

Stress Detection in it Professional by Image Processing and Machine Learning : A Review

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Abstract: *Stress is an inevitable part of the IT industry, where tight deadlines, long working hours, and high expectations often take a toll on employees' mental and physical well-being. While traditional stress detection methods rely on self-reported surveys or physiological sensors, they often lack real-time monitoring and personalized support, making them less effective in a fast-paced work environment. Our project introduces an advanced stress detection system powered by Machine Learning (ML) and Image Processing, designed specifically for IT professionals. Unlike older systems that focus only on survey-based assessments or physiological signals like heart rate, our solution takes a more comprehensive and real-time approach. It analyzes facial expressions, micro-expressions, and behavioral patterns using image processing techniques to detect signs of stress as they happen. In addition to live detection, our system conducts periodic assessments through short, intuitive surveys to track stress levels over time. But we don't stop at just detecting stress—we take it a step further by offering personalized stress management solutions. Based on the detected stress levels, employees receive recommendations such as mindfulness exercises, relaxation techniques, and even professional counseling options. By combining real-time facial analysis with periodic psychological assessments, our system ensures a more holistic, proactive, and effective approach to stress management. This not only helps IT professionals maintain a healthier work-life balance but also creates a more positive, productive, and stress-free workplace. Our solution is a significant upgrade over traditional stress detection models, making workplaces smarter, healthier, and more supportive for employees.*

Keywords: Stress detection, Computational intelligence, Observing the system in real-time, Stress signals, Stress check, Convolutional Neural Network (CNN) , Support Vector Machines (SVM) , Random Forest.

