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Detection of Stress Based on Social Media Blogs using ML

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ABSTRACT

People are increasingly using online platforms to share their feelings, opinions, and experiences as a result of the exponential rise of social media platforms. This abundance of user-generated material is an important resource for researching mental health and human behaviour. This abstract gives a summary of a study that aims to identify stress through social media blogs. This study's goal is to create an algorithm for assessing stress levels in people via the examination of their internet-based blog postings. The results of this study will have a number of repercussions. First, by providing an automated method for stress identification and monitoring, it will advance the study of mental health. This could help mental health experts spot people who might need help or intervention. The study will also clarify the function of internet use in mental health and contribute to greater awareness of the potential negative effects of online expressiveness on stress levels. Additionally, the study will investigate the connections between psychological stress and other elements including demographic data and historical trends. The model can provide light on the contextual elements that affect stress levels in various people by looking at these linkages.

Keywords: SME, Stress, detection, psychologists.

I. INTRODUCTION

In recent years, social media has emerged as a prominent platform for individuals to express their thoughts, emotions, and experiences. People often turn to social media blogs to share personal narratives, vent frustrations, seek support, and engage with others. This vast pool of user-generated content provides a unique opportunity for researchers to gain insights into human behaviour and mental health. Stress, a prevalent mental health issue affecting millions of individuals worldwide, has become a growing concern. Detecting and monitoring stress levels is crucial for timely intervention and support. Traditional methods of assessing stress, such as surveys and clinical evaluations, have limitations in terms of scalability, cost, and real-

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time monitoring. Consequently, there is a need for innovative approaches that can leverage the wealth of data available on social media platforms. The detection of stress based on social media blogs offers a promising avenue for understanding the psychological well-being of individuals. By analysing the language, emotions, and themes present in blog posts, researchers can extract valuable insights regarding stress levels. This approach holds the potential to provide a scalable, cost-effective, and real-time means of assessing stress in individuals. The findings from this research have the potential to significantly impact the field of mental health. By providing an automated and scalable method for stress detection, mental health professionals can gain insights into individuals' stress levels without relying solely on self-reporting. This can enable early intervention and targeted support for those in need.

Additionally, the study of stress detection based on social media blogs can shed light on the relationship between online expression and mental well-being. It can uncover the factors that contribute to stress, identify high-risk groups, and explore the temporal dynamics of stress levels in different populations. Such knowledge can inform interventions, policies, and public health campaigns aimed at promoting mental well-being in the digital age. Incorporating one tweet and weekly tweets from the users, neural networks trained using deep learning may also be utilized to investigate the user's stress category. The following information is derived from a social networking platform designed to determine the level of stress experienced by users and the amount of time they dedicate to participating in social interactions on the platform.

II. RELATED WORK

[1] “A Dataset for Psychological Human Needs Detection from Social Networks”, This knowledge can be valuable in improving the well-being and experiences of individuals. This study looks at how people's experiences relate to their basic human needs in order to provide new insights into the idea of the affect-aware metropolis. Our proposal, which is based on research in motivational psychology, is a multi-layered theoretical framework for analysing psychological requirements.. The framework comprises layers that identify psychological needs, assess the level of satisfaction, and evaluate the individual's environment across various aspects of life. To facilitate accurate annotations, . We have compiled a corpus of tweets from Twitter that address psychological needs. Based on the three universal requirements proposed by the self-determination theory framework, these posts have been annotated. We have used a number of strategies to promote the creation of excellent annotations. We also include the annotated corpus' descriptive statistics. The development of autonomous detection systems and prediction models that recognize individual demands and gauge their satisfaction might use this corpus as a resource. It can also contribute to a better interpretation and understanding of the individual's social contexts.

[2] This awareness is valuable for improving the quality of life and experiences of citizens. In this essay, we investigate personal experiences in relation to basic human needs in an effort to provide new insights into the idea of the affect-aware city. We suggest a multi-layered approach for analysing psychological demands that is founded on theoretical underpinnings and draws on motivational psychology research. The layers of this framework are designed to identify psychological needs, assess their level of satisfaction, and evaluate various aspects of an individual's environment across different domains of life. To facilitate the generation of high-quality annotations, We have created a psychological needs corpus, which consists of a set of Twitter postings annotated in accordance with the self-determination theory framework's three universal needs. The annotated corpus's descriptive statistics are given. The

development of autonomous detection systems and prediction models that can recognize individual requirements and determine their level of satisfaction can benefit greatly from this corpus. Additionally, it can contribute to a better understanding and interpretation of the social contexts surrounding individuals.

[3] "The truth behind online suicide game: Blue whale", The "Blue Whale challenge" was reported to be an online "suicide game" focused towards teens, with 50 projects spread over 50 days. It was claimed that the challenge was responsible for a large number of fatalities worldwide. But hardly much about the "game" was just how it seemedRina Palenkova is the origin point of the narrative surrounding the Blue Whale challenge. Rina, a young girl from the southeastern region of Russia, shared a self-portrait on November 22, 2015. The photo depicts her standing outside while wearing a black scarf that covers her mouth and nose. She is seen raising her middle finger towards the camera, which appears to be stained with dried blood. The largest social network in Russia, known as Vontae, hosted specific chat rooms where Rina Palenkova's tragic death was discussed. These online forums became a gathering place for teenagers to engage in conversations about profound topics such as sadness, loneliness, and even suicide, as well as more mundane subjects like their schooling and their preferences regarding fellow students. Within these chat rooms, terrifying stories were exchanged, with their eeriness stemming from their convincing nature, achieved through manipulated images or edited videos. This concept closely resembles the approach used by classic horror films, which often claimed to be "based on true events," as a small element of plausibility lies at the core of any compelling ghost story.

[4] Throughout the 19th century, psychologists have dedicated their efforts to exploring emotions, yet a universally accepted definition of emotions and their origins remains elusive. Nonetheless, over a century of research has consistently shown a correlation between emotions and physiological responses. Numerous studies have utilized physiological indicators such as heart rate, muscle activity, and electrodermal activity to objectively measure individuals' emotional states, particularly those associated with stress. Complementary tools like scales and questionnaires have also been employed to assess affective states. However, administering these instruments to individuals during their daily tasks can disrupt their work and potentially influence their emotions. Moreover, relying solely on self-reporting methods can introduce biases and raise doubts about the accuracy of such measures, as expressing emotions in writing can be inherently challenging. Consequently, there is a strong inclination to develop systems capable of recognizing stress through physiological signals, not solely for experimental purposes.

BLOCK DIAGRAM:

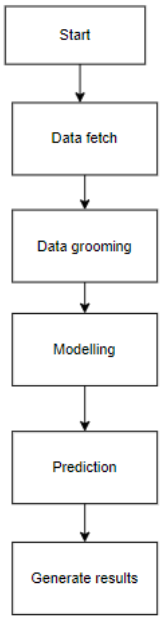


Fig 1. Block diagram of proposed method

III.EXISTING SYSTEM

Machine learning is becoming more and more prevalent, with classical and machine learning approaches used in computer science. This section discusses These can't, however, be given to users

without interfering with their work and influencing their emotions. In addition to potential biases that might effect any form of self-reporting, the inherent difficulty of expressing emotion in writing could call into question the validity of such instruments. It is therefore extremely tempting to build systems that may recognize stress through physiology, and not simply for experimental investigations. follows a certain flow, and KNN is also utilized for model creation. However, the outcome is inaccurate and a lot of memory is needed.

Steps:

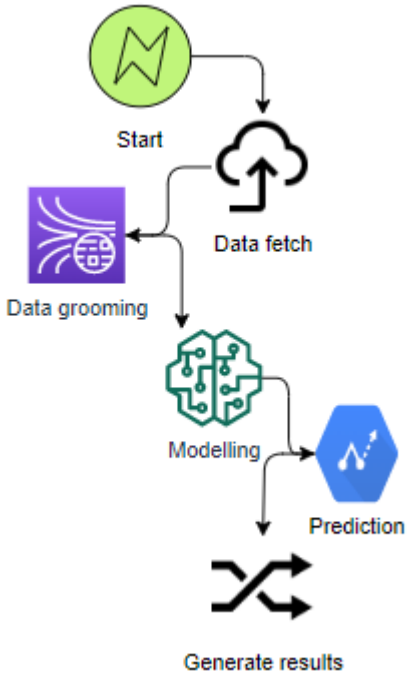
Take the dataset: System works with the dataset provided to it for model building.

Preprocessing: In preprocessing step system works with to impute any disorders in the data set and extract the features.

Training: In training phase system generates the model from the dataset by using python modules.

Generate Results: System generates the detection results from the model to the user as either the presented text is stress or not stress.

ARCHITECTURE:

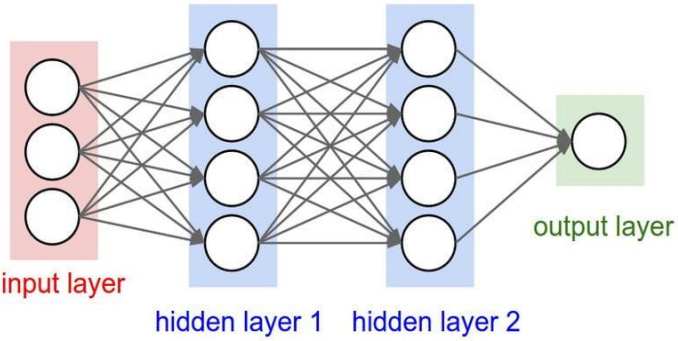


IV.METHODOLOGY AND ALGORITHM

1. Artificial Neural Network (ANN):

Artificially generated neural networks (ANNs), also known as neural networks (NNs), are computer systems that mimic the neural networks found in animal brains. They form the basis of deep learning techniques, which are a subset of machine learning. These networks are designed to replicate the communication between organic neurons, with nodes representing artificial neurons. An ANN typically consists of an input layer, one or more hidden layers, and an output layer. Each node in the network is connected to others and is assigned a weight and threshold. When a node's output exceeds the threshold, it becomes activated and transmits data to the upper layers. Otherwise, no data is passed to the next tier of the network.

To better understand how a neural network equipped with deep learning learns, we can consider a production line analogy. The initial data, similar to ingredients in a production line, is fed into the network. As it progresses through the network's layers, various high-level features are extracted at each stage, resembling stops on a conveying system. For instance, in a network designed for object recognition, the first layer might assess the brightness of the object's pixels' While it is not necessary to grasp the intricacies of ANNs, you might find it beneficial to explore a tutorial to enhance your understanding.



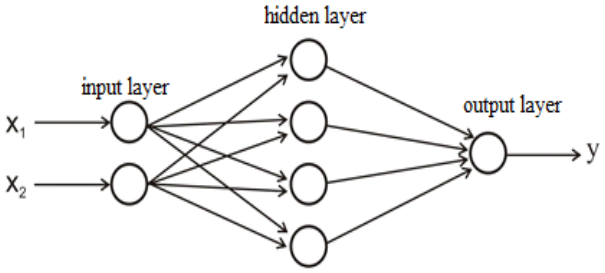
The subsequent layer may then assess if there were any discontinuities in the image based on lines of identical pixels. A subsequent layer may then take up on textures, shapes, and so forth. By the fourth or fifth

stratum, the deep learning network will have created powerful feature detectors. It can spot patterns in pictures, such how often a mouth, a set of pupils, and a set of nostrils appear.

Once this is complete, the scientists who trained the network may label the output and utilize back propagation to fix any errors that were made. After some time, the network can do categorization tasks on its own without assistance from humans.

Summary

The length of time necessary to instruct networks, which might demand a significant amount of computing power for more sophisticated tasks, is one of the greater technological obstacles. However, the main difficulty is that the networks are "black boxes," whereby the user enters data and receives responses. They can improve the responses, but they are not privy to the precise decision-making procedure.



Simple ANN Architecture

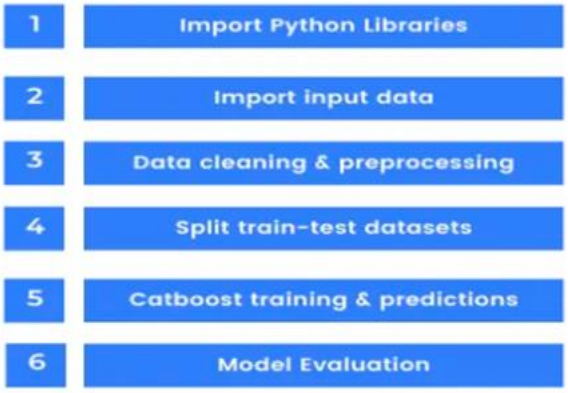
1. Cat Boost:

Cat Boost is a high-performance open-source library for decision tree gradient boosting. Cat Boost is a technique for decision trees that uses gradient boosting. It was created by Yandex engineers and researchers and used for weather prediction, personal assistant, self-driving automobiles, and search. and many other tasks at Yandex and in other companies, including CERN, Cloudflare and Careem taxi. It is in open-source and can be used by anyone. Cat boost, LightGBM, the most recent kid on the playground, has only been operating for a little over a year and is already posing a challenge to XGBoost.

On the benchmark, Catboost earns the top results, which is fantastic.

However, this gain becomes considerable and obvious when we look at datasets wherein categorical variables are heavily weighted.

Implementation:



Although training may require more time than other According to the Yandex benchmark, Catboost, a well-known gradient boosting decision tree (GBDT) library, offers much quicker prediction times than other libraries. In particular, it is claimed that its prediction speeds are 13–16 times faster than those of other implementations. Because of this, Catboost is a desirable choice for newcomers looking for a ready-to-use model for projects like tree clustering or taking part in Kaggle competitions. For beginners in particular, Catboost's default settings are made to be user-friendly and require the least amount of configuration when compared to other GBDT approaches.

V. RESULTS AND DISCUSSION

Home:

In our project, we're looking for signs of stress in the content of microblogs.

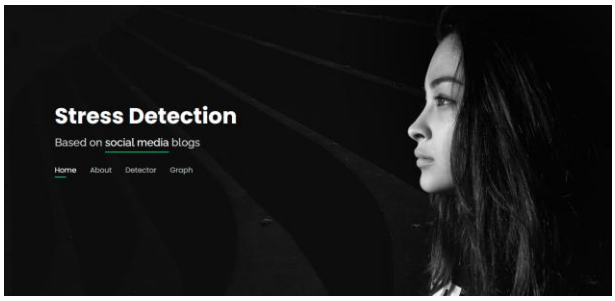


Fig1: Home

About:

Fig2: About

Here the application describes what is stress and its symptoms.

Detector:

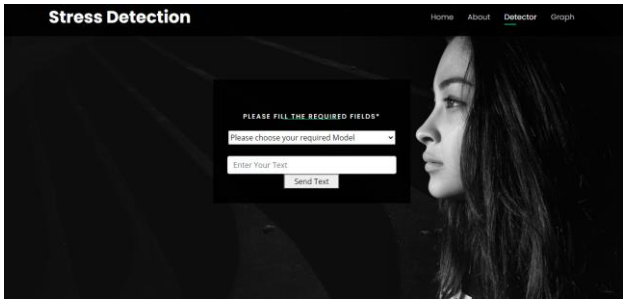


Fig3: Detector (Before Submission)

Detection page in which user need to select a model and fill the required text to get the response

Stress:

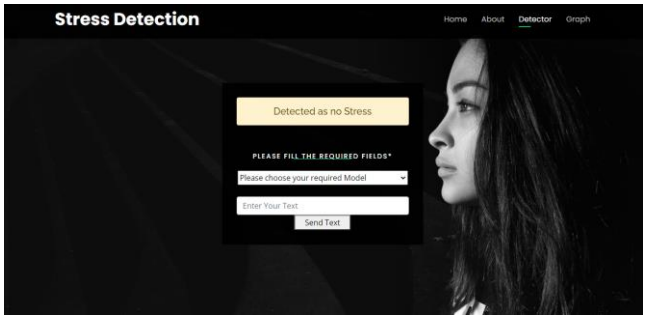


Fig4: Detected as No Stress (After Submission)

no pressure for the detection page, according to the text submitted.

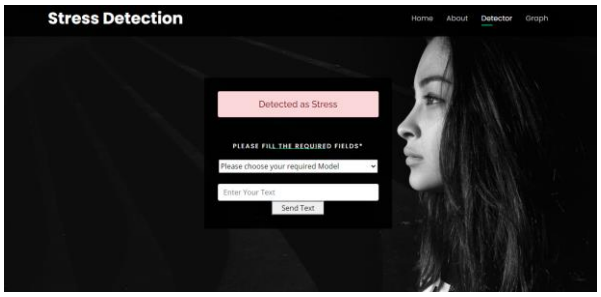


Fig 5: Detected as Stress (After Submission)

Detection page gives output as stress for the text submitted.

Graph:

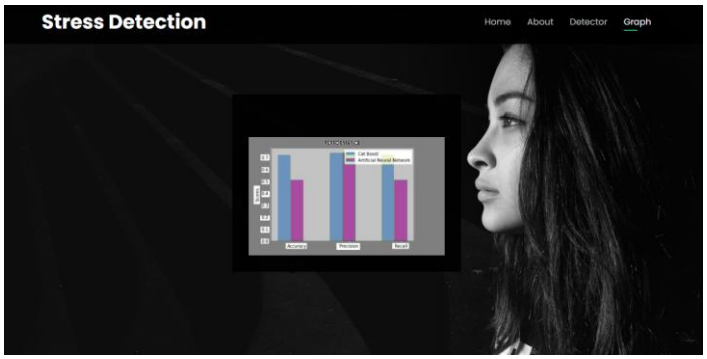


Fig6: Performance Graph

Performance graph for the model which shows Cat Boost is far better than ANN.

VI.CONCLUSION

In this application, we have successfully created a system to recognize mental stress. With the use of Python and Flask programming, this is created in an approachable manner. The program will probably ask the user for information in order to determine whether the words are disturbing.

Future versions of this program could have the capability to recognize various emotions. With the updated data set, we want to examine the prediction strategy and use the most precise and pertinent data mining algorithms for detection.

VII.REFERENCES

[1] K. R. Alharthi, B. Guthier, C. Guertin and A. M. El Saddik, “A Dataset for Psychological Human Needs Detection from Social Networks”, Page. 9109-9117, Volume 5, 2017.

[2] Arun Kumar S, Newby Das, Nishchitha D S, Ranjitha V, Sahana M R, “Framework for analyzing stress using deep learning”, IJARIIT, ISSN: 2454-132X, Volume 4, Issue

[3] Adeane, “The truth behind online suicide game: Bluewhale”, BBC 2009. Available: Blue Whale: What is the truth behind an online 'suicide challenge'? - BBC News.

[4] R. Sioni, L. Chittaro, “ Detection of Stress Using Physiological Sensors”, IEEE Society of computer, page. 26-33,2015.

[5] Shruti Kaushik, Mehul P. Barot, “Sarcasm Detection In Sentiment Analysis”, IJARIIE, 2016, ISSN-2395-4396

[6] Formal Ontology, [Available Online] https://en.wikipedia.org/wiki/Formal_ontology.

[7] Mohammed Mahmood Ali, Mohd Tajuddin, M. Kabeer, “Framework for psychological Stress Detection from Messages using pre-defined tenets and Ontologies” IJISAE, ISSN: 2147-6799.

[8] R. Alharthi, B. Guthier, C. Guertin and A. M. El Saddik, “A Dataset for Psychological Human Needs Detection from Social Networks”, Page. 9109-9117, Volume 5, 2017.

[9] Arun Kumar S, Newby Das, Nishchitha D S, Ranjitha V, Sahana M R, “Framework for analyzing stress using deep learning”, IJARIIT, ISSN: 2454-132X, Volume 4, Issue

[10] T. Primov, “Knowledge Hub: What are Ontologies”, Ontotext-2019

[11] Liyu Zheng, Janis Terpenny, "Integration of obsolescence information using hybrid ontology approach", CIE, Volume 65, Issue 3, July 2013, Pages 485-499.

[12] Saul McLeod, “Questionnaire: Simple Psychology”, 2018

[13] R. Sioni, L. Chittaro, “ Detection of Stress Using Physiological Sensors”, IEEE Society of computer, page. 26-33,2015.

[14] M. Salai, I. Vassanyi, I. Kosa, "Detection of Stress using low-cost heart rate Sensors”JHE, Hindawi Ltd-2016.

[15] J. Golbeck, C. Robles, M. Edmondson, and K. Turner, “Personality prediction from twitter”, IEEE, page. 149–156, 2011.

[16] M. Thelwall, K. Buckley, G. Paltoglou, D. Cai, and A. Kappas, “Detection of Sentiment strength in small informal text”, JASIST, page. 2544–2558, 2010.

[17] Lin. H, Jia. J, Guo. Q, Xue. Y, Huang. J, CAI. L, and Feng. L, “Detection of Psychological stress from cross-media microblogs data using DNN”, IEEE, 2014.

[18] Shaikha Hajera, Mohammed Mahmood Ali, "A Relative Study of Psychological Stress Detection Methods", IJCEM,Vol. 21(2), 2018, ISSN: 2230-7893

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