



ARTIFICIAL INTELLIGENCE-BASED APPROACHES TO REDUCING CHEATING IN ONLINE EDUCATION

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Abstract. *The rapid expansion of online education has increased concerns about academic integrity, particularly in remote examinations where traditional supervision is limited. This paper discusses the challenge of cheating in distance learning environments and explores the role of artificial intelligence in supporting reliable online assessment. By analyzing student interaction behaviors such as mouse movements, copy-and-paste activities, and time spent on exam questions, AI-based approaches can provide insights into behavioral patterns during assessments. The paper also highlights the potential use of machine learning models, including XGBoost, as a practical direction for future implementation, while emphasizing ethical considerations related to privacy and fairness.*

Keywords: *artificial intelligence, education, machine learning models, XGBoost.*

Online education has become an essential component of modern educational systems, making it necessary for institutions and learners to adapt to flexible and effective approaches that enhance its quality and reliability as an alternative to traditional education. As distance learning continues to expand across various educational platforms, ensuring the effectiveness and credibility of its assessment methods has become a critical challenge. In this context, online examinations represent one of the most important and sensitive aspects of e learning environments, as they directly influence academic evaluation and integrity [1, 2].

As examinations are increasingly conducted remotely, traditional supervision mechanisms have become limited or entirely absent. This situation has created opportunities for some students to engage in dishonest practices in order to obtain higher grades. Consequently, concerns have emerged regarding a decline in overall educational quality, particularly as distance learning has become a widespread and unavoidable component of modern education [2].

The rapid advancement of artificial intelligence provides promising opportunities to address many of the challenges associated with online education. AI based techniques can be utilized to support the detection and monitoring of dishonest or manipulative behaviors during online examinations. Rather than relying solely on traditional supervision methods, intelligent systems enable more flexible and data driven approaches to assessment [1, 3].

Artificial intelligence offers a set of tools capable of analyzing student behavior during online examinations. By examining interaction indicators such as mouse movements, copy and paste activities, and the amount of time spent on individual questions, intelligent systems can infer behavioral patterns and levels of engagement throughout the assessment process [3, 5].

To support the practical applicability of the proposed approach, machine learning models such as XGBoost can be employed to analyze structured behavioral



features extracted from student interactions. Due to its ability to handle complex relationships among multiple behavioral indicators, XGBoost represents a promising tool for future implementation [4, 5].

In conclusion, maintaining academic integrity in online education requires innovative and ethical solutions that go beyond traditional surveillance based methods. Artificial intelligence, when applied through behavioral analysis and responsible design, can support fairer and more trustworthy assessment systems.

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