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(57) Abstract :

System and method for AI-based physiological stress monitoring is the proposed invention. The proposed invention relates to a system and method for AI-based physiological stress monitoring that enables continuous, non-invasive, and intelligent assessment of stress levels in individuals. The system collects multimodal physiological signals from wearable or sensor-based devices, including heart rate, heart rate variability, electrodermal activity, body temperature, respiration rate, and physical activity data. These signals are pre-processed to remove noise and extract relevant features, which are then analysed using machine learning and deep learning models to identify stress patterns and generate personalized stress indices. The proposed method adapts to individual physiological baselines and incorporates temporal analysis to improve accuracy and early detection of stress conditions. The system provides real-time visualization, alerts, and actionable feedback through user interfaces, supporting proactive stress management. The invention offers a scalable and adaptive solution applicable to healthcare, workplace, educational, and wellness environments for enhancing well-being and preventive care.

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