STRESS DETECTION BASED ON SOCIALMEDIA BLOGS

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ABSTRACT - **Major psychological health issues like stress, anxiety, etc. are a direct result of technological development and a significant increase in social media usage. It is possible to analyse these problems and develop prevention plans. Due to peoples' strong desire for SMEs, there is an urgent need to monitor blogs on social media in order to address these serious issues. Psychologists used conventional techniques like questionnaires and interviews, though these procedures are time taking and hysterical. In this article, we reviewed a variety of stress detection techniques and discovered that they were ineffective for identifying stress in social media. In this study, we proposed a method for effectively detecting stress in people and taking the appropriate preventative measures.**

Keywords – Stress Detection, Social media, Catboost, NLP, Psychologists, ANN.

1. INTRODUCTION

The trend towards social media is starting to cause stress levels among people to increase rapidly. Chronic stress makes a significant contribution to illnesses, including mental health conditions that cause anxiety. Individuals who already are anxious sometimes even commit suicide. Due to people's social involvement with others, primarily colleagues using the same platform, psychological stress is becoming a serious threat to people. An online game called "Blue Whale Challenge" [3] Adeane, "The truth behind online suicide game: Bluewhale", BBC 2009. aims to end the life of many people, primarily children, all over the world. The curators of all the online groups, according to a professor by the name of Alexandra Arkhipova at the Russian State University, are all young people between the ages of 12 and 14. The result of technological advancement is this situation. The trend towards social media is starting to cause stress levels among people to increase rapidly. Chronic stress makes a significant contribution to illnesses, including mental health conditions that cause anxiety. Individuals who already are anxious sometimes even commit suicide. Due to people's social involvment with others, primarily colleagues using the same platforms, psychological stress becoming a serious threat to

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people. An online game called "Blue Whale Challenge" aims to end the lives of many people, primarily children, all over the world. The curators of all the online groups, according to a professor by the name of Alexandra Arkhipova at the Russian State University, are all young people between the ages of 12 and 14. The result of technological advancement is this situation. The consequence of social media addiction and technological advancement is this scenario. Microblogging is widely utilized. Users express their emotions through text, images, and videos [1][2]. According to a survey carried out by the company New Business, excessive use of various technologies has led to an overall significant increase in stress levels.People who use new tech are well aware of stressful situations in other people's lives; among them, Pinterest users were at the top of the list because of being aware of the significant stressful events in other people's lives. Interviews, questionnaires, as well as other traditional techniques of stress detection used by psychologists are time-consuming and hysterical because they rely on respondents' responses. Since people might be feeling anxious, accurate results cannot be anticipated. The traditional approaches have the additional drawback of requiring more hardware, which drives up costs. Therefore, the creation of sophisticated automated stress detection techniques that aid in stress detection and ultimately advance societal welfare is urgently needed.In the hysterical process of detecting mental stress, physiological signals are also used. Three signals, including the electrocardiogram (ECG), soft computing techniques, and pupil diameter analysis are used. The social media platform where users share their social media interactions is analysed, along with the users' stress levels and the length of time they spend on the platform. Using tree algorithms, the condition of stress is categorised and best attribute are chosen.Stress can lead to serious physical and psychological health issues. Personal interviews, questionnaires, physiological indicators, and other techniques have been used in the past to detect stress [3][4].The majority of conventional stress detection techniques rely on time-consuming, laborious, and hysterical personal interventions. Social networks are the go-to source for shareholders for instant information on commercial agreements. due to technological advancement and globalisation. Microblogs are used to post messages that are shared by people all over the world. The invention process is driven by necessity. The development of automated methods for stress detection and reduction is urgently required.SDF is a stress detection and prediction strategy based on ontologies that has been proposed to analyse stress in microblogs. Ontologies, probabilistic models, such as Visual characteristics incorporating, knowledge-based established logical principles, GSHL and tree alignment algorithms, social interactions between individuals, and individual preferences are all combined. into the stress detection framework (similar and dissimilar). [6] Mohammed Mahmood Ali, Mohd Tajuddin, M. Kabeer, "Framework for psychological Stress Detection from Messages using pre-defined tenets and Ontologies" IJISAE, ISSN: 2147-6799.With improved features like predefinedformal logic using lexical terms with linguistic emphasis, emojis, and social involvement, as well as improved accuracy using hybrid ontologies, [10] Liyu Zheng, Janis Terpenny, "Integration of obsolescence information using hybrid ontology approach", CIE, Volume 65, Issue 3, July 2013,Pages 485-499. this strategy outperformed strength with a better percentage of stress detection rate. Incorporating neural networks may also be used to analyse weekly tweets and a solo tweet from the users investigatethe stress level of the user. These are analysed from the social

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website developed to determine the user's level of stress and the length of time they spend on the website participating in social interactions [5][6].

2. LITERATURESURVEY

The affect-aware city aims to provide real-time awareness of a person's emotional state. Understanding various affective states can help improve a citizen's quality of life and experiences [7][8]. [1] 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.With this essay, we hope to shed new light on theaffect-aware city and examine how different people's experiences relate to fundamental human needs. We suggest a multi-layer theoretical framework for analysing psychological needs which is informedby engaging in motivational psychology-related work. Layers in framework must be designed to pinpoint psychological requirement, gauge how well they are being met, and evaluate a person's environment in several spheres in life.We have developed a psychological requirements corpus, that consists ,Twitter posts that have been annotated in accordance with the self-determination theory framework's three universal needs [9][10].A variety of strategies were used to promote excellent annotations. We give the annotated corpus's descriptive statistics. In order to identify individual needs and gauge their satisfaction, this corpus can be used to develop automatic detection systems and prediction models. Additionally, it can be applied to more accurately interpret and comprehend the person's immediate social contexts.Nowadays, stress and anxiety are common experiences for most people. Chronic and excessive stress can cause blood pressure to rise, sleeplessness, heart attacks, and even death. The main contributing factor to mental illness today is stress. The Word Net library and (LCH) algorithm, a cutting-edge deep neural networking [11][12]. [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.Stress can become deeply ingrained and seriously interfere with our daily activitiesif we do not learn to manage it. Therefore, it's critical to identify stress before it affects someone's wellbeing. Due to its lack of diversity and timeliness, traditional psychological evaluation and therapy conducted in-person cannot fully address the need of people's stress.Since the 19th century, psychologists have studied emotions, but there is still no agreed-upon definition of what emotions areor how they are produced. But more than a century's worth of research indicates a connection between emotions and physiology. Many studies use physiological information, including heart rate, muscle activity, and electrodermal activity, to measure participants' affective states, including those connected to stress. Affective states can be measured with additional tools like scales and questionnaires. These can't, however, be given to users without interfering with their work and affecting their emotions. [5] Shruti Kaushik, Mehul P. Barot, "Sarcasm Detection In Sentiment Analysis", IJARIIE, 2016 ISSN-2395-4396 . Using sentiment analysis as a tool for determining individuals' attitudes, beliefs, and feelings regarding every given target, including people, things, events, ideas, products, businesses, and services, among others. When you use words that signify the complete opposite of what you want to say, you are expressing an unique type of feeling called sarcasm ,Heavy tonal tension and certain gestures, such as rolling the eyes, are frequently used by people to

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indicate it vocally. Sarcasm cannot be expressed in writing using these tonal and gestural cues, hence its recognition must rely on additional elements [13][14][15].

3. METHODOLOGY AND ALGORITHM

1. Artificial Neural Network (ANN): [27][28]

Computer systems designedArtificial neural networks are modeled after the artificial neural systems that comprise animal brains.Neural networks are the basis of deep learning techniques, also referred to as artificial neural networks (ANNs), which are a subset of machine learning.They have names and structures that are modelled after the human brain, mimicking the exchange of messages in biological nerve cells. Each and every node to whom theoutput is enabled and starts delivering data to the top layer of the network when it exceeds the specified threshold value.. Anything other than that no information is sent to the succeeding layer of the network. Consider an assembly line to get a general idea of how a deep learning neural network learns. After that the raw data set is moved forward, where a different set of high-level features are extracted at each stop or layer as they proceed. The first layer could evaluate the brightness of an object's pixels if the network is meant to recognize it [16][17].
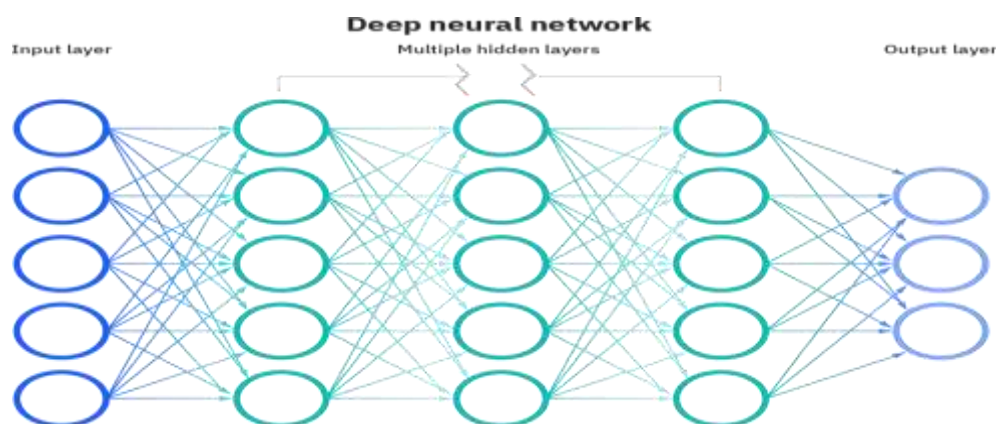
Fig 1. Showing different layers
Source: https://www.ibm.com/cloud/learn/neural-networks

Based on lines of similar pixels, the following layer could then determine if there were any edges in the image [29][30].Following this, a subsequent layer might pick up on textures and shapes, and so forth. The deep learning network will have developed sophisticated feature detectors by the time the last layer is delivered. It can recognise patterns in images, such as the frequent occurrence of eyes, a nose, etc. Once that happen, scientists who made the net can label the result by using back propagation to fix errors that were made. After some time, the network can perform classification tasks on its own without assistance from humans [18][19].

2. Cat Boost:

Catboost is an free source , better gradient-boosting library for decision making trees. Cat Boost is methodology for decision making trees that utilizes gradient boosting. This was invented by Yandex researchers, and it is used by many enterprises, such as Cloud flare, and Carem taxi, for exploration, recommender system, voice assistants, weather monitoring, numerous other tasks. Everyone seems to beurged to utilise it due to the fact that it is open source.After only a little over a year on the market, Cat boost, a newcomer is a threat to XGBoost and Light GBM.On the benchmark, Cat boost achieves the best results, which is fantastic. However, this improvement becomes significant and obvious while examining datasets with a high weight placed on categorical variables [20][21].

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Fig 2
Source:dataaspirant.com

4. EXISTING PROCEDURE

The usage of both conventional and machine learning techniques in computer science is increasing steadily. This section covers relevant research on stress detection systems and the advantages of machine learning over more traditional methods. The project's current methodology has a specific flow, and model development also tends to make use of KNN. The outcome is factually inaccurate, though, and requires a significant degree of memory [22][23].

5.PROPOSED SYSTEM

We recommend this application, where it can be seen as a helpful system because in order to lessen the restrictions caused by conventional and different current methodology .Purpose of this research is to produce an efficient and trustworthy methodology to precisely detect stress [31][32].To create this system, we utilised a strong algorithm in a Python-based environment [24][25][26].

Upsides: HighPrecision, Time Saving, Less Sophisticated [33][34].

Fig 3. Flowchart

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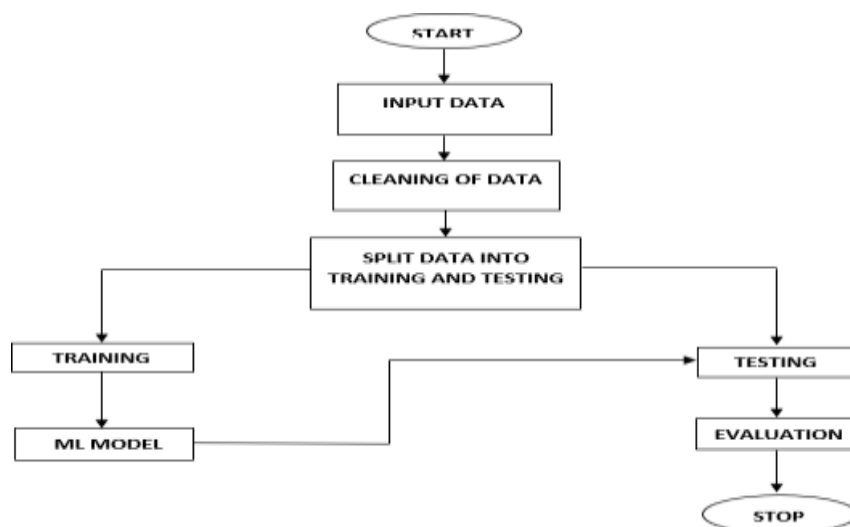
6. Implementation

The prediction time is much faster than other libraries as stated by the evaluation, but the training period can be greater than other implementations. Other major advancements made by Catboost include support for snapshots, object semantics, and feature interactions [35][36].The out-of-the-box ranking is another feature that Catboost enables in addition to classification and regression. Here are the followingsteps to implement the program.

Fig 4. Procedure

7. RESULTS

Home:

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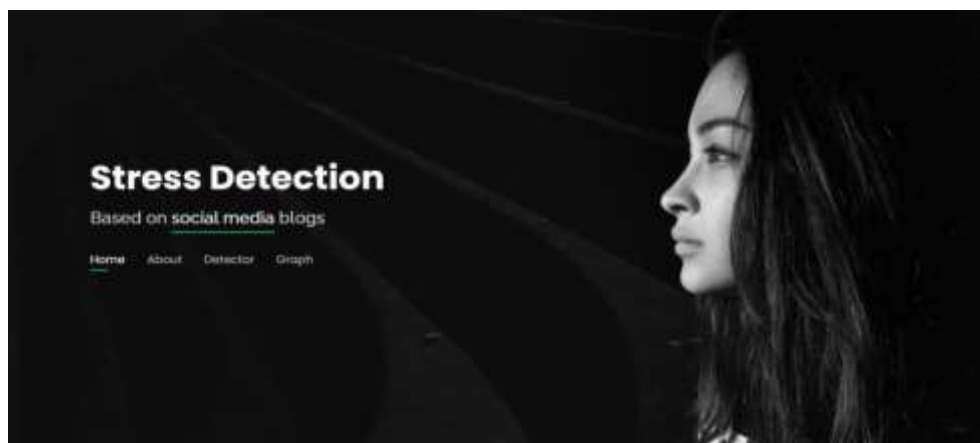

Fig1: Home

Detector:

Detection page, where users must choose a model and enter the necessary information to receive a response.

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Fig2: Detector (Before Submission)

ABOUT:

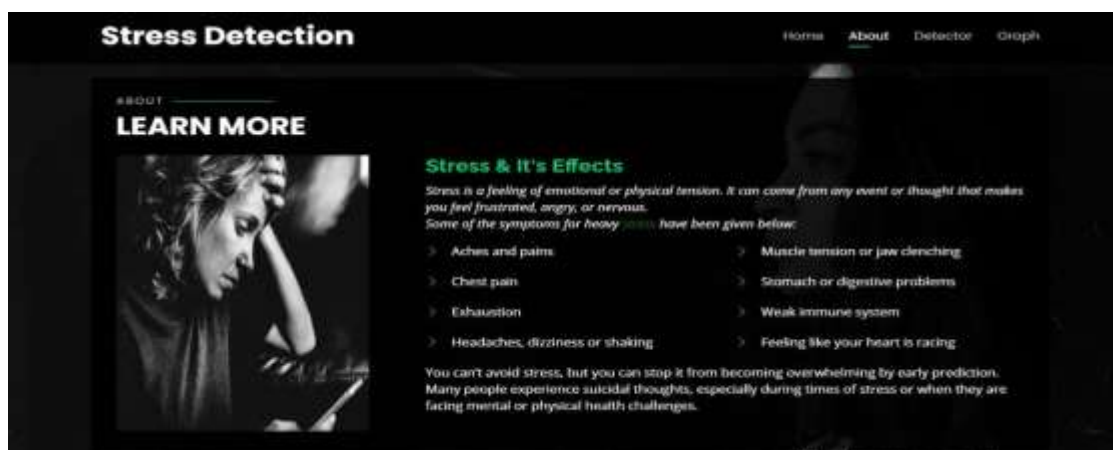Here the application describes what is stress and its symptoms.
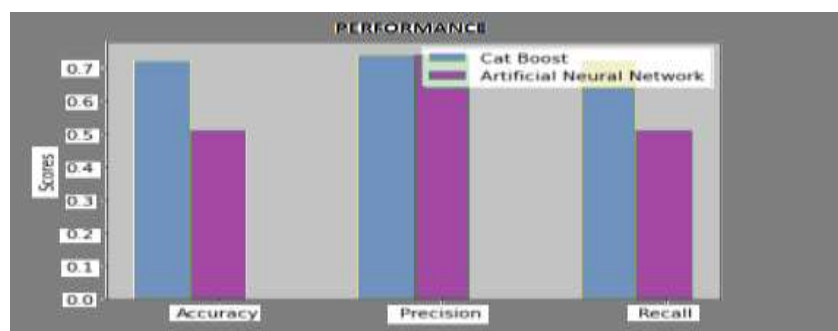

Fig2: About

Stress:
The detection page reports that there is no stress for the submitted text.

Fig3: Detected as No Stress (After Submission)

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Graph: Cat Boost is significantly superior to ANN.

Fig4: Performance Graph

8. CONCLUSION & FUTURE SCOPE

We have effectively created a technique to identify psychological stress in this instance. It is designed in user-friendly setting using Flask and Python programming. To ascertain whether the words are upsetting, the system is likely to collect information from the user.In this experiment, we also identified a number of fascinating stress-related behaviours. We discovered that stressed users had around 14% more sparsely connected social structures (i.e., no delta connections) than non-stressed users, suggesting that social structures of stressed users are often fewer complex and less linked to those users who are not under stress. These occurrences may serve as beneficial resources to further investigations in this area. Future versions of this programme could have the power to comprehend various emotions. The improved data set allows us using the most accurate and appropriate machine learning algorithms for detection, to evaluate the prediction strategy.

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