

Efficacy of AI and Human Proctors in Ensuring Academic Integrity in 2025 JAMB Examination

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Abstract

This study examined the efficacy of AI-powered system and human proctors in ensuring academic Integrity in JAMB Examination. Proctoring is aided detecting and preventing suspicious activities during online examinations, thereby upholding academic integrity. As virtual assessment is generally expected in education, it is important to secure valid and reliable assessment methods. The study used 2025 Unified Tertiary and Matriculation Examination (UTME) conducted by JAMB. The research method adopted was a survey research design, while the observation method was used to collect data. Purposive sampling technique was used to select 200 UTME candidates, which were grouped into two 100 each were proctored under human proctor and AI proctor. The observational analyses with a rating scale, data gathered, were subjected to descriptive statistics. Results revealed that AI proctoring and human proctoring are significantly efficient and effective in ensuring the integrity of 2025 JAMB examination, but AI proctoring lacks the ability to detect some normal psychological moves that are not suspicious activities during online examinations. Notably, findings strongly suggest that examination bodies should combine AI and human proctoring to deliver a more efficient and unbiased examination supervision. This synergy within AI and human proctoring will enable a more comprehensive and accurate examination proctoring of students' behavior, ultimately enhancing the validity and reliability of UTME exercise.

Keywords: Online Examinations, JAMB, Academic Integrity, AI and Human Proctoring, Cheating Detection, Real-Time Monitoring.

Introduction

Education is the act of teaching and learning to bring about changes in behavior. These changes can be known after assessment of learners. Educational assessment is simply the presentation of test items to testees in order to assess whether learning has taken place. This mostly is done with the use of test items. Tests are vital tools in the hands of any teacher used to elicit sampled behavior (Udi and Udemba, 2021). With the introduction of technology in education, tests can be administered in various modes, such as online and offline examinations. As online education continues to expand, the demand for secure and reliable assessment methods has become increasingly critical, which lead to the introduction of electronic supervision (proctor).

The rapid shift towards online and remote education and testing and accelerated by global events

such as the COVID-19 pandemic, which has significantly transformed the landscape of academic evaluation. As educational institutions increasingly rely on digital devices and platforms for administering tests and examinations, ensuring academic integrity in online assessments has become a critical concern.

Artificial intelligence (AI) represents a field of technological advancement that is experiencing rapid and transformative evolution, which fundamentally involves the intricate development of sophisticated machines endowed with the capability to execute tasks that conventionally necessitate the cognitive functions associated with human intelligence. These tasks encompass a diverse array of operations, including but not limited to the comprehension of natural language, the identification and recognition of complex patterns,

and the capacity to make informed decisions predicated on extensive data analysis. In essence, “AI encapsulates the domain of computer science that is dedicated to the creation of computer programs that are proficient in mimicking intelligent behavior, with the overarching goal of enhancing capabilities that are akin to those of human beings (Udemba et al., 2024). In contemporary society, AI-driven tools and applications have found their utility across a multitude of industries, including, notably, the educational sector, where they are being employed to significantly improve the quality and effectiveness of services rendered to both students and educators alike.

Proctoring is other words called supervision of examinees. Traditional proctoring (in-person or human proctoring), the online proctoring also called the remote proctor systematically analyzing audio inputs and tracking eyes and head or body movements, the system effectively identifies irregular or suspicious activities, ensuring a fair and transparent examination process. (Johnson et al. 2022) To enhance usability and build trust, Proctor Secure offers continuous graphical representations, allowing educators to monitor and evaluate students’ activities with ease (performance of business education students in Federal University, Oye-Ekiti, Ekiti State

According to Narayanan et al. (2021), traditionally, human proctors have played a central role in invigilating examinations, relying on direct observation and judgment to detect misconduct. However, human proctoring faces limitations, especially in large-scale, remote, or asynchronous exam settings. Challenges such as fatigue, subjectivity, and logistical constraints reduce the reliability and scalability of human oversight in virtual learning environments.

To address these concerns, Artificial Intelligence (AI)-based proctoring systems have emerged as a modern solution. These systems use screen monitor soft wares, computer vision, machine learning, webcam, cameras, microphones, biometric devices, tracking devices and data analytics to monitor students’ behavior, flag suspicious activities, and ensure adherence to exam protocols (Phoenicia and Kerr 2017). Online proctoring has the responsibility to consider the privacy, security and reliability of the exam sessions. ProctoU's AI capabilities can analyze student behavior and detect potential cheating. Sweeney et al. (2021) stated that ProctoU is primarily known for its online proctoring services, ensuring academic integrity in remote assessments AI proctoring offers advantages

such as 24/7 availability, consistency in monitoring, and the ability to process large volumes of data quickly. Nonetheless, it also raises ethical concerns related to privacy, bias, technical failures, and false accusations.

Despite the growing adoption of AI proctoring tools, questions remain regarding their effectiveness compared to traditional human proctors. While AI may be efficient in automating tasks, human proctors bring emotional intelligence, context-based judgment, and flexibility to their roles. There is a need to systematically assess the strengths and weaknesses of both proctoring methods to determine their efficiency in maintaining academic integrity. The crux of this study, therefore, seeks to evaluate and compare the efficiency of AI and human proctoring systems in ensuring academic integrity during online assessments. Idika, et al (2020). It aims to identify which approach better detects and deters academic dishonesty, and under what conditions a combination of both may be most effective. The intricate relationship between technology and educational assessment is fundamentally rooted in the reality that an array of technological innovations has been harnessed to engender a heightened level of efficiency, timeliness, and sophistication within the multifaceted domains of educational assessment design and execution. It has become increasingly evident that only educators who have received specialized training in the utilization of these cutting-edge technologies in the realm of assessment will possess the requisite skills and knowledge to navigate the complexities and challenges that will characterize the future landscape of educational assessment. The integration of information and communication technologies (ICT) within the context of testing entails the electronic generation of assessment items, comprehensive analysis of such items, the administration and proctoring of assessments, as well as the meticulous scoring and reporting of results (Udemba and Adenji, 2025).

Statement of the Problem

Academic dishonesty remains a persistent challenge in educational systems, particularly with the rise of online and remote learning environments. Ensuring academic integrity during assessments is crucial for maintaining trust, fairness, and the value of academic qualifications. Traditionally, human proctors have played a central role in monitoring examinations. However, their efficiency can be limited by factors such as fatigue, bias, human error, and scalability.

In response to these limitations, Artificial Intelligence (AI) proctoring systems have been

increasingly adopted as a technological solution to monitor large-scale online assessments. These systems offer automated features such as facial recognition, screen monitoring, gaze tracking, and real-time behavior analysis. While AI proctoring promises enhanced scalability and objectivity, concerns about its accuracy, privacy, and potential for false positives raise questions about its overall effectiveness and ethical use.

Despite the growing interest and adoption of both AI and human proctoring methods, it remains unclear which method more effectively ensures academic integrity, or whether a hybrid approach may be more advantageous. Therefore, this study compared the efficiency of AI and human proctoring in maintaining academic integrity, with the aim of providing data-driven insights to guide institutions in adopting the most effective and ethical proctoring practices.

Research Questions

This study investigated the efficacy of AI and human proctors in ensuring academic integrity in UTME examination, specifically the following question was the focus

1. What is the hypothetical statistics differences between AI proctoring and human proctoring in terms of specific observable behaviours of candidates during 2025 UTME in FUOYE UTME CBT center ?

Literature Review

Concept of Artificial Intelligence (AI)

Artificial intelligence (AI) represents a dynamic and rapidly advancing sector of technology that is fundamentally concerned with the creation and enhancement of intelligent machines, which possess the ability to undertake tasks that are traditionally associated with human cognitive functions, such as the interpretation of natural language, the detection and recognition of intricate patterns, and the execution of decision-making processes that are informed by data analysis (Udemba et al., 2024). The concept of AI encompasses a broad spectrum of applications and innovations within the field of computer science, which is dedicated to the development of computer programs that are capable of emulating intelligent behavior, with the ultimate objective of augmenting human-like abilities through technological means. To fully grasp the essence of AI, it is critical to acknowledge that it embodies any resource or mechanical construct that is

designed to facilitate the performance of tasks typically executed by humans. These machines are meticulously engineered by humans to automate and mechanize the daily tasks they undertake, with the primary aim of achieving greater productivity and efficiency within a shorter timeframe.

Phoenicia and Kerr (2017) articulate that AI comprises computing systems that can engage in cognitive processes analogous to those of humans, which include, but are not limited to, learning, adapting to new information, synthesizing knowledge, self-correcting previous errors, and employing data for complex processing tasks. Within the specific context of education, Artificial Intelligence (AI) manifests as the strategic application of these technologies to provide tailored and automated feedback and guidance within the educational milieu, as noted by Song and Wang (2020). The inculcation of Artificial intelligence (AI) in business education has great influence on the performance of students of business education because it provides important information to comply with the requirements. It has aided in the assistance of assignment, also, it has increased self-paced learning on the part of the students, as they are able to go back to materials, and read them for better understanding, and at their own convenience. It can be seen as a major contribution of advanced technology (Udemba and Mercy, 2025)

The incorporation of AI into the teaching and learning process has demonstrably facilitated the realization of learner-centered educational paradigms, as evidenced by the findings of Huang (2018). Furthermore, AI-enhanced tools and applications have been shown to significantly improve educational measurement practices, encompassing testing, assessment, and overall evaluation methodologies. These advanced tools are capable of furnishing educators with invaluable insights and detailed analyses concerning student performance, learning outcomes, and the overall effectiveness of instructional strategies. For instance, AI-infused assessment tools possess the capacity to meticulously analyze student responses to various assignments and subsequently provide personalized feedback, thereby aiding students in the identification of their respective areas of strengths and weaknesses (Udemba et al., 2024). CBT- Computer-Based Testing. CBTs are digital examinations that an individual takes on computers while answering questions posted on a screen instead of on paper. As such, a structured, efficient, and flexible method is

available for conducting assessments anywhere around the world.

Understanding the Role of Proctoring in Modern Assessments

Proctoring is the process of supervising exams to prevent academic dishonesty and maintain fairness. Traditionally, this was done in person by educators or exam supervisors. However, with the rise of digital learning, proctoring has expanded into two primary formats:

- **AI-based (automated) proctoring**
- **Human (live or recorded) proctoring**

Human Proctor

According to Clark and Hee (2024) human proctors can:

- Engage with students before and during the exam to offer support.
- Make real-time decisions based on context, not just rules.
- Allow room for natural behavior, especially under exam stress.
- Intervene when students face technical challenges or need clarification.

For many students, knowing that a real person is available offers reassurance. It mirrors the familiarity of in-person exams, making the transition to online exams less daunting (Johnson, Adebayo and Singh, 2022).

That said, human proctoring also comes with limitations such as;

- **Resource Intensive:** Requires trained staff to supervise exams, especially in large numbers.
- **Time-Bound:** Students must take exams within fixed time slots.
- **Scaling Challenges:** Difficult to manage for institutions with a wide student base or frequent testing schedules. (Bashir and Chan, 2022).

Despite these drawbacks, the human element adds significant value particularly in understanding emotional cues, offering flexibility, and ensuring fairness beyond rigid software algorithms.

Sweeney, Arora, and Patel, (2023). Stated that human proctor is significant because of the following reasons:

- Address technical issues and errors
- Chat in case of dilemma and confusion
- Friendly conversational tone
- Calm candidate's anxiety and distress
- Maintain brand reputation
- Clear false positives

- Analyze the data for misconduct or integrity violation
- Final review and decision

Merits and demerits AI proctor

Artificial Intelligence has made significant inroads into the education sector, and exam proctoring is no exception. AI-enabled systems use a combination of facial recognition, behavior tracking, screen monitoring, and audio analysis to detect any suspicious activity during an online exam. AI proctoring solutions offer several compelling benefits such as;

Scalability: Capable of monitoring thousands of candidates simultaneously.

Efficiency: Automated flagging and reporting reduces administrative burden.

Flexibility: Exams can be conducted 24/7 across time zones, accommodating students globally.

Cost-Effectiveness: Reduces the need for large proctoring teams, especially for large-scale assessments.

However, despite these advantages, AI-based systems are not without criticism. (Bashi et al., 2022).

Johnson et al (2022) reported that students feel uncomfortable or anxious when monitored by AI. Movements as simple as adjusting a chair or glancing away from the screen can trigger false alerts. Moreover, AI lacks context it cannot differentiate between dishonest behavior and natural human reactions like thinking, stretching, or dealing with minor distractions at home.

Another area of concern is data privacy being continuously recorded or observed by a software tool can make one feel intrusive, especially when exams are taken in personal living spaces. According to Bashir and Chan (2022).the presence of AI creates a stressful environment, which can might negatively impact performance, even in the absence of dishonest intent.

Academic Integrity

While AI proctoring excels in scalability and efficiency, it lacks the ethical discernment and flexibility of human proctors. Conversely, human proctoring offers richer judgment but is limited by cost and scalability. A hybrid system may offer the best compromise, balancing academic integrity with student fairness and institutional efficiency.

Empirical Review

According to Sweeney et al. (2021) in a study on AI vs human proctoring detection rates. The study was a survey research design, involving 500 students in an online testing environment. Participants were monitored under two separate proctoring conditions: AI-only and human-only. Findings from the study showed that; AI proctors flagged suspicious behavior in 18% of test-takers, Human proctors flagged 12%, but with fewer false positives. Also, Of the AI-flagged cases, 40% were deemed false positives after human review. And Human proctors, however, missed 6% of cheating behaviors that AI detected. It was concluded in the study that AI is more sensitive but less accurate in isolation. Human judgment provides contextual filtering but may miss subtle violations.

Johnson et al. (2022) in their study on student perceptions and fairness. The study surveyed 1,000 students across 10 universities who had experienced both AI and human proctoring in remote exams. The study revealed that 65% of students felt AI proctoring was intrusive and unfair, 78% believed human proctors made them feel more "seen" and less anxious, 42% preferred AI due to its speed, consistency, and flexibility in scheduling and 54% expressed concerns about AI's inability to interpret cultural behaviors or disabilities (e.g., eye contact, fidgeting). It was concluded that students generally trust human oversight more, but acknowledge the scalability and efficiency of AI.

Narayanan et al. (2021) carried out a study on the experimental comparison in academic integrity. An experimental setup involving two online test groups (n=100 each), one proctored by AI and one by humans. A set of test-takers was instructed to attempt to cheat in

subtle ways. The study revealed that AI detected 72% of cheating incidents. Human proctors detected 61%. In the AI group, 15% of false flags were reported. Human proctors produced only 5% false accusations but failed to detect several low-profile cheating strategies. The study concluded that AI demonstrated better detection rates but lower reliability in judgment. Human proctors were more accurate when they did detect violations but missed more subtle misconduct.

Bashir and Chan (2022) studied the effectiveness of hybrid proctoring models. The research was a survey research. The instrument used was university-wide exam, and a sample of 3,000 students, using AI with human review of AI-flagged behavior. Findings indicated that; cheating rates dropped by 35% compared to the previous semester using human-only proctoring, False positive reports fell from 22% (AI-only) to 6% (hybrid). The study concluded that the hybrid model significantly improved both detection accuracy and student confidence in the fairness of the system.

Methodology

The study adopted a survey research design and a sample of 200 candidates for 2025 UTME was selected from FUOYE CBT JAMB center, using the purposive sampling technique. The instrument used for data collection was the AI proctor devices (cameras and microphones) and human proctors to check the forms of suspicious behaviours not allowed in the examination, and rating scale of 1 to 5 was used to statistically present the reports also descriptive statistics (percentage) was use to present the results from the data (observations) collected by the researchers.

Results

Table 1: Hypothetical Statistics On Comparing Ai Proctoring And Human Proctoring In Terms Of Specific Observable Behaviours Of Students During 2025 UTME In FUOYE UTME CBT Center. 200 candidates on human proctoring and AI Proctoring.

S/N	Behaviours (Suspected to be suspicious activities)	AI Proctoring (Detection rate/impact)	Human Proctoring (Detection rate/impact)
1	Facial expression	79%	21%
2	Head movement	97%	11%
3	Eye motion off the screen	83%	17%
4	Background noise	73%	27%
5	Unauthorized persons	50%	50%
6	Computer screen activities	6%	92%
7	Scalability and consistency	87%	13%
8	Emotional distress triggered by monitoring	64%	36%
9	Unauthorized devices	42%	68%
10	Delay in identity verification	32%	64%

(Source: Surveys 2025)

Table 1 indicated behaviours suspected to be suspicious activities during examinations. For facial expression AI was rated 79% while human proctor was rated 21%, this means that AI reads the facial expression of the examination candidates faster to be as unaccepted behaviour during examination. Also, other behaviours indicated in items 2,3,5,7 and 9 (Head movement, Eye motion off the screen, Background noise, Scalability and consistency, Emotional distress triggered by monitoring) rated a high percentage of AI proctor with 79%, 83%, 73%, 87% and 64% than the human proctor. Which means that AI. While, item 5 - Unauthorized persons indicated 50% rate of both AI and human proctoring. This means that both the AI and human proctor were able to indicate unauthorized person in 2025 UTME the examination venue in the study area. On the other hands, items 6, 9 and 10 indicated that human proctor identified computer screen activities, unauthorized devices, delay in identity verification at the percentage rate of 92% 68% and 64% better than AI proctor, in the study area.

Discussions

The first finding revealed that AI reads the facial expression of the examination candidates faster to be as unaccepted behaviour during examination than human proctor. This supports the result of Narayanan et al. (2021) who concluded that AI demonstrated better detection rates but lower reliability in judgment. Human proctors were more accurate when they did detect violations but missed more subtle misconduct. The second finding indicated that 2025 UTME candidates' behavior such as head movement, eye motion off the screen, background noise, scalability and consistency, emotional distress triggered by monitoring rated a high percentage of AI proctoring than human proctor. This finding agrees with Sweeney et al. (2021) who concluded in the study that AI is more sensitive but less accurate in isolation. Human judgment provides contextual filtering but may miss subtle violations. The third result revealed that the presences of unauthorized persons were 50% rated of both AI and human proctoring. This means that both the AI and human proctor were able to indicate unauthorized person in 2025 UTME the examination venue in the study area. This supports the report of Johnson et al. (2022) who concluded that students generally trust human oversight more, but acknowledge the scalability and efficiency of AI. Finally the study revealed that human proctor identified computer screen activities, unauthorized

devices, delay in identity verification at the percentage rate of 92% 68% and 64% better than AI proctor, in the study area. This supports the report of Johnson et al. (2022) who concluded that students generally trust human oversight more, but acknowledge the scalability and efficiency of AI.

Conclusion

Artificial Intelligence, despite its remarkable advancements and capabilities, can never fully replace the intricate and multifaceted role of human proctoring in educational assessments or examinations. The presence of a trained proctor is indispensable, as they possess the expertise to not only correct inappropriate behavior but also to review the situation thoroughly and make informed and nuanced judgment calls based upon real-time observations of the candidates. Both human and AI-based proctoring systems present their own unique advantages that are complemented by a distinct array of challenges that must be navigated effectively. While it is true that human proctoring is particularly adept at providing nuanced judgment and facilitating immediate intervention in response to unexpected situations, AI proctoring brings to the table significant benefits such as scalability, cost-effectiveness, and the potential for unbiased monitoring devoid of human emotional influence. Ultimately, the decision regarding which proctoring method to employ is contingent upon a careful analysis of the specific requirements and constraints of the situation at hand, including factors such as the nature of the examination, the volume of candidates, and the resources available. Furthermore, it is essential to consider the broader implications of integrating AI technologies into educational settings, including ethical considerations and the impact on the learning environment. Thus, the dialogue surrounding the efficacy and appropriateness of AI versus human proctoring remains a critical area of examination within the field of educational technology and assessment. AI proctoring tools have raised issues about privacy invasion, racial/gender bias in facial recognition, and psychological stress. Also, Human proctors are not free from challenges; unconscious biases, inconsistent vigilance, or even misconduct have been documented

Recommendations

Based on the findings the following were recommended.

1. Institutions needs to combined AI with human proctoring in other to balance efficiency with human judgment.
2. Institutions should invest in the training of human proctor in AI interpretations.
3. Institutions should use AI for initial screening of candidates and use human proctor for final review.
4. Examination bodies should customize proctoring based on the examination type or mode.

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