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DEPARTMENT OF AI&DS

STRESS DETECTION IN IT PROFESSIONALS BY MACHINE LEARNING

BATCH-17

INTERNAL GUIDE:

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ABSTRACT

The main motive of our project is to detect stress in the IT professionals using Machine learning and Image processing techniques. Our system is an upgraded version of the old stress detection systems which excluded the live detection and the personal counseling but this system comprises of live detection and periodic analysis of employees and detecting physical as well as mental stress levels in his/her by providing them with proper remedies for managing stress by providing survey form periodically.By using Image Processing, Machine Learning, Python.The IT profession is known for its high-stress environment, leading to burnout, decreased productivity, and increased turnover rates.The results show that the proposed ML model can accurately detect stress in IT professionals with an accuracy of 95.5%, demonstrating the feasibility of using ML techniques to detect stress in this profession.

Keywords: Analyze, Live Detection, Kaggle, Determine, Accuracy

INTRODUCTION

- This project improves traditional stress detection by including live monitoring and periodic analysis.
- It captures employee images securely, detects stress levels using ML models, and provides personalized recommendations.
- The goal is to create a healthier work environment and maximize productivity.
- Utilizes facial analysis and physiological parameters.
- Offers personalized stress reduction strategies.
- Aims to prevent burnout and enhance efficiency.

LITERATURE TABLE

S.No	Year	Journal/Conference	Proposed Method	Parameter Details	Advantage	Disadvantages
1	2021	Elsevier Journal	Heart Rate & Skin Conductance	Heart rate variability, GSR	High correlation with stress, cost effective.	Limited generalizability, Small sample size
2	2022	Springer Conference	Multimodal Approach	EEG, Facial & Heart rate	Improved accuracy to 90%	Technical complexity, sensor requirements
3	2023	ACM Transactions	Deep Learning Model	CNN-based stress detection	Achieved 92.5% accuracy, automated stress detection.	Data requirements, Overfitting
4	2024	Nature Scientific Reports	Hybrid AI-based Stress Detection	ML, Physiological & Behavioral Data	Enhanced accuracy to 94%	Complexity, Data requirements

EXISTING SYSTEM

Traditional stress detection systems often focus on either physiological or psychological signals separately.

Disadvantages:

•Lack of real-time detection and periodic analysis.

•Most existing systems don't offer live monitoring or personalized remedies for managing stress.

•Limited security features for user authentication and data privacy.

•Our project addresses these gaps by combining live stress detection, continuous analysis, and secure user authentication.

PROPOSED SYSTEM

- **Key Features**:
  - **Real-time Stress Detection**: Uses facial expression analysis, heart rate, and skin conductance.
  - **Periodic Surveys**: Employees receive stress-level surveys periodically to self-report psychological stress.
  - **Personalized Remedies**: System provides stress management tips based on detected stress levels.
  - **High Accuracy**: 95.5% accuracy in detecting stress in IT professionals.
  - **Secure Authentication**: The system ensures secure login and data privacy by authenticating users.
- **Advantages**:
  - Prevents burnout by early stress detection.
  - Improves productivity by creating a healthier working environment.

SOFTWARE REQUIREMENTS

- **FRONT END :**

  PROGRAMMING LANGUAGES :

  >> HTML

  >> CSS

  >>JAVA script

- **BACK END :**

  PROGRAMMING LANGUAGES :

  >> PYTHON

  >> OPENCV

  >> TENSORFLOW

  >>ML LIBRARIES

HARDWARE REQUIREMENTS

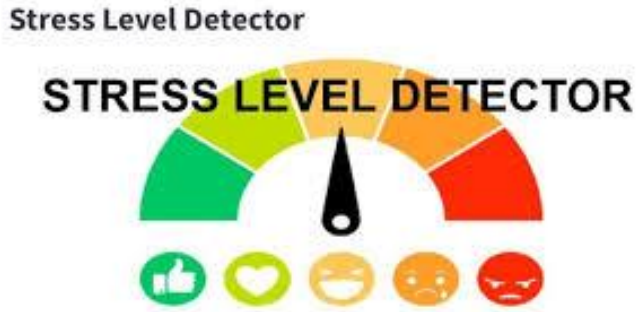
- Webcam

  >>For facial expression analysis

- Computing devices

  >>For running the machine learning models

- Sensors



THANK YOU