

Depression Detection from Social Network using Machine Learning Techniques

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Abstract

Social network is a great platform for users to communicate, share their feelings, updates, sentiments. We can use this data to check whether the person is suffering from depression. In order to diagnose the depression, it can be divided into separate categories. In this paper, we focus on to perform depression detection on dataset which contains images related to post. To discover the impacts of sorrow, we created AI procedure as a proficient technique. We explored the execution of the proposed technique. We have checked the productivity of our proposed technique utilizing a lot of classification of Images. Our system can improve the accuracy and reduce the error. SVM gives better results than Machine Learning to detect the depression. Machine learning technique detects high accuracy of results of depressed user and will also categorize the type of depression among social network users.

Keywords: Machine Learning, Social Network, Depression detection, Sentiment Analysis, Reddit.

1. Introduction

Depression could be a common psychological state. It's one amongst the foremost regarding public health issues worldwide. More than three hundred million people have suffered from depression in 2015 as per the sources. It very well may be recognized by having a solid sentiment of dissatisfaction, despair, low vitality, void temperament, decreased or expanded craving, dozing issue, liable inclination, and self harm in like manner as pointless considerations. This psychological issue influences day by day course since it conjointly influences memory and an ability to focus. Not exclusively it influences capacity to quantify generally; it additionally becomes weight to the general public. It creates many challenges before the person. This Paper focuses mainly on the solution to increase the performance by feature selection method. Here we consider two type of posts i.e. Text and image. Firstly we consider text post, posts that pre-processed and remove stop words. After that SVM apply to check depression related words. Secondly we take image posts that contains words that shows depression, so we get input image and we send image to pre-processing means convert that image into binary format, after that extract the pixels that have high precision so we can recognize the characters, when we recognize character fetch it for post processing and finally translate into text, when getting text then again we apply pre-processing and remove stop words, and detect depression.

2. Literature Survey

Kantinee Katchapakirin in the paper titled “Facebook Social Media for depression Detection in the Thai Community” proposes model for the early detection of depression. Given Facebook is that preferred social media as a platform in the Asian country, It very well may be an enormous

hotspot for the advancement of a downturn identification framework. This examination gives Natural Language Process (NLP) methods to build up a calculation rule for the downturn identification in Thai language via web-based networking media (Facebook). Clients utilize this instrument for sharing inclination, conclusions and life occasions. By utilizing the consequences of thirty five clients conduct may anticipate misery.

Hongfei Linin the paper titled “**Detection of Depression Related Posts in Reddit Social Media Forum**” uses the linguistic communication process techniques and Machine Learning technique to coach the information and appraise the potency planned technique. Author determines a terms that are common from depressed user accounts. The most effective feature is written word with the classifier called as Support Vector Machine to observe and depression with eightieth accuracy and zero.80 F1 score. The Multilayer Perceptron (MLP) classifier gives highest accuracy i.e. nighty one accuracy.

Christoph M. Friedrich in the paper titled “**Utilizing Neural Networks and Lingustic Metadata for Early Detection of Depression Indication in Text Sequences**” this paper centers the principal sorrow identification exploitation models bolstered messages on a social stage. Most importantly, a convolution neural system bolstered totally unique word implanting is assessed and contrasted with an arrangement upheld client level phonetic data. Partner degree gathering of each approach is appeared to acknowledge dynamic prompts a current early discovery task. It uses most famous ERDE score as a metric to detect early depression.

Sushama D. Shelke in the paper titled “**Speech to Text Conversion for Multilingual Languages**” proposes a multilingual discourse to-message change framework. Change relies upon information in discourse position. Discourse - To-Text (STT) framework snatches a character's discourse vocalization as info and yield is as strings. The principle focus of this procedure is to separate first at that point portray and after that recognize the information understanding discourse. The arranged framework is implemented abuse Mel-Frequency Cepstral Constant (MFCC) highlight extraction strategy and Minimum Distance Classifier, Support Vector Machine (SVM) procedures for discourse characterization. The information is then divided into two categories testing and coaching. System gives the output with the words having most similarity square aspect.

Martinez-Enriquez AM in the paper titled “**Image to Multilingual Text Conversion for Literacy Education**” proposed application is utilized to decipher the content which is incorporated to photos for visual obtaining. Further, numerous procedures are utilized for Image-To-Text multilingual interpreter square measure checked on well. By beating the issues, that square measure known by exhaustive audit of writing, a superior approach is proposed. Therefore, the occasion of use has four principle stages including: first catching at that point second extraction after that acknowledgment and interpretation. Principally, Optical Character Recognition (OCR) calculation rule is particularly utilized for character extraction and acknowledgment with high precision underneath totally unique condition conditions. The anticipated yield might be utilized in procurement instruction.

3. Existing System

In existing framework Depression might be a treatable unwellness. Related in nursing earlier location and inclusion would lessen the treatment course. Unfortunately, the speed of accessibility to treatment is amazingly low. It had been reportable that however five hundredth of this United Nations organization has this insane person gained access to mental state administration. The boundaries express a nonappearance of data and sharpness in sorrow, which comprises of negative discernment with respect to mental state administrations and a control quantities of mental state calling. To help speed up availability to mental state administration, it's obligatory that an accomplished innovation and dynamic strategy should be utilized. To urge people to hold up under as a top priority their passionate prosperity along with sorrow.

Fewer Studies examined early depression detection. Ophir et al observed signals of depression among the Facebook, Inc users with the aim of eventually applying the coding strategy to early depression detection techniques. De Choudhary achieved 70% accuracy in an experiment.

Algorithm	Precision	Recall	F-measure
Decision Tree	0.58	0.9	0.71
KNN	0.57	0.58	0.58
SVM	0.58	0.10	0.73
Ensemble Classifier	0.58	0.90	0.73
Ensemble Bagged Tree	0.59	0.69	0.63

4. Observation on Summary

Year	Title	Requirements	Challenges & Future Scope
2018	Facebook Social Media for Depression Detection in the Thai Community.	Thought: To create instrument for melancholy discovery on Facebook. Method: Natural Language Processing, Support Vector Machine (SVM), Deep Learning, Random Forest.	The outcomes getting from this investigation probably won't spread every factor. There may be a few mistakes because of this procedure since some significant feeling polar words may have been wiped out during the interpretation.

2018	Detection Of Depression-Related Posts In Reddit Social Media Forum.	Thought: To perceive the nearness of sorrow in Reddit web based life. Procedure: Support Vector Machine, Multi-Layer Perceptron Dataset: The dataset was worked by Inna Pirina et al., which comprises of a record of discouraged and non-discouraged clients.	To test the connection between the clients character and their discouraged conduct reflected in internet based life.
2018	Utilizing Neural Networks Linguistic Metadata for Early Detection of Depression Indications in Text Sequences.	Thought: Early sadness Identification. Strategy: Convolutional Neural Network. Dataset: The dataset is distributed as a major aspect of the CLEF 2017 meeting eRisk pilot task on early wretchedness discovery.	Consolidating word sets of two models in a solitary neural system has additionally not been evaluated at this point. Another practical improvement is use contribution as BERT for arrange and to differentiate a self-prepared model.
2016	Speech to Text Conversion for Multilingual Languages	Idea: To extract, identify and acknowledged the information about speech. Technique: Mel-Frequency Cepstral Constant, Support Vector Machine	The process is developed in MATLAB (R2010a) environment.
2018	Image to Multilingual Text Conversion for Literacy Education	Thought: To change over content by catching a picture with client advanced mobile phone camera. Strategy: Optimal Character Recognition.	The advancement of use incorporates four significant stages: catching, extraction, acknowledgment, interpretation.

Table 1: Summary of Literature Survey

5. Result

We planned the proposed framework to give legitimate outcome. We have checked the proposed framework's proficiency by utilizing different arrangements of semantic highlights. We saw that our framework improves the precision and arrangement blunder rate. The outcome shows that SVM gives the most noteworthy precision than ML ways to deal with distinguish the downturn.

6. Technique

In this we have utilized four classifiers for example Choice tree, k-closest Neighbor, Ensemble and Support Vector Machine. Choice tree is a straightforward technique. It is utilized for characterization which is done deliberately. It makes various leveled tree. Choice tree is utilized to separate information progressively. All information has various attributes. All information is partitioned into its youngsters. Roots are partitioned into hubs. Outfit techniques are celebrated for utilizing more than one learning calculation. It utilizes choice tree for better outcomes. K-Nearest Neighbor (KNN) K-Nearest Neighbor is utilized to discover good ways from one point to point in preparing set.

Bolster Vector Machines (SVM) is likewise called as Support Vector Machine systems. It bolsters non-probabilistic classifier that utilizes information for characterizing location. It is in type of class. It is greatest detachment to preparing the information.

7. Advantages

1. A tool on facebook which will detect depression.
2. Beneficial for individual suffering from mental disorders.
3. It identifies the depression in social media.
4. Early detection of depression.

8. Disadvantages

1. We have to collect some more amounts of data & valid feature.
2. We need to have some additional ideas to find some better and better ways.

9. Conclusion

In this paper, we have used to find the keywords in social media. It increases the performance to increase detection of depression. We have tendency to characterize more features of depression. A SVM is used for text classification techniques. The words of depression should contain the words which have feelings like depression, disappointment, happy, anger or destructive stress thoughts. In future we will try to examine users.

10. References

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