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Depression Detection and Analysis

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ABSTRACT :

Stress weakens the impervious system and has other serious personal property on the brain and body such as cardiovascular problems, and mental illness such as depression. Stress management involve understanding the psychology behind the cause of the stress and finding strategies to deal with, reduce, or do away with the stress. The presented accurate stress uncovering and management systems are either too expensive or time consuming, making them insufficient for a agitated, stressful student on the threshold of harming himself. Thus, there is a need to build a cost effective solution that gives instantaneous and accurate results and can act as a good substitute for existing systems. Our proposed system combines parameters such as pupil dilation, emotion recognition through face and voice and a dynamic quiz to help them come across their way out. The given solution can make a payment towards increasing accuracy as well as efficiency, by integrating several parameters that contribute towards the detection of pressure level.

Index Terms - stress, anxiety, facial recognition, voice recognition, emotion recognition, stress alleviation, machine learning, mental stress levels, stress detection

I. INTRODUCTION

Stress accounts for 80 percent of all illnesses in people whichever directly or at one remove. Stress is any situation that develops negative thoughts and feelings in students and these stressful events can be appraise by them either as ‘challenging’ or ‘threatening’. what time students see their education as a challenge, stress can bring them a sense of competence and an increased capacity to learn, but if education is seen as a threat, it can produce feelings of helplessness and a common sense of loss. A critical issue with reference to stress in students is its effect on learning; therefore, stress should be dealt with carefully and effectively. The academic success of engineering students is related to the level of stress. The existing accurate stress detection and administration systems are either too expensive or time consuming, making them insufficient for a restless, stressful student on the verge of harming himself. There is a need for a system which appears to be the magic solution to their aid. The other proposed systems use unusual parameters to detect stress but no coordination integrates all these independent parameters to form an accurate and inexpensive system, available to the student at all times. Our system combine parameters such as pupil dilation, emotion finding through face and voice and a dynamic quiz to help them find their way out.

II. LITERATURE SURVEY

Literature Related to Existing System

Paper [1]: Mental Stress Detection Based on Soft Computing Techniques:

The model introduce in this paper consists of five stages which are: Video capturing, Fuzzy Question Based, Signal processing, Feature extraction and Classification. Video capturing included taking videos of the user through high-resolution camera. The model was exclusively concentrated on pupil parameter that are Pupil Diameter (PD) and Pupil Dilation Acceleration (PDA). Fuzzy Question Based included the use of fuzzy filter for noise reduction and elimination, boundary detection. The Hough transform technique was used for detecting the ellipses that are the eye regions and also for linking. To get the most momentous features, signal processing modus operandi was implemented on the pupil parameters. States like ‘stress’ and ‘relaxed’ were identified with the help of the implementation of Fuzzy SVM on the extracted significant facial appearance.

Paper [2]: Detection of Stress Using Question Based and Machine Learning Techniques:

A stress detection organization is developed based on the analysis of the facial expression. The acquired video frames are processed sequentially by the software modules. The face acquisition module processes the video sequences capture by the camera. Pixel transformation is used. The deep learning module is the final module that consists of the sub-modules of training dataset, education linear regression algorithm, reproduction and testing the dataset for prediction.

Literature Related to Algorithms

Genetic Algorithm:

Genetic Algorithm (GA) is a search-based enhancement strategy based on the principles of Genetics and Natural Selection. The hereditary algorithm is a technique for solving both constrained and unconstrained optimization problems that is based on natural selection, the process that drives natural biological evolution. Genetic algorithms recreate the course of action of normal choice which implies those species who can adjust to changes in their condition can endure and reproduce and go to the next age bracket. At each step, the genetic algorithm chooses people aimlessly from the present populace. Those individuals who are fittest then produce offspring. Genes from "fittest" parents propagate throughout the generation, i.e. sometimes parents create offspring which is better than either parent. Thus each successive generation evolves to be an optimal solution.

SVM and FSVM:

A support vector machine (SVM)is a supervised learning algorithm that analyzes data used for categorization and regression analysis. SVM learns the conclusion surface from two distinct classes of the input points i.e. an SVM training algorithm builds a reproduction that assigns new example to one grouping or the other, making it a non-probabilistic binary linear classifier. A support-vector appliance constructs a hyper plane or set of hyper planes in a infinite-dimensional space, which can be used for classification, regression, or other tasks like outliers detection. This hyper plane in two dimensional spaces is a line partitioning a plane in two parts where in each class lay in either side. In many applications, each input point may not be completely allocated to one of these two classes. If we apply a fuzzy relationship to each input point and reformulate the SVMs such that unusual input points can make different contributions to the knowledge of decision surface. After that it is called fuzzy SVMs.

III. OBSERVATIONS BASED ON EXISTING WORK

Table 1. Literature Survey Comparison II

Parameters	**Mental Stress Detection Based on Soft Computing Techniques [1]**	**Machine Learning to Differentiate between Positive and Negative Emotions Using Pupil Diameter [4]**	**Automatic Stress Classification With Pupil Diameter Analysis [5]**
Input	Video was taken as an input. The pupil region was detected using the genetic algorithm (GA)	First dataset contained data of PD which was recorded using the Tobii TX300 eye-tracking system that measured eye movement such as eye gaze: fixation and saccades. The second dataset contained the pupil dilation of the right eye	PD was recorded at 50Hz sampling rate using a SMI RED 4 remote video eye tracker.
Algorithms	Fuzzy filter for noise reduction, edge detection was performed based on the fuzzy reasoning.	All corrupted pupil size data associated with eye blink regions or caused by subject's head or pupil movement were removed and trials with over 50% of missing data were eliminated.	Eye-blink artifacts were identified and replaced by linear interpolation. Task-Evoked Pupillary Responses extraction: Pupillary responses following sound presentations (in t2 and t4) were evaluated to confirm the existence of pupillary reactions to stressful stimuli.
Output Process	Ellipse detection algorithm PDD=d(secondary PD-primary PD)/dt Check pupil condition with respect to to PDD	To classify positive and negative emotions, k-nearest neighbor (kNN) was applied.	Analysis of variance Signal approximation extraction Classification with neural networks.

From the above observations, we conclude that,

- A non-expensive, easy to use and fast organization is required to become aware of the levels of stress and provide an appropriate solution.
- Independent parameter solution lead to different drawbacks as everyone parameter has its exceptions such as facial emotion appreciation cannot work for a person who hides his feelings well.
- Hence, this system takes into description all the independent parameters that can be used to detect stress and provide maximum accuracy due to belief on multiple parameters rather than a single limitation.

IV. PROPOSED SOLUTION

In comparison to the traditional system our proposed system offers many benefits as follows:

- Easily accessible in the form of an submission
- Increased accuracy due to integration of various parameters for stress detection
- Free of cost for any user
- Recommendations to help the user find a way out
- Therapist helps for any deeper issues

V. FEATURES OF THE PROPOSED SYSTEM

- Pupil dilation will be analyzed and most relevant features shall be extracted.
- Emotion recognition through natural Sentence could detect the emotion change which would occur when exposed to mental stress. Thus for recognition of emotion, face expressions and natural Sentence shall be used.
- The users have to give an online test wherein their type of stress will be detected.
- Solutions will be provided depending upon the determined stress level.
- If the user logs in, the stress detection procedure can be carried out again and the difference between previous stress level and current one can be calculated and the improvement can be shown.
- If the user wants, he can send queries to a therapist, who can view the user's response and respond to his queries accordingly.

VI. CONCLUSION

In this paper, we proposed a system for detection and analysis of stress levels. We pointed out the issues in current existing systems, and explained how our system can be used to increase the accuracy by integrating various parameters through which stress level can be calculated. We highlighted the possible technique that can be used to implement this system with more efficiency.

REFERENCES

[1] F. Mokhayeri, M-R. Akbarzadeh-T, S. Toosizadeh, "Mental Stress Detection Using Physiological Signals Based on Soft Computing Techniques", 18th Iranian Conference on BioMedical Engineering.

[2] Jin Zhang, Hao Tang, Dawei Chen and Qian Zhang, " deStress: Mobile and Remote Stress Monitoring, Alleviation, and Management Platform", Hong Kong University of Science and Technology.

[3] Kevin Tomba 1 , Joel Dumoulin 1 , Elena Mugellini 1 , Omar Abou Khaled 1 and Salah Hawila 2, "Stress Detection Through Sentence Analysis", Journal of Information Processing Society of Japan, 50(3):1181–1191.

[4] Marco Pedrotti, Mohammad Ali Mirzaei, Adrien Tedescho, Jean-Rémy Chardonnet, Frédéric Merienne, et al.. "Automatic Stress Classification With Pupil Diameter Analysis", International Journal of Human-Computer Interaction, Taylor.

[5] Jarernsri Mitrpanont, Jaruwan Phandhu-fung, Nantanut Klubdee, and Supanat Ratanalaor, "iCare-Stress: An Integrated Mental Health Software", 2017 2nd International Conference on Information Technology (INCIT).

[6] Nisha Raichur, Nidhi Lonakadi, Priyanka Mural, "Detection of Stress Using Question Based and Machine Learning Techniques", International Journal of Engineering and Technology.