

Stress Detection in IT Professionals Using Image Processing and Machine Learning

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Abstract: *Stress is a prevalent issue among students and professionals, significantly impacting mental and physical health. This study presents a machine learning-based stress detection system tailored for IT college students, leveraging real-world data. The research follows a structured pipeline, including data ingestion from MongoDB, preprocessing, validation, and predictive modeling using regression algorithms such as ElasticNet, Gradient Boosting, and Random Forest. Exploratory Data Analysis (EDA) reveals key factors contributing to stress, such as workload, job satisfaction, and work-life balance. A feature engineering approach refines stress predictors, while GridSearchCV optimizes model performance. Results demonstrate that the trained models effectively predict stress levels with high accuracy, offering a foundation for proactive mental health interventions. This study highlights the potential of AI-driven stress monitoring systems in academic and professional environments.*

Keywords: Stress Detection, Machine Learning, Feature Engineering, Exploratory Data Analysis, Regression Models, Mental Health, Predictive Analytics, Workload Management

