Real-Time Exam Monitoring

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Abstract*: With the rapid expansion of online learning platforms and remote assessments, ensuring academic integrity during examinations has become a significant challenge. Traditional human proctoring methods have limitations in scalability, accuracy, and cost-effectiveness. To address these concerns, this paper presents an AI-powered cheating detection system for online exams, which utilizes real-time video monitoring, object detection, and facial recognition to prevent and detect cheating attempts. The system is developed using YOLO (You Only Look Once) deep learning model, OpenCV, and PyQt, providing an efficient and automated approach to proctoring.*

The system continuously captures video feeds and processes frames using YOLO-based object detection to identify restricted objects such as mobile phones, books, laptops, earphones, and handwritten notes, which are commonly used for cheating. Additionally, facial detection ensures that only one candidate is present during the aexamination, flagging any unauthorized individuals detected in the frame. A behavioral monitoring module tracks eye movements, head position, and unusual activities, while an event logging system records suspicious events and generates automated warnings. Furthermore, tab-switch detection prevents candidates from accessing external resources on their computers during the test.

The proposed system was evaluated using multiple test scenarios, and results demonstrate high accuracy in detecting cheating behaviors, significantly reducing false negatives. By integrating AI-driven monitoring techniques, this system minimizes human intervention, enhances exam credibility, and ensures a fair evaluation process. Future improvements include incorporating gaze-tracking, voice detection, and machine learning-based behavioral analysis to further strengthen cheating prevention in online assessments..

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