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Edumetrics: A Revolutionary Step in Education

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Abstract: *Traditional methods of attendance marking like manual registers or biometric systems have limitations such as being time-consuming, prone to fraud, and lacking real-time monitoring capabilities. This paper proposes AI-powered classroom attendance and engagement tracker, addressing these limitations. The system utilizes facial expressions and Body gestures and postures to analyse students' engagement and presence in real-time. Face detection and a deep learning-based model are employed to recognize facial expressions and categorize emotions like boredom, confusion, focus, frustration, yawning, and sleepiness. This information is then used to estimate individual and group engagement levels. The proposed system offers significant advantages over traditional methods by providing automatic and real-time attendance marking and enhanced engagement tracking. This paper proposes a novel AI-powered system for tracking student attendance and engagement in offline classrooms. Leveraging facial expressions and academic affective states, the system automatically and accurately monitorsstudents presence and engagement levels in real-time. By recognizing emotions like boredom, confusion, focus, frustration, yawning, and sleepiness, the system provides valuable insights into student learning and helps teachers adapt their teaching strategies accordingly. This innovative approach offers significant advantages over traditional methods, eliminating time-consuming manual attendance taking, facilitating real-time engagement tracking, and demonstrating scalability for large classrooms. This AI-powered solution has the potential to revolutionize classroom engagement and enhance the learning experience for both students and teachers.*

Keywords: ai-powered classroom attendance, computer vision, machine learning algorithms, natural language processing, student engagement, deep learning, openPose, openFace, classroom analytics ds.