

Detecting Social Network Addicts Mental Stress Using Machine Learning

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Abstract— Now days social addicts are increasing because usage of internet and smart devices increasing sequentially. In this current situation children to adult are demanded to use smart phones therefore continuous monitoring of users are not possible which leads to privacy issues. In this paper, without disturbing user privacy issue monitoring their chats and analyzing their mental pressure is performed using machine learning. Initially chat text will be extracted and analyzed using natural language processing. By NLP we can process sentimental analysis and identify whether the particular user is in happy or in depression state. By fixing a threshold limit we can detect if the person is in continuous depression or normal mind upset. If our system identifies that the particular person is continuously in depression it will send an intimation to respective care taker mail ID which was collected during registration process of our system. Hence our system detects status of particular person in accurate way through machine learning and take proper step for securing that person from depression.

Keywords: Mental Pressure Detection, Machine Learning, NLP, Emotion Analysis and Intimation Process

I. INTRODUCTION

Relaxation gives wellbeing though stress influences your wellbeing. In the current day, circumstance Stress is most quickly expanding. This is the reason individuals are unsettled notwithstanding success. Stress is a compressed inclination. The pressing factor can be either enthusiastic, physical or even mental. At the point when one is feeling the squeeze can be either passionate, physical or even mental. At the point when one is feeling the squeeze s/he feels s/he would bomb not to succeed. Stress is found all over. It is found in every single character. Any idea, any circumstance can cause stress. Yet, nature is unique. Stress is multi-overlay. It is physical, mental, and monetary. Any idea, any circumstance can cause pressure. At the point when one denies in under pressure, it expansions in products progressively.

Stress location is conceivable through online media, Based on one's review via web-based media, one's responding on a specific issue via web-based media, one's preferring and hating help to recognize pressure. Through the constant review via online media, a therapist can discover individuals under tension, insane, frantic after an ordinary subject. This likewise means that pressure. Utilization of long range interpersonal communication locales investigations the condition of one's brain and thinking. Twitter and Facebook have a wide number of clients. Individuals share their own contemplations, thoughts, philosophy, temperament and so on Remarks on Twitter or Facebook unquestionably show whether the author is typical or unusual. What's more, unusual is unquestionably under pressure. So this

demonstrates the avoidance and it's a reality "Counteraction is superior to fix."

Opinion investigation framework either utilize a vocabulary or AI calculation. Contrasted and nonexclusive AI calculation, dictionary based calculation functions admirably, however the choice about which to utilize relies upon the idea of the content which to utilize relies upon the idea of the content which need to examined and the motivation behind the undertaking.

A. Text Mining:

Text mining is valuable for dealing with literary information. Literary information is unstructured, hard to control and muddled, so text mining turns out to be most valuable strategy for data trade while information mining is essentially applied on business information. Immense measures of new data and information are created ordinarily through monetary, scholarly and social exercises, much with huge expected financial and cultural worth. Strategies, for example, text and information mining and investigation are needed to misuse this potential. The primary objective of this system is to lessen endeavors needed for acquiring data from huge arrangement of printed reports.

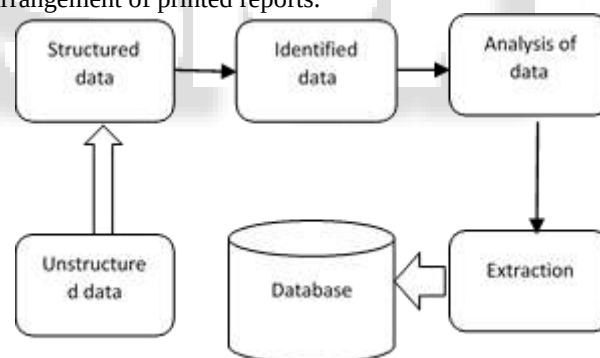


Fig. 1: Text mining process

B. Sentimental Analysis:

The Sentiment Analysis is the computational examination of people's emotions, outlooks and emotions toward a substance. The component can talk about any individuals, events or subjects. Assessment Analysis can be seen as a plan strategy. There are three essential portrayal levels in Sentiment Analysis: record level, sentence-level, and angle level. Report level intends to describe a decision document as imparting a good or negative speculation or assessment while Sentence-level plans to organize feeling explained in each sentence. The underlying advance is to recognize whether the sentence is theoretical or objective. In case the sentence is enthusiastic, Sentence-level notion assessment will choose if the sentence conveys positive or negative notions. In any case, there is no fundamental differentiation among report and sentence level requests since sentences are just short

chronicles. Viewpoint level slant investigation intends to aggregate the assessment with respect to the specific pieces of substances. The underlying advance is to recognize the substances and their perspectives.

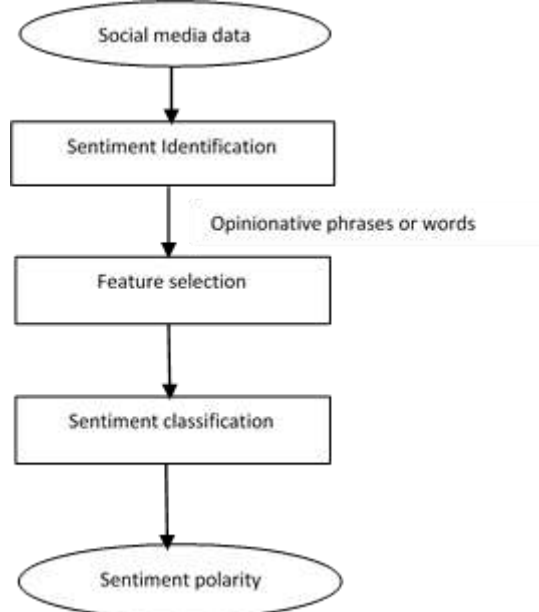


Fig. 2: flow for sentiment analysis

C. Contribution of this Paper:

- Detection of user mental depression without affecting their privacy and data confidentiality.
- To intimate particular user mental status to respective user care taker through mail.
- To prevent user from accidental incident.

II. LITERATURE SURVEY

1) Dishi Jain et.al (2019), describes extending advancement of the web organization, casual networks, online entryways, reviews, surveys, ideas, assessments, and info are delivered by customers and it tends to be tied in with anything like books, people, things, investigate, events, etc. These sentiments become beneficial for associations, political body, and individuals. While this is expected to be important, a larger piece of this customer delivered content require using the assessment mining strategies or supposition investigation. Slant Analysis is a field where we learn about emotions, ends and subjectivity of assessments. This audit paper is a comparable examination of various actually proposed computations' overhauls and distinctive inclination assessment applications. Principally for item audits that how opinion investigation can be utilized to suggest an item dependent on surveys by the customer. The connected fields to assessment examination that pulled in experts actually are analyzed. The basic goal of this audit is to give almost full image of estimation investigation, its sorts and portrayal. The essential responsibilities of this paper incorporate the unpredictable orders of late articles and the framework of the progressing example of examination in the notion investigation and its connected domains.

- 2) J. S. Kanchana et.al (2018), presents mental issues are turning into a significant danger to individuals' life. It is essential to identify and oversee pressure before it transforms into a serious medical problem. These days individuals share their inclination in online media routinely. It turns out to be not difficult to distinguish the pressure of the clients dependent on their social conduct. Likewise, conventional pressure discovery strategies are tedious and exorbitant. So the semantic credits in tweets can be utilized to distinguish singular client stress. In this undertaking, the pressure conditions of clients are grouped utilizing Naive Bayes arrangement calculation and are ordered into pushed and non-focused on client.
- 3) Rie Johnson and Tong Zhang (2017), discusses a low-intricacy word-level profound convolutional neural organization (CNN) design for text classification that can proficiently address long-range relationship in text. In the writing, a few profound and complex neural organizations have been proposed for this assignment, expecting accessibility of moderately a lot of preparing information. Nonetheless, the related computational intricacy increments as the organizations go further, which presents genuine difficulties in down to earth applications. Also, it was shown as of late that shallow word-level CNNs are more exact and a lot quicker than the cutting edge extremely profound nets, for example, character-level CNNs even in the setting of enormous preparing information. Roused by these discoveries, we painstakingly examined developing of word-level CNNs to catch worldwide portrayals of text, and tracked down a straightforward organization engineering with which all that exactness can be acquired by expanding the organization profundity without expanding computational expense by a lot. We call it profound pyramid CNN.
- 4) Munmun De Choudhury et.al (2013), explore the possibility to utilize online media to identify and analyze significant burdensome problem in people. We first utilize publicly supporting to assemble a bunch of Twitter clients who report being determined to have clinical sorrow, in light of a standard psychometric instrument. Through their web-based media postings longer than a year going before the beginning of gloom, we measure conduct ascribes identifying with social commitment, feeling, language and semantic styles, self image organization, and notices of stimulant drugs. We influence these conduct prompts, to construct a measurable classifier that gives assessments of the danger of wretchedness, before the detailed beginning. We track down that online media contains helpful signs for portraying the beginning of despondency in people, as estimated through decline in friendly movement, raised antagonistic effect, exceptionally bunched inner self organizations, increased social and therapeutic concerns, and more prominent articulation of strict contribution. We accept our discoveries and techniques might be helpful in creating devices for distinguishing the beginning of significant wretchedness, for use by medical services offices; or in the interest of people, empowering those experiencing despondency to be more proactive about their psychological wellness.

- 5) Gabriel Dulac-Arnold et.al (2011), propose to show the substance request measure as a back to back decision association. In this collaboration, an expert sorts out some way to assemble files into subjects while scrutinizing the record sentences sequentially and sorts out some way to stop when enough information was examined for picking. The proposed figuring relies upon a modelisation of Text Classification as a Markov Decision Process and learns by using Reinforcement Learning. Tests on four unmistakable old style mono-mark corpora show that the proposed approach performs likewise to conventional SVM approaches for gigantic getting ready sets, and better for little planning sets. Additionally, the model normally changes its examining collaboration to the measure of planning information gave.
- 6) P.J. Hayes et.al (2002), describes the sort of use that the content order shell, TCS, can deliver is portrayed. Large numbers of its applications have incredible business esteem. The plan objectives for TCS are talked about, and different ways to deal with text order in the light of these objectives are analyzed. The TCS and how it meets its plan objectives are portrayed, and instances of utilizations worked with TCS are given. A book order application created with TCS comprises of the TCS runtime framework and a standard base. The standard base characterizes what classes the application can dole out to messages and contains decides that settle on the arrangement choices for specific writings.

III. PROPOSED SYSTEM

In this paper, we used machine learning (ML) to identify the increasing stress level in the students and to predict the stress beforehand and be able to stop the major damage to their life before happening. In the test, we evaluate students amongst different situations. The level of stress was approved by the undertaking execution. The proposed model includes PSS dataset collection, pre-processing, feature extraction and applying machine learning algorithm (Random Forest, SVM, NB, KNN).

A. Data Pre-processing:

In information pre-preparing, the uproarious and deficient information are eliminated. The twitter dataset has the client ID, stress class and client's tweet. For instance: Incomplete tweet information like "u folks know y" and "definitely so" are eliminated from the dataset.

1) Remove Non-alphabetic character:

In PCs vision an individual can peruse just „A-Z“, „a-z“, and some unique image. for example In this stage, the images which doesn't determine an alphabetic significance is eliminated like „0-9“ numbers are taken out. This progression eliminates all muddled organization character. And furthermore these images won't assist with distinguishing the pressure.

2) Remove Special Symbol:

In dataset, undesirable exceptional images come habitually on which algorithmic standard can't work. In spite of the fact that the exceptional image give a ton data to put it plainly, yet

this strives to break down by this executed framework. This stage eliminates the images like "!,@,#,\$,%,&" are taken out.

3) Remove Spaces:

This carried out framework chips away at manually written information (or human coded information) so often, unintentionally some undesirable spaces or lines which is added naturally in the content. So need to eliminate these spaces to work precisely on given information.

4) Remove Stop Words:

For supposition examination, In English language there is a rundown of some regular stop words, which won't change the importance of sentences and furthermore not demonstrate any pressure related feeling, yet it joins sentences. There is a stopwords.txt to eliminate all regular words in a content as am "I, she" and so forth

B. Feature Extraction:

Feature extraction is a very important step in developing WSD system, which will then have a high effect on the system performance. In this problem, features are the set of words which exist in the context of the ambiguous word that is under investigation. The set of extracted features includes frequent words. Every word that frequently occurs in the training corpus is represented as a feature in this set. The value of a typical feature is dependent on the number of times it has co-occurred with the ambiguous word, ignoring the position of its occurrence in the paragraph.

C. Naïve Bayes:

Naïve Bayes is for the most part utilized in conclusion investigation. This classifier chips away at Bayes hypothesis. This calculation chips away at categorisation or expectation of the content by the recurrence of words present in the record. This classifier functions admirably in some genuine word circumstances especially on report order. It requires modest quantity of preparing information to assess the vital boundaries. It is incredibly quick contrasted with others.

Naive Bayes calculation is the calculation that learns the likelihood of an item with specific highlights having a place with a specific gathering or class. Bayes hypothesis gives a technique for computing the back likelihood, $P(c|x)$, from $P(c)$, $P(x)$, and $P(x|c)$. Gullible Bayes classifier accepts that the impact of the estimation of an indicator (x) on a given class (c) is autonomous of the estimations of different indicators. This supposition that is called class contingent autonomy.

$$P(c|x) = P(x|c)P(c) / P(x)$$

Where,

$P(c|x)$ is the Posterior probability

$P(x|c)$ is the likelihood

$P(c)$ is the class prior probability

$P(x)$ is the Predictor prior probability

D. Intimation process:

In this module, status identification of user whether he/she in normal status or any mental stress. This can be identified by analysing user comments as negative comments or positive comments. Initial registration process itself user should enter their own caretaker mail ID for intimation process. However the comments shared by particular user are not shared to caretaker or other users hence our system is fully privacy

protected. If any mishandling is done then respective intimation will be sent to registered email. Hence necessary action will take by that particular caretaker to handle the stress faced by that user.

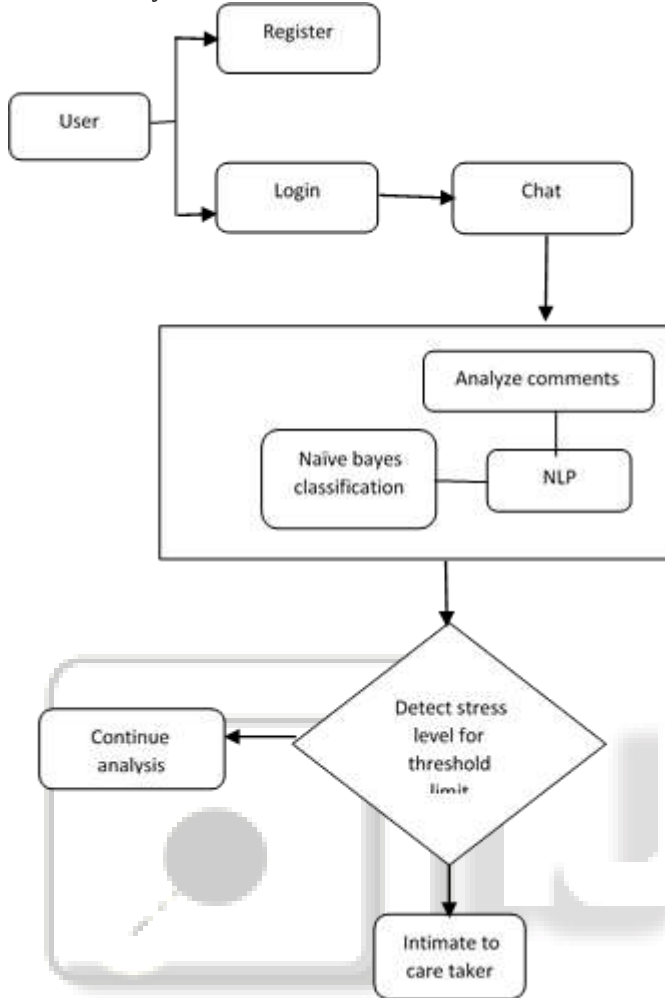


Fig. 3: System Architecture

Sentiment analysis framework either utilize a vocabulary or AI calculation. Contrasted and conventional AI calculation, vocabulary based calculation functions admirably, yet the choice about which to utilize relies upon the idea of the content which to utilize relies upon the idea of the content which need to broke down and the motivation behind the assignment. The fundamental disadvantage of the AI is area explicit for example it functions admirably on the sorts of text that is prepared by the framework, while dictionary chips away at its own principles.

IV. RESULT AND DISCUSSION

From our proposed work it clearly shows that we can identify the stress of particular person accurately without disturbing their privacy. Here the accuracy of emotion classification through text analysis by implementing machine learning is shown in below figure 4.

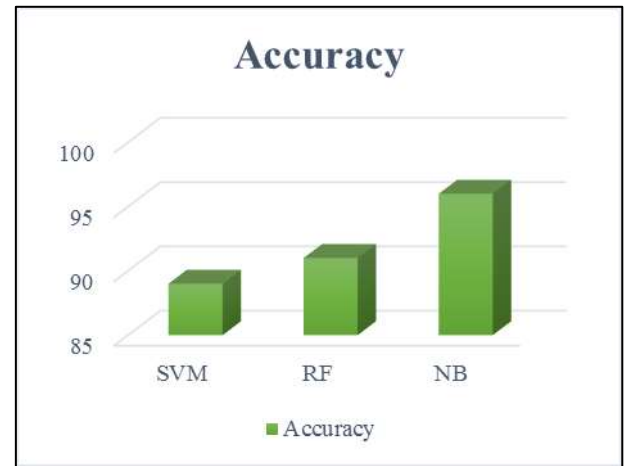


Fig. 4: Accuracy performance of proposed algorithm

V. CONCLUSION

Detecting social network addict's mental stress through their chats without affecting their privacy is a difficult task. This can be possible by utilizing machine learning algorithms and NLP technique. Hence our process will work in server side which analyse user comments and identify their mental status as either in normal (happy) or depression state. Through continuous monitoring by fixing threshold limit our system will identify that particular person pressure level and intimate it to respective care taker mail to protect that user from unpredictable incident happening. Our system attains high accuracy in detection emotional level compared to other existing methods.

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