Depression Detection through Integrative Multimodal Signals: Exploring Advanced Computational Techniques

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Abstract: *This research paper presents a comprehensive exploration of advanced methodologies in affective computing aimed at enhancing the detection of depression, a condition impacting millions globally. We propose an innovative model that integrates machine learning algorithms with multimodal data analysis to facilitate real-time monitoring and early intervention. Our approach synthesizes data from facial expression analysis, speech pattern recognition, and physiological signal processing, creating a robust depression detection system. Through rigorous experimentation, we demonstrate that this integrated methodology significantly improves the accuracy and reliability of depression diagnosis compared to traditional methods. The findings underscore the potential of affective computing technologies to transform mental health monitoring and support, offering new avenues for timely identification and intervention strategies in clinical settings. This work not only contributes to the field of mental health but also paves the way for future research in automated emotional assessment and intervention systems.*

Keywords: Affective Computing, Depression Detection ,Multimodal Analysis, Machine Learning, Real-time Monitoring, Facial Expression Analysis, Physiological Signals