

e-ISSN: 2319-8753 | p-ISSN: 2320-6710

EDIA

International Journal of Innovative Research in SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

808

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 6, June 2021

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.512

9940 572 462

6381 907 438

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| e-ISSN: 2319-8753, p-ISSN: 2320-6710| <u>www.ijirset.com</u> | Impact Factor: 7.512|

|| Volume 10, Issue 6, June 2021 ||

[DOI:10.15680/IJIRSET.2021.1006305]

Detecting Depression from Tweeter Data Using Bayes Algorithm

Rutika Parkhe¹, Shruti Jagdale², Suraj Borkar³, Prof. Madhavi Kulkarni⁴

U.G. Student, Department of Computer Engineering, JSPM'S BSIOTR, Wagholi, Pune, India^{1,2,3}

Associate Professor, Department of Computer Engineering, JSPM'S BSIOTR, Wagholi, Pune, India⁴

ABSTRACT: Depression is the driving cause of incapacity around the world, Nearly 75% of individuals with mental clutters stay untreated in developing nations with nearly 1 million individuals taking their lives each year. In expansion, agreeing to the World Health Organization (WHO), 1 in 13 universally endures from anxiety. The WHO reports that anxiety clutters are the foremost common mental disorders around the world with particular phobia, major depressive clutter and social phobia being the foremost common anxiety disarranges. Depression on Social Media, It has been found out in a overview that 322 million individuals around the world live with depression. Recognizing prior depression can be a tremendous step to address the mental sickness and offer support to the individuals enduring from this terrible mental illness. Creating a model to distinguish depression from tweets, In Machine Learning, there are numerous ways for estimation analysis such as: decision-based systems, Bayesian classifiers, support vector machine, neural networks and sample-based strategy. In this Paper we have proposed a framework which is competent of Identifying a depression from tweets utilizing Bayes Theorem In Machine Learning.

KEYWORDS: Sentiment Analysis, Bayes theorem, Machine Learning, Depression Detection

I. INTRODUCTION

Agreeing to Our World in Information Site, Depressive clutters happen with changing severity. The WHO's International Classification of Illnesses (ICD-10) characterize this set of clutters ranging from mild to moderate to severe. The Institute for Health Measurements and Evaluation(IHME) receive such definitions by disaggregating to gentle, persistent depression (dysthymia) and major depressive clutter (extreme).

All forms of depressive clutter encounter a few of the following symptoms:

(a) Diminished concentration and attention

- (b) Diminished self-esteem and self-confidence
- (c) Thoughts of blame and unworthiness (indeed in a mild sort of episode)
- (d) Disheartening and critical views of the future
- (e) Thoughts or acts of self-harm or suicide

(f) Aggravated sleep

(g) Reduced appetite

Paper is organized as follows. Segment II portrays the diverse way of actualizing the Depression Detection model Utilizing Artificial Intelligence. How We are able to execute the Bayes algorithm in Machine Learning to Distinguish the Depression from the Tweets, that's given in Segment III. Segment IV presents experimental results showing results of, Processed data. At last, Segment V presents conclusion and the future Scope.

II. RELATED WORK

In 1895, the German therapist Emil Kraepelin got to be the primary to recognize hyper depression, what we presently known as bipolar clutter, as an sickness isolated from dementia praecox (the term for schizophrenia at the time). [1]. The concept of Identifying the depression utilizing Artificial Intelligence was first represented in 19th and 20th century. It was 19th Century German therapist Emil Kraepelin who started alluding to different forms of depression as "depressive states," due to the low disposition that characterizes it. Kraepelin moreover took a double approach to mental illness, separating depression into two categories: hyper depression and dementia praecox. Melancholics were in like manner seen as thoughtful, deep masterminds, who ordinarily related more to the sadder portion of the enthusiastic range. It is from this discernment of despondency that our current concept of sadness inevitably advanced. [2]. Kraepelin's refinement was based on whether the depression's source was outside or inside: in case the depression was



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|| Volume 10, Issue 6, June 2021 ||

[DOI:10.15680/IJIRSET.2021.1006305]

caused by an outside tragedy, such as the passing of a cherished one, it was considered a form of hyper depression and anticipated to be long winded and passing. Assist researches within the field of detecting depression appears that, nowadays social network like tweeter or any other social platforms where people are free to precise their sentiments may be the best asset for identifying the depression. The method is advance named as early depression detection process. In spite of the fact that therapeutic data, Person's connections with others are very much ingenious but in the period of social networking these platforms are truly accommodating and can be effectively utilized for the depression detection[3]. In this strategy people's posts, tweets, etc. Are handled using different machine learning or deep learning algorithms, and after that yield is given within the frame of medical reports or messages, etc [4]. In a work (Choudhury et al., 2013 a, Choudhury et al., 2013 b) creators utilized crowd sourcing to gather information of Twitter clients with clinical depression and degree behavioral qualities to construct a classifier in order to recognize depression in a individual. In another consider the creators utilized Facebook information and created a arrangement of measurable models to anticipate postpartum depression. Authors (Rensik et al., 2015) investigated the use of administered theme models within the analysis of etymological signal for detecting depression in Twitter[5]. Recently deep learning methods have too been utilized for depression detection on social media. Creators used profound neural systems on Twitter information for detection of depression among Twitter users.(Trotzek et al., 2018) compared their convolution neural network-based model on distinctive word embeddings to a classification based on user-level phonetic metadata. Finally, an gathering of both approaches is appeared to attain state-of-the-art results in a depression detection task[6].

III. METHODOLOGY

Bayes Theorem is a approach to decide conditional probabilities – that's , the probability of one occasion happening given that another occasion has as of now happened. Since a conditional probability incorporates extra conditions – in other words, more data – it can contribute to more exact results.

The Bayes Theorem states that:

P(H | X) = [P(X | H) * P(H)] / P(X)

1. Evidence: P(X) is known as evidence.

- 2. Prior Likelihood:- P(H), known as the earlier probability, is the basic likelihood of our hypothesis.
- 3. Posterior Probability:- P(H | X) is known as the back probability.
- 4. Likelihood:- P(X | H) is the probability.

In Bayes Hypothesis it give results comparable to other algorithms, and Bayesian classifiers are for the most part considered basic high-accuracy strategies. However, care ought to be taken to keep in mind that Bayesian classifiers are especially appropriate where the assumption of class-conditional independence is substantial, and not across all cases. Another practical concern is that securing all the probability data may not continuously be feasible. Applying this family of algorithms in machine learning includes familiarity with terms such as earlier probability and back probability.



Fig 1: Data flow in Bayes Algorithm



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IV. EXPERIMENTAL RESULTS

In this Demonstration there are Estimation (8,000 positive tweets), and another one for depressive tweets (2,314 tweets), with a add up to of 10,314 tweets. The Sentiment 140 dataset contains 1,600,000 tweets extricated utilizing the twitter API. The tweets have been commented on (0 = negative, 2 = unbiased, 4 = positive) and they can be utilized to distinguish sentiment. It contains the taking after 6 fields: target: the extremity of the tweet (0 = negative, 2 = impartial, 4 = positive)

ids: The id of the tweet (2087)

date: the date of the tweet (Sun May 1 7 22:18:36 UTC 2010) flag: The query (lyx). In case there's no query, at that point this esteem is NO_QUERY.

user: the client that tweeted

text: the content of the tweet



A)

B)

Fig 2: sample keywords used in positive tweets(A), sample keywords used in negative tweets(B)

	Unnamed: 0	message	label
0	106	just had a real good moment. i misssssssss hi	0
1	217	is reading manga http://plurk.com/p/mzp1e	0
2	220	@comeagainjen http://twitpic.com/2y2lx - http:	0
3	288	@lapcat Need to send 'em to my accountant tomo	0
4	540	ADD ME ON MYSPACE III myspace.com/LookThunder	0
5	624	so sleepy. good times tonight though	0
6	701	@SilkCharm re: #nbn as someone already said, d	0
7	808	23 or 24ī¿½C possible today. Nice	0
8	1193	nite twitterville workout in the am -ciao	0
9	1324	@daNanner Night, darlin'! Sweet dreams to you	0
10	1332	Good morning everybody!	0
11	1368	Finally! I just created my WordPress Blog. The	0
12	1578	kisha they cnt get over u til they get out frm	0
13	1595	@nicolerichie Yes i remember that band, It was	0
14	1861	I really love reflections and shadows	0
15	1889	@blueaero ooo it's fantasy? i like fantasy no	0
16	1899	@rokchic28 no probs, I sell nothing other than	0
17	1919	@shipovalov "NOKLA connecting people"	0
18	1992	Once again stayed up to late and have to start	0
19	2097	@Kal_Penn I just read about your new job, CONG	0
		A)	

Fig. 3. Sample tweets (Data Format)(A)



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	Positive Tweets		
n [45]:	<pre>pm = process_message('Loving how me and my lovely partner is talking about what we want.') sc_bow.classify(pm)</pre>		
ut[45]:	False		
n [46]:	<pre>pm = process_message('Very rewarding when a patient hugs you and tells you they feel great after changing the diet and daily habits') sc_bow.classify(pm)</pre>		
ut[46]:	False		
n [48]:]: pm = process_message('Happy Thursday everyone. Thought today was Wednesday so super happy tomorrow is Friday yayyyyy') sc_bow.classify(pm)		
ut[48]:	False		
	A) Depressive tweets		
[40]:	<pre>pm = process message('Hi hello depression and anxiety are the worst') sc_bow.classify(pm)</pre>		
[40]: t[40]:	<pre>pm = process_message('Hi hello depression and anxiety are the worst') sc_bow.classify(pm) True</pre>		
[40]: t[40]: [42]:	<pre>pm = process_message('Hi hello depression and anxiety are the worst') sc_bow.classify(pm) True pm = process_message('My depression will not let me work out') sc_bow.classify(pm)</pre>		
[40]: t[40]: [42]: t[42]:	<pre>pm = process_message('Hi hello depression and anxiety are the worst') sc_bow.classify(pm) True pm = process_message('My depression will not let me work out') sc_bow.classify(pm) True</pre>		
<pre>[40]: at[40]: a [42]: at[42]: at[42]: a [43]:</pre>	<pre>pm = process_message('Hi hello depression and anxiety are the worst') sc_bow.classify(pm) True pm = process_message('My depression will not let me work out') sc_bow.classify(pm) True pm = process_message('Feeling down') sc_bow.classify(pm)</pre>		

B)

Fig. 4 Text Detection and output after processing the data results for the positive tweets(A) results for the negative tweets(B)

Whenever we process the data and execute the Bayes algorithm it will process the data and gave us the output in the above format. If the model detects the negative wordings in tweets it will give the result as True otherwise it will give output as false.

V. CONCLUSION

Social media has revolutionized the way we connected with the world, permitting us all to remain associated and selfexpressive. Blended anxiety depression and social media appear to exist in a horrendous cycle with one issue frequently invigorates the other. We have implemented an Depression Detection Model utilizing the tweeter data using Bayes algorithm in Machine Learning Technology. It has given one of perfect way for early Detection of the Depression among the individuals. About 85% expectations are found to be precise in the preliminary analysis.

As a conceivable future work, fine grain feeling analysis can be done to detect anxiety markers rather than utilizing Senti Word Net which categorizes the words into three polarities. Advance, the model can be tried on distinctive client base: geographic, age, calling etc. Neuro-fuzzy and profound learning models can be explored for superlative forecast performance.

REFERENCES

- [1] Semantic analysis of social media and associated psychotic behavior Amna Noureen; Usman Qamar; Mubashi Ali 2017 13th International Conference on Natural Computation, Fuzzy Systems and Knowledge Discovery .[2017]
- [2] Depression Detection Using emotion Artificial Intelligence ,Mandar Deshpande,Vignesh Rao,2017 International <u>Conference on Intelligent Sustainable Systems(ICISS)[2017].</u>

[3] A Novel Co-Training-Based Approach for the Classification of Mental Illnesses Using Social Media Posts, Subhan Tariq; Nadeem Akhtar; Humaira Afzal; Shahid Hussain; Asad Habib; Ghufram Ahmed[2019].

[4] Analysis of Post centric suicidal expressions and classification on the Social Media Post: Twitter, C. Lalrinmawii;Vanlalhruaia;Somen Debnath2020 11th International Conference on Computing, Communication and Networking Technologies (ICCCNT)[2020].

[5] A Depression Recognition Method for College Students Using Deep Integrated Support Vector Algorithm, YAN DING 1, XUEMEI CHEN 2, QIMING FU 3[2020].



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[DOI:10.15680/IJIRSET.2021.1006305]

[6] Text-based Depression Detection on Social Media Posts: A Systematic Literature Review David Williama, *, Derwin Suhartonob [2020]

[7] Methods in predictive techniques for mental health status on social media: a critical review Stevie Chancellor $1 \ge 1000$ and Munmun De Choudhury 2[2020].

[8] Survey of Depression Detection using Social Networking Sites via Data Mining, Aqsa Zafar; Sanjay Chitnis, 2020 10th International Conference on Cloud Computing, Data Science & Engineering (Confluence)[2020]

[9] Detecting Mental Disorders in Social Media Through Emotional Patterns - The case of Anorexia and Depression,

Mario Ezra Aragon; Adrian Pastor Lopez-Monroy; Luis-Carlos Gonzalez Gonzalez-Gurrola; Manuel Montes, IEEE Transactions on Affective Computing[2021].

[10] Negatively Correlated Noisy Learners for At-risk User Detection on Social Networks: A Study on Depression, Anorexia, Self-harm and Suicide, Waleed Ragheb; Jerome Aze;Sandra Bringay; Maximilien Servajean, <u>IEEE</u> <u>Transactions on Knowledge and Data Engineering[2021].</u>

[11] Depression Detection Using Machine Learning Techniques on Twitter Data, Kuhaneswaran AL Govindasamy;Naveen Palanichamy, <u>2021 5th International Conference on Intelligent Computing and Control Systems</u> (ICICCS)[2021].



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