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ABSTRACT

Mental stress in the workplace is a growing concern, as it can negatively impact employee well-being, productivity, and overall organizational success. Traditional methods of assessing stress, such as self-reported surveys or observations, can be subjective and often fail to capture real-time stress levels. Traditional methods of assessing stress, such as self-reported surveys or observations, can be subjective and often fail to capture real-time stress levels. This project aims to develop an intelligent system for **real-time mental stress detection** in workplaces using **machine learning** techniques. The proposed system leverages multiple modalities, including **physiological signals** (heart rate, skin conductance), **behavioral cues** (speech patterns, facial expressions), and **textual analysis** (emails, messages) to provide a comprehensive measure of stress. A dataset containing various sleep patterns and stress levels is analyzed. The proposed system implements Random Forest along with Support Vector Machine (SVM), Decision Trees (DT), Naïve Bayes (NB), and Logistic Regression (LR) to compare their accuracy in classifying stress levels. The dataset, sourced from SayoPillow.csv, includes features such as snoring range, respiration rate, body temperature, limb movement rate, blood oxygen levels, eye movement, sleep hours, heart rate, and stress levels.

LIST OF ABBREVIATIONS

S. No	Word	Standard form
1	API	Application Programming Interface
2	BP	Blood Pressure
3	CSS	Cascading Style Sheet
4	DT	Decision Tree
5	EEG	Electroencephalogram
6	FFT	Fast Fourier Transform
7	GSR	Generalized Symbolic Regression
8	HTML	Hyper Text Markup Language
9	IDE	Integrated Development Environment
10	IT	Information Technology
11	KNN	K-Nearest Neighbor
12	ML	Machine learning
13	SVM	Support Vector Machine
14	UML	Unified Modelling Language
15	RAM	Random Access Memory

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