INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.165

Detection of Depression Indications in Text Sequences Using Neural Networks

Akash Doppalapudi, Veerendra Challa, TarunThambi Bonagiri, Nikhileswar Jonnadula,

Asst Prof Shalini Tadi

Dept. of ECE, VVIT, Namburu, Guntur, Andhra Pradesh, India

Dept. of ECE, VVIT, Namburu, Guntur, Andhra Pradesh, India

Dept. of ECE, VVIT, Namburu, Guntur, Andhra Pradesh, India

Dept. of ECE, VVIT, Namburu, Guntur, Andhra Pradesh, India

Dept. of ECE, VVIT, Namburu, Guntur, Andhra Pradesh, India

ABSTRACT: Depression is the leading cause of suicide. Unfortunately, many individuals are still depressed and aren't receiving adequate therapy for a variety of reasons. In this project we are detecting depression from users' posts, users can upload posts in the form of text files . This project can help to detect depression by sending. Now-a-days people. Are using online post services to interact with each other compared to human to human interaction. So by analyzing users' posts this application can detect depression. To detect depression we are using CNN (Convolutional neural network) which analyzes users' posts and gives results as negative or positive. If users express depression words in a post then CNN detects it as a negative post else positive post. To implement this project we are using CNN by adding text vectorization to the model and analyzing that text to detect depression of the user. This well trained Machine Learning model based on linguistic data if deployed on social media platforms like Facebook, Twitter and Instagram can help in earliest recognition of depression depending upon text used in posts.

KEYWORDS: Depression, convolutional neural network, early detection, linguistic metadata.

I. INTRODUCTION

As per W.H.O around 300 million individuals suffer with depression Worldwide. Seeking professional help For depression is Considered taboo in Conserved societies like India.Initiation from the user is least expected. But if we can detect depression. Help can be initiated from the other side. Our proposed solution is to develop a Neural Network that can Detect signs of depression by processing the text. We are planning to use a CNN (Convolutional Neural Network).The Previous method also mentions CNN but we plan on adding text-vectorization to the modal. The project aims to give the best accuracy than the other existing systems the neural networks that used in this project gives the accuracy of 79%

II. LITERATURE SURVEY

Depression Indications in Text Sequences Marcel Trotzek , Sven Koitka , and Christoph M. Friedrich, Member, IEEE [1]Previous studies have shown that depression also has an effect on language usage and that many depressed individuals use social media platforms or the internet in general to get information or discuss their problems. This paper addresses the early detection of depression using machine learning models based on messages on a social platform. In particular, a convolutional neural network based on different word embeddings is evaluated and compared to a classification based on user-level linguistic metadata. An ensemble of both approaches is shown to achieve state-of-the-art results in a current early detection task. Furthermore, the currently popular ERDE score as a metric for early detection systems is examined in detail and its drawbacks in the context of shared tasks are illustrated. A slightly modified metric is proposed and compared to the original score. Finally, a new word embedding was trained on a large corpus of the same domain as the described task and was evaluated as well.

A Machine Learning Approach to detect Depression and Anxiety using Supervised Learning AnamikaAhmed, Raihan Sultana, MdTahmidur Rahman Ullas,MariyamBegom,Md. MuzahidulIslamRahi,Md. AshrafulAlam[2] a model that uses a standard psychological assessment and machine learning algorithms to diagnose the different levels of such mental disorders. Proposed system predicts the severity of depression and anxiety using supervised learning algorithms.it is used to calculate the score to measure the severity of depression of the patient. The levels of severity of depression were divided based on the score of the answers this model uses machine learning approach

Detection of depression-Related posts in Reddit social Media Forum Michael M.Tadewsse,HongfeiLin,Boxu ,And Liang Yang [3]The key objective of this paper is to examine Reddit users' posts to detect any factors that may reveal the depression attitudes of relevant online users. For such a purpose, they employed the Natural Language Processing (NLP) techniques and machine learning approaches to train the data and evaluate the efficiency of our proposed method. In this model they identify a lexicon of terms that are more common among depressed accounts. The results show that their proposed method can significantly improve performance accuracy. This model Detects the depression by taking input as posts in Reddit Social Media Forum By using the NLP and text classification techniques

Depression Detection Based On Deep Distribution Learning WheidimaCarneiro de Melo, Eric Granger,AbdenourHadid.[4] This paper introduces a deep learning architecture for accurately predicting depression levels through distribution learning. It relies on a new expectation loss function that allows to estimate the underlying data distribution over depression levels, where expected values of the distribution are optimized to approach the ground-truth levels. The proposed approach can produce accurate predictions of depression levels even under label uncertainty. proposed methods that are based on verbal and nonverbal information for accurate estimation of a subject's depression level it detects the depression levels based on faces captured in videos. In this model it uses the deep distribution Learning

III. EXISTING SYSTEM

Depression is ranked as the largest contributor to global disability and is also a major reason for suicide. Still, many individuals suffering from forms of depression are not treated for various reasons. Previous studies have shown that depression also has an effect on language usage and that many depressed individuals use social media platforms or the internet in general to get information or discuss their problems. The Existing System uses a Convolutional Neural Network (CNN). Where the model is trained using text acquired from social media platforms.

IV. PROPOSED SYSTEM

The Objective of this project is to perform depression analysis on twitter data collected from an online public source. To investigate the effect of depression detection, we propose the CNN model as an efficient and scalable method. This proposed system addresses the early detection of depression using machine learning models based on messages on a social platform. In particular, a convolutional neural network based on different word embeddings is evaluated and compared to a classification based on user-level linguistic metadata. An ensemble of both approaches is shown to achieve state-of-the-art results in a current early detection task. The Proposed System also uses a Convolutional Neural Network (CNN) that will be trained on posts on social media platforms. Specifically, 1.6 million tweets from the Twitter API. This model uses word combinations instead of words for text vectorization.

V. ARCHITECTURAL DIAGRAM

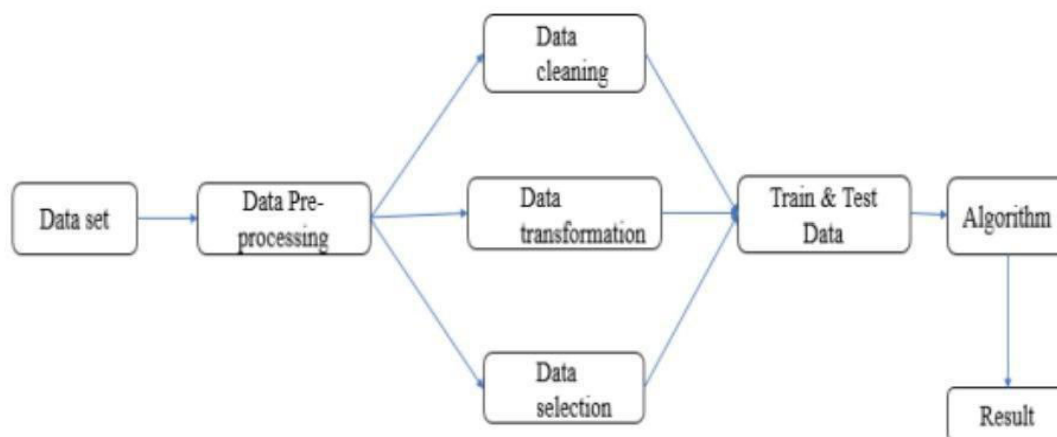This diagram gives a detailed explanation of the project requirements

FIG 1 ARCHITECTURAL DIAGRAM

The project is divided into 3 main modules in which each module has again divided into subparts , data collection and preprocessing next training the model with dataset and testing the data set

Data preprocessing
Data Collection is one of the main assignments in building a CNN model.
•Data is very essential for Machine Learning or Deep Learning. The dataset for this project is obtained from kaggle.com that Contains 1.6 million tweets.
• It is the social occasion of undertaking related data in view of a few designated factors to break down and deliver some important result.
• In any case, a portion of the information may contain mistaken values, fragmented values or garbage values
• The collected data set needs to be extracted.
•The training data needs to be cleaned of unnecessary data.
• Data cleaning: Fill up needed attributes, smooth down noisy information, detect or eradicate unneeded data, and address data set abnormalities

Data Input
•We give the Twitter tweets as the data input to the trained model
•We give the test data set and checks the accuracy by using tensorflow
•for better accuracy we train the model with more data

VI. SYSTEM DESIGN

Based on the research on the other projects and papers we came up with the new solution with help of algorithm CNN with addition to Text vectorization to the CNN model

Convolutional Neural Network
 Layers of neurons make up the structure of neural networks. Solving complicated data-driven challenges requires use of Artificial Neural Networks, which imitate human brain behavior. When a Neural Network receives input data, it begins to operate. In order to get a desired result, this data is first processed using layers of Perceptrons.
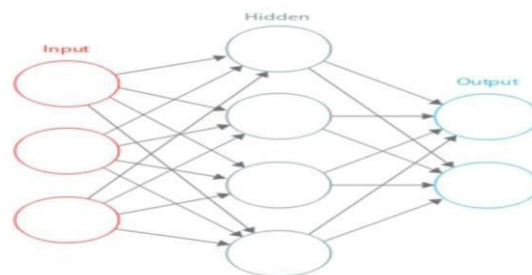

Fig 2 AN ARTIFICIAL NEURAL NETWORK

For classification of problems, complex architectures are built by using different layers in a CNN. Pooling/subsampling layers, vectorization layers, embedding layers, Dropout layer as well as dense layer are five types of layers. The several levels of CNN are seen in Figure 2. The vectorization layer receives a part of the input picture as input. The output of this layer is subsequently passed into the pooling layer for further processing.

Fig 3 ARCHITECTURE OF CNN MODEL

Our proposed solution is to develop a Neural Network that can detect signs of depression by processing the text inside a post. This model can be plugged into the backend of a social media in which we use CNN on adding text-vectorization to the model.

TEXT -VECTORIZATION

FIG 4 TEXT-VECTORIZATION SAMPLE IMAGE

The method of converting text to a vector of numbers is called text-vectorization. Text Vectorization will allow text to be used as training data.

MODEL

FIG 5 MODEL IMAGE

The above fig describes the conversion of text to vector and generates the relationship between different words and also reduces the over fitting and converts 2d matrix to 1d vector

TRAINING ACCURACY STATICS
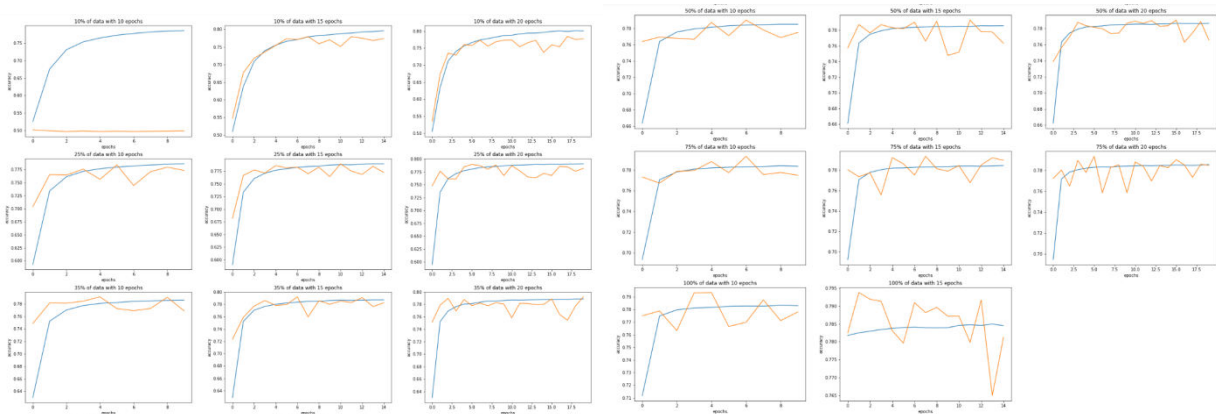
The above fig describes the both training and validation accuracy

VII. RESULT ANALYSIS

Most accuracy achieved in this model is 79%.

This Model Might give slight improvement of accuracy at expense of huge Training time

VIII. CONCLUSION

Into our article we suggested system with CNN algorithm that gives accuracy of 79% combined and shows the best results that helps to detects depression using text sequences efficiently in the future work we can enhance with other Machine learning algorithms that gives the more advance techniques

REFERENCES

1. Marcel Trotzek , Sven Koitka , and Christoph M. Friedrich , Member, IEEE "Utilizing Neural Networks and Linguistic Metadata for Early Detection of Depression Indications in Text Sequences",2018
2. AnamikaAhmed,RaihanSultana,MdTahmidur Rahman Ullas,MariyamBegom,Md. MuzahidulIslamRahi,Md. AshrafulAlam "A Machine Learning Approach to detect Depression and Anxiety using Supervised Learning",2020
3. Michael M.Tadesse , Hongfei Lin , Bo Xu , And Liang Yang. "Detection of Depression-Related Posts in Reddit Social Media Forum", 2019.
4.Wheidima Carneiro De Melo,Eric Granger, AbdenourHadid. "Depression Detection Based On Deep Distribution Learning",2019
5. A. T. Beck and B. A. Alford, Depression: Causes and Treatment. 2nd ed. Philadelphia, PA, USA: Univ. Pennsylvania Press, 2009

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING