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HDMI Cheating Mitigation Strategy with Machine Learning in AI Proctoring Systems: Using A Novel Dataset

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Abstract

The rapid growth in Information Technology has led to the widespread adoption of AI Proctored examination systems in academic institutions, in light of which, maintaining the integrity of online assessment has been facing newer challenges. Formulating effective methods of electronic cheating detection, more particularly the use of HDMI connection for multi-screen display during examinations has become a need with the evolution of newer ways of cheating. In this research, a step-by-step methodology for detecting HDMI usage in an AI-proctored test system is presented, to uncover suspicious activity involving the use of HDMI to trick the AI-proctoring systems. Traces left behind by an HDMI device's connection to a system, are persistent and still available even after the system was restarted, and are evidence that can be used in forensic analysis on suspicious systems. Throughout this paper, we demonstrate how one can leverage the Device manager to extract relevant Datasets. Therefore, we present extensive experiments with cutting-edge machine learning algorithms and purified datasets from system information reports and Device manager used to demonstrate the efficacy of the suggested model in detecting when HDMI usage patterns or anomalies is used for cheating during AI Proctoring exams. The findings demonstrate accurate electronic cheating detection that would improve the AI proctoring system and academic integrity.

Keywords: HDMI connection; integrity of e-assessment; AI proctored examination; electronic cheating.