the machine learning model. Then collected data are uncluttered by using NLP. [4]

We have presented a comprehensive computational framework for depression detection from video emotion based on video title analysis. The system gathers information from social media use and processes on it. Collectively and identify emotions behind social activity. Content through the emotions obtained from processing we can easily detect the mood of user as user is happy or user in depression. By providing social support to user we can easily expel user from depression. [5]

III. RELATED WORK

Over a previous couple of years, social media has been used to examine psychological health by many researchers. They considered that social media principal can divert the users' personal life on many levels. [11] They proposed to acquire supervised machine learning approaches like deep neural networks. Their primary objective was to detect depression using the foremost effective deep neural architecture from two of the foremost popular deep learning approaches within



the field of natural language processing (NLP): Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs), given the limited amount of unstructured data.[6]

Some accessible research works affiliated with Machine and Deep Learning-based sentiment and emotion analyses are described[4].

1. Machine learning for emotion analysis

A Machine Learning-based human emotion examination approach is represented by Riyadh.[8] During this research work, the authors use sadness, happiness, disgust, and surprise for his or her distributed task. They collected tweets from Sentiment140, labeled them manually, abolish tweets with no emotion, and created a balanced dataset accommodate 3,750 tweets.[2] 3,500 tweets were selected because of their training dataset and 250 tweets as the testing dataset. For feature extraction, the Unigram model and therefore the Unigram model with POS tagging were used. The authors use the frequency of the Bag of Words model as a feature to coach their classifier.

2. RNN for Depression Forecasting

A novel approach for depression forecasting was initiated by Sahara, using RNN. The authors design the LSTM-RNN based deep learning algorithm.[6] They used their model to elaborate embedding layers regarding every absolute parameter, which also assimilate a day-of-the-week variable to work out the day-of-the-week consequences in their imitation. They collected depressing data from 2,382 self-declared depressed persons, covering 22 months' time span, via an android application[7]. Their technology was successfully ready to forecast 84.6%, 82.1%, and 80.0% severe depression instances in 1, 3, and 7 days beforehand, respectively.

3. Machine Learning for Depression Analysis

Wang et al. conducted an investigation on Sina Weibo, a Chinese micro-blog, which is one among the foremost influential social media services in China[4]. They integrate both Psychological and Machine Learning knowledge for their evaluation. From the technical perspective, Machine Learning techniques, like Decision Tree, Naive Bayes, and Rule-based classifiers were used.[5] Their described method contained mainly three types, namely, polarity calculation of sub-sentences, sentence and word segmentation, and polarity calculation of sentences. Their model was ready to achieve 80% precision.[5]

IV. PROPOSED METHODOLOGY

our proposed system for detection of depression and provide social support is developed for the users who are suffering from depression but due to lack of support sometimes they lost their life. The proposed system we provide social platform the proposed system we use we social media Platform like YouTube for the detection of depression as we know that mobile users are more Connected help of things we used in our project. The proposed system it detects the mental Condition or mood of the user during these of Social media via YouTube 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.

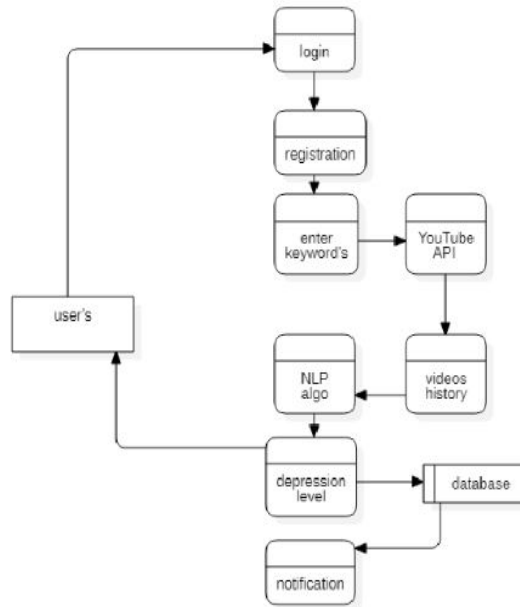


Fig 1. Proposed System Architecture

Natural language processing

Natural language processing (NLP) is a subfield of linguistics, computer science, and artificial intelligence concerned with the interactions between computers and human language, in particular how to program computers to process and analyse large amounts of natural language data. The goal is a computer capable of "understanding" the contents of documents, including the contextual nuances of the language within them. The technology can then accurately extract information and insights contained in the documents as well as categorize and organize the documents themselves.[5]



Fig 2. Sentiment Analysis

Sentiment analysis (or opinion mining) is a natural language processing (NLP) technique used to determine whether data is positive, negative or neutral. Sentiment analysis is often performed on textual data to help businesses monitor brand and product sentiment in customer feedback, and understand customer needs.[4]

Sentiment analysis is the process of detecting positive or negative sentiment in text. It's often used by businesses to detect sentiment in social data, gauge brand reputation, and understand customers.[3]



Graded Sentiment Analysis

If polarity precision is important to your business, you might consider expanding your polarity categories to include different levels of positive and negative:

- ❖ Very positive
- ❖ Positive
- ❖ Neutral
- ❖ Negative
- ❖ Very negative

V. WORKING MODULE

The first step requires the user to register and login to the android application. In a format similar to YouTube, the user will be able to stream videos of their choice with the help of the search bar. Videos that match the keywords mentioned will be displayed. As the user browses through the application, a history will be generated of the videos watched and keywords searched. On the basis of this accumulated data, natural language processing will be used to calculate the level of depression as per the scale previously designed.

• User Login/Registration:

The first step is to register on the android application and login to avail the services and features.

• You Tube Interface:

The interface is designed with the help of the official YouTube API. It stores the details of the video in the database.

• Historical Data

System user Historical data i.e. data search by user for watch video to calculate the depression factor using sentiment analysis as a NLP

• Result Generation:

The dashboard displays the results of depression level calculated by the NLP algorithm based on the user history.

• Database

The database stores login credentials and history of each YouTube video search title.

The scope of our project is to take a part of the whole depression level detection process. From a technical point of view it focuses on below points:

1. Registration and login of the user.
2. Link YouTube API with the application
3. Shows the video as per search keyword by user
4. Save history about keywords search and watch video
5. Apply an algorithm on history with the help of API
6. Find depression level
7. Show depression level to user
8. If depression is high send notification mail on guardian mail ID.

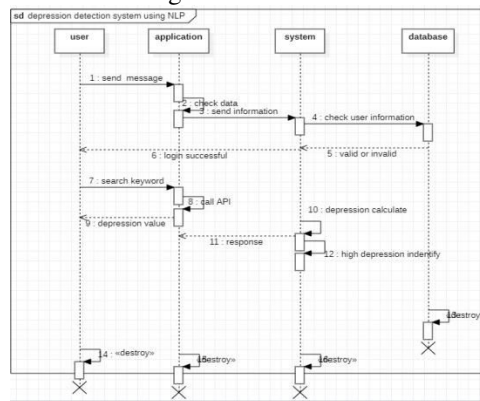


Fig 3. System Module



VI. CONCLUSION

As per studies, depression if unaddressed can negatively impair an individual's ability to regulate their thoughts, behaviors, and emotions. This research demonstrated the use of machine learning to detect depression among individuals. The proposed system presents a comprehensive framework for depression detection from video emotion based on video title analysis. The natural language processing based technique analyses the user's watch and search history to determine their depression level.

By providing social support to the user we can aid in receiving timely medical care. The features are also highly complementary, combining attributes with the title features shows very promising results. The future scope could require a focus on building a system that would limit the opportunities of exploitation of an individual's privacy. One such approach could be compliance with data protection regulations. Provision of transparency about the quantity as well as quality of data collected and to make sure that information collected for one purpose is not used anywhere else.

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