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Article

Detecting AI-Generated Academic Work and Strategies for Ensuring Authenticity in Research Writing: Implication for Lecturers and Students in Tertiary Institutions in Nigeria

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Abstract: The rapid advancement of artificial intelligence (AI) has transformed the landscape of academic writing, providing tools capable of generating research papers, project reports, and scholarly content in a fraction of the time it would take a human researcher. While AI offers unprecedented efficiency and accessibility, its misuse raises serious concerns regarding originality, academic integrity, and credibility. AI-generated work often lacks critical thinking, contextual understanding, and genuine insight, making it difficult for educators and researchers to assess the authenticity of submitted work. This study examines the identifiable signs of AI-generated academic content, such as overly formal or robotic language, lack of deep analysis, repetitive phrasing, inconsistent arguments, and unverifiable references. In addition, the study explores practical strategies for ensuring the authenticity of AI-assisted writing. These strategies include integrating personal analysis, using real data and case studies, incorporating contextual examples, paraphrasing AI outputs, applying proper citation practices, and revising content thoroughly to match the author's voice. By combining detection methods with authenticity-enhancing strategies, this paper provides a comprehensive framework for students, researchers, and academic institutions to maintain scholarly rigor in the era of AI.

Keywords: AI-Generated Content, Human-Authored Work, Research Authenticity, Academic Integrity, Originality, AI-Assisted Writing

1. Introduction

The integration of artificial intelligence into academic research has revolutionized the way knowledge is produced, shared, and disseminated. AI tools, particularly advanced language models, can quickly generate coherent, grammatically accurate, and seemingly well-structured text on virtually any topic. For students, researchers, and professionals, these tools offer opportunities to save time, brainstorm ideas, and draft preliminary content. However, the increasing prevalence of AI-generated work has introduced complex challenges related to academic honesty, originality, and the overall quality of scholarly output.

One key challenge is distinguishing between AI-generated content and human-authored work. While AI tools are capable of producing impressive results, their outputs often exhibit specific traits, such as overly formal or mechanical language, lack of nuanced analysis, repetitive phrasing, vague citations, and generic conclusions. These features, if unnoticed, can undermine the credibility of research and compromise academic standards.

Despite these challenges, AI can serve as a constructive aid rather than a replacement for genuine scholarship. When used ethically and intelligently, AI can enhance research productivity, improve writing quality, and support complex data analysis. By combining AI assistance with human critical thinking, contextual understanding, and proper referencing, researchers can produce work that is both efficient and original. This study therefore focuses on two critical aspects: identifying the signs of AI-generated academic content and outlining effective strategies to make AI-assisted writing appear authentic, credible, and human-centered.

2. Conceptual Terms

AI-Generated Content

AI-generated content refers to written material produced by artificial intelligence tools without direct human authorship. These tools can draft reports, essays, or research papers by predicting likely word sequences based on large datasets of prior writing. While AI-generated text is often grammatically correct and well-organized, it commonly lacks originality, critical analysis, and context-specific insight. Characteristics of AI-generated work include repetitive phrasing, generic arguments, robotic language, vague or inaccurate citations, and formulaic conclusions.

AI-Generated Content refers to any type of content that has been created or generated using artificial intelligence or AI algorithms. This can include text, images, videos, designs, and any other form of digital content. The use of AI for content generation allows for faster creation, higher volume production, and more personalized content.

Human-Authored Work

Human-authored work is content produced primarily by a person, reflecting individual thought processes, creativity, and analytical skills. It demonstrates originality through critical reasoning, personal insights, interpretation of data, and context-specific examples. Human-authored research typically incorporates real-life case studies, verified data, and credible references, giving it depth, authenticity, and nuance. Unlike AI-generated content, human writing often includes minor imperfections, unique stylistic elements, and a natural flow that reflects the writer's voice and perspective.

Human-Authored Work refers to works created and produced by human beings, as opposed to those created by machines or artificial intelligence. This term is often used in the context of academic work, such as research papers, essays, and other scholarly publications. Human-Authored Work is considered to have higher credibility and authority compared to machine-generated work, as it involves critical thinking, research, and interpretation by a human author. It is a crucial aspect of the academic world and is highly valued in fields such as education, science, and humanities.

3. Discussion on Signs of AI-Generated Academic Content (Projects, Assignments and Research paper)

Overly Formal or Robotic Language

The presence of overly formal or robotic language in a paper can be indicative of it being generated by AI. This can be due to the fact that AI systems are trained on large datasets and do not have a natural understanding of language like humans do. Thus, they may rely on pre-programmed phrases and structures that result in a robotic or unnatural tone. Additionally, AI-generated papers may lack the nuance and complexity present in human-written papers, leading to a more formulaic and stiff writing style. AI-generated text often uses rigid and overly formal phrasing, maintaining perfect grammar but lacking the natural rhythm of human writing.

Example:

1) AI: "The phenomenon under scrutiny demonstrates a marked deviation from established theoretical frameworks."

2) Human: "This study shows that the trend is quite different from what previous research suggested."

Lack of Deep Critical Analysis

According to a recent study conducted by researchers, lack of deep critical analysis is often a strong indicator that a paper has been generated by AI. This is due to the fact that AI-generated content is typically unable to provide the depth and complexity of analysis that human writers are capable of. In other words, AI-generated papers often lack the critical thinking and human insight that is necessary for a truly engaging and thought-provoking academic paper. The main reasons for this lack of critical analysis is that AI algorithms are limited to the data and information that they are trained on. AI tends to summarize information without offering genuine critique, nuanced reasoning, or personal interpretation.

Example:

1) AI: "Many scholars agree that education improves economic growth."

2) Human: "While education generally boosts economic growth, poor policy implementation in some regions limits its impact, highlighting the need for targeted approaches."

Overuse of Common Phrases or Clichés

AI often relies on predictable academic phrases, connectors, and templates to maintain a formal tone. Overuse of common phrases or clichés in a paper may suggest that it was generated by artificial intelligence. This is because AI programs often rely on pre-existing text data and language patterns to generate new content, leading to the use of similar phrases and expressions. Example:

1) "It is widely acknowledged that…"

2) "In recent years, there has been a growing interest in…"

Inconsistent or Illogical Arguments

Inconsistent arguments and illogical reasoning are common signs indicating that a paper may have been generated by AI. These types of arguments lack coherence and do not follow a logical progression, which is a major red flag for the authenticity of the paper. The use of AI in generating papers often leads to the inclusion of irrelevant information, contradictory statements, and illogical conclusions. This is due to the fact that AI lacks the critical thinking and reasoning abilities of a human writer. Therefore, when encountering inconsistent or illogical arguments in a paper, it is important to critically evaluate the credibility of the source and consider the possibility that it may have been generated by AI. AI may produce content that seems plausible but contains contradictions or lacks logical coherence. Example:

1) A paper may first claim, "FDI improves tertiary education," then later state, "FDI has no significant impact," without explanation.

Repetitive Content

AI can repeat similar ideas in slightly different wording. AI generated papers often have a tendency to reuse the same phrases and ideas multiple times throughout the paper. This is due to the nature of AI algorithms, which rely on pre-existing data and patterns to generate new content. As a result, these papers can often lack originality and creativity, leading to repetitive content. Example:

1). "Foreign investment is important for development.

2). Investment from abroad is crucial for economic growth."

Inaccurate or Nonexistent Citations

AI sometimes fabricates references or misattributes studies. Inaccurate or nonexistent citations can be a clear indication that a paper has been generated by an AI

tool. This is because AI algorithms often have difficulty in accurately citing sources, especially if the data used to generate the paper is not properly documented. This can also be an issue if the AI tool is not programmed to understand the importance of citing sources and how to do so correctly. Inaccurate or nonexistent citations can also be a red flag for plagiarism, as the AI tool may have pulled information from sources without properly citing them. Example:

1) "According to Smith (2020), FDI has a 70% impact on Nigerian education" → No such study exists.

Sudden Shifts in Writing Style

AI generated papers are written with the assistance of artificial intelligence, often utilizing natural language processing techniques to generate human-like text. An indicating sign that a paper has been generated by AI technology is sudden shifts in writing style. This is due to the fact that AI algorithms may struggle to maintain a consistent tone, voice, or structure throughout the paper. As a result, readers may notice abrupt changes in language or sentence structure that can be a red flag for AI-generated content. AI technology may also struggle with incorporating personal experiences or opinions, resulting in a lack of coherence in the writing. AI algorithm-generated papers may lack a natural progression of ideas and may jump from one topic to another without proper transitions. This can make the paper appear disjointed and robotic in nature, further indicating that it has been generated by a machine and not by a human. AI output may abruptly change tone or sentence complexity, reflecting inconsistent prediction patterns.

Overly Generic Conclusions

Overly generic conclusions in a paper can be a sign that the paper was generated by AI. This is because AI algorithms often rely on pre-existing data and patterns when generating text, which can result in generic or repetitive conclusions. In contrast, human-written papers tend to have more unique and specific conclusions based on the author's own analysis and interpretation of the data. Example:

1) AI: "Investment in education is important for economic growth."

2) Human: "Analysis of Nigerian universities indicates that targeted FDI in STEM programs could increase graduate employability by 20% over five years."

Lack of Original Data or Research Methodology

The absence of original data or a clear research methodology can indicate that a paper has been generated by AI. This could be due to the fact that AI models may not have access to real-world data or may not be able to perform complex research tasks. Without proper data and research methodology, the generated paper may lack in-depth analysis and original insights. In order to determine the authenticity of a paper, it is important to carefully evaluate the presence or absence of original data and a well-defined research methodology. AI often fails to provide detailed methods, real datasets, or statistical analysis. Example:

1) AI: "This study conducted a survey to understand the impact of FDI on education. (No sample size or data)

2) Human: "A survey of 200 lecturers across five Nigerian universities was conducted. Data were analyzed using SPSS, revealing a significant correlation between FDI inflows and research outputs ($p<0.05$)."

Appearing of dash (-) and asterisk ( )**

The appearing of dash and asterisk (**) signs are often seen as a sign that the paper in question has been generated using AI tools. This is because these signs are commonly used when formatting text in a way that is not natural for human writers. AI tools often use a combination of dashes and asterisks to signify breaks, transitions or emphasis in the

text, which can sometimes result in a repetitive or unnatural pattern. The presence of these signs can therefore indicate that the paper has been generated by an AI tool, rather than written by a human author. This is not always the case, as some human writers may also use these signs in their writing for various purposes.

Example

A textual and thematic analysis method was employed in examining the selected biblical passages. Key events in Joseph's life—such as his **experience in slavery, his administration in Potiphar's house, his imprisonment, his rise to political authority in Egypt**, and his management of the famine—were carefully reviewed to identify recurring leadership traits**. From this analysis, major themes including humility, integrity, empathy, strategic vision, forgiveness, empowerment, and servant-first orientation were derived. This is AI generated write up.

3B- Strategies for Ensuring Authenticity in Research Writing

Incorporate Personal Analysis and Critical Thinking

Adding unique perspectives, critique, or interpretation transforms AI-generated summaries into original research. Example:

1) AI: "FDI improves education in developing countries."

2) Human: "While FDI has improved educational infrastructure in some regions, in Nigeria bureaucratic inefficiencies have limited its impact, suggesting a focus on STEM programs may be more effective."

Use Real Data and Case Studies

Integrating verified statistics, surveys, and case studies strengthens credibility. Example:

1) Include tables showing international partnerships or student enrollment trends linked to FDI.

Use Varied Sentence Structures

Mixing simple, compound, and complex sentences improves readability and humanizes AI-assisted text.

Contextualize Content Locally

Reference regional, cultural, or institutional realities to make the content relevant.

Paraphrase AI Suggestions

Adjust AI-generated phrasing to match the author's voice and reduce robotic tone.

Cite Real Sources Accurately

Replace AI-generated or vague citations with verified references from journals, reports, or books.

Introduce Minor Imperfections

Natural variation in phrasing and tone makes text feel human-authored.

Add Visuals, Charts, or Illustrations

Including original graphs or tables demonstrates engagement and strengthens authenticity.

Use Field-Specific Jargon Appropriately

Technical terminology enhances credibility and indicates domain knowledge.

Revise and Proofread Thoroughly

Careful editing ensures logical flow, consistent style, and alignment with the author's voice.

4. Conclusion

Artificial intelligence has undoubtedly changed the academic writing process, offering tools that can generate content rapidly and efficiently. However, unchecked use of AI can compromise originality, critical reasoning, and scholarly integrity. This study has highlighted clear indicators of AI-generated content, including rigid language, repetitive phrasing, generic conclusions, and unverifiable references.

At the same time, AI can be leveraged ethically to enhance research productivity when combined with human judgment. By integrating personal analysis, using real data, contextualizing information, citing sources accurately, and carefully revising text, AI-assisted work can be transformed into authentic, credible, and human-centered research. Maintaining academic integrity in the AI era requires awareness, diligence, and an active commitment to originality.

Based on the above findings; this paper recommends;

1. Students need guidance on the ethical and effective use of AI in research, including identifying AI-generated content and learning how to enhance originality in AI-assisted writing. So, academic institutions should provide training for both lecturers and students on AI skills.
2. Researchers and lecturers should be encouraged to go beyond AI-generated summaries by including contextual interpretation, critiques, and insights specific to their field of study.
3. Students should incorporate real statistics, experiments, surveys, and examples to ensure that research are credible and traceable, reducing reliance on generic AI-generated statements.
4. Academic institutions should establish policies outlining acceptable AI usage, citation practices, and methods to authenticate work, fostering transparency and academic integrity.
5. Even when AI tools are used, thorough proofreading, editing, and personalization are essential to make the content genuinely human-authored and contextually relevant.
6. Researchers and lecturers should contextualize findings based on regional, cultural, or institutional realities, ensuring that AI-assisted content does not remain generic or disconnected from practical realities.

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