A Computational Model for Stress Intervention using Affective Brain-Computer Interfaces

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Abstract

Stress is a growing public health concern that negatively impacts individual well-being, making accurate detection of stress emotions essential yet challenging due to the limitations of self-reporting and the complexity of emotional states. Electroencephalography (EEG) offers an objective means to monitor brain activity related to stress emotions, but effective interpretation requires advanced analytical methods. This research aims to develop a reliable EEG-based model for stress emotion detection by collecting EEG data from participants exposed to stress-inducing stimuli and applying machine learning techniques for classification. The expected outcome is an improved stress

detection model that augments traditional subjective measures. By advancing EEG-based stress emotion detection, this study seeks to contribute to better mental health interventions and more effective management of stress-related conditions. © 2025 IEEE.

Author keywords

Electroencephalography (EEG); Emotion; Machine Learning; Stress

Indexed keywords

Engineering controlled terms

Brain; Classification (of information); Electroencephalography; Electrophysiology; Emotion Recognition; Learning systems; Machine learning; Neurophysiology; Public health; Signal processing

Engineering uncontrolled terms

Brain activity; Computational modelling; Electroencephalography; Emotion; Emotion detection; Emotional state; Health concerns; Machine-learning; Self-reporting; Well being

Engineering main heading

Brain computer interface; Stresses

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