



AI Ethical Implications in Research practice and Academic Writing

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Abstract

This paper contributes to the ongoing debate on artificial intelligence (AI)'s dual and profound impact in academic writing and research practice. While AI enhances research efficiency and accuracy across the research lifecycle such as accelerating discovery, improving data analysis, supporting literature reviews, and strengthening academic writing and editorial quality through diverse applications, yet its misuse raises ethical concerns and challenging academic integrity; including potential AI-related plagiarism (AI-giarism), bias, intellectual ownership erosion, and lack of transparency in AI-driven methodologies. Over-reliance on AI risks eroding critical thinking, creativity, authorship, originality, and academic credibility.

To address these ethical dilemmas and regulatory gaps, the study aims to propose a clear harmonized guideline, and advocate for a comprehensive robust ethical framework involving all stakeholders. Recommendations include, scientific integrity, transparency in disclosure, and mandatory human oversight, data privacy policies, and intellectual property protections and strict adherence to research ethics. emphasizing that AI should remain a supportive instrument rather than a substitute for human reasoning, to ensure a fair and ethical academic environment for responsible AI integration.

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Introduction

The contemporary scientific landscape is undergoing a profound transformation driven by the rapid integration of artificial intelligence (AI), emerging as a pivotal force reshaping academic, research, and societal landscapes. Once relegated to the periphery of scientific inquiry, AI has evolved from a specialized technical utility into a fundamental force reshaping research methodologies, scholarly communication, and academic standards. Its applications now permeate every stage of the research lifecycle—from hypothesis generation and experimental design to complex data analysis and the synthesis of novel insights. This evolution has significantly enhanced research efficiency, analytical accuracy, and the overall quality of scientific outputs, positioning AI as a pivotal instrument for advancing knowledge and fostering interdisciplinary collaboration (CU-AI Nexus, 2025, p. 7; Lutfi & Al-Aklabi, 2023, p. 7).

However, the ascendancy of AI in scientific research presents a complex, dualistic challenge. While its capacity to accelerate discovery is undeniable, its widespread adoption has also triggered significant ethical concerns within the global academic community. The increasing reliance on AI tools has been described as a "double-edged sword" (Badir, 2025, p. 31). On one hand, AI empowers researchers with unprecedented capabilities; on the other, its misuse threatens to undermine the very foundations of academic integrity. Key ethical perils include the proliferation of sophisticated forms of scientific

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plagiarism, the erosion of intellectual ownership, and a lack of transparency in AI-driven methodologies. These issues can lead to the perpetuation of misinformation, the generation of biased or inaccurate results, and potential violations of data confidentiality, thereby endangering the reliability of primary information sources (**Badir, 2025, pp. 31, 38**). Beyond the immediate risks of academic misconduct, the over-dependence on AI raises deeper concerns about the future of scholarly practice. An excessive reliance on automated tools may erode the critical thinking skills and intellectual autonomy that are essential for genuine scientific innovation (**Bouali & Abidi, 2025, p. 53**).

This cognitive risk is further compounded by systemic academic pressures, such as the intense demand for high publication output, —often prioritized over quality- which can incentivize expediency over methodological rigor and ethical diligence. The confluence of these factors creates a precarious environment where the transformative potential of AI is in direct tension with the core values of scientific inquiry, and further complicates ethical dilemmas.

Addressing this tension has become a paramount challenge for the academic and research community. The imperative is to establish a balance between leveraging AI's powerful capabilities and upholding the rigorous ethical and legal norms that govern scientific research. This necessitates the development of robust ethical frameworks and clear governance structures. It is crucial to recognize that current AI systems, despite their analytical power, lack the capacity for human reasoning, contextual understanding, and social comprehension, we are far from replicating all components of human intelligence in a machine (**ALECSO, 2023-2024, p. 18; UNESCO, 2018**). Their capabilities are confined to the specific the mechanical tasks assigned by their human operators. without possessing autonomous social understanding or interaction beyond these designated functions. Consequently, stringent human oversight and accountability are indispensable to prevent misuse and ensure that AI is deployed responsibly; this need for a deep understanding of its concepts, mechanisms, and applications. The key global debates have thus converged on critical issues of trust, accountability, intellectual property, and the responsible role of AI in education and research (**Lutfi & Al-Aklabi, 2023, p. 9**).

This study is motivated by the urgent need to navigate the ethical complexities introduced by AI in scientific research. It aims to probe the ongoing debate regarding the effects of AI tools on academic integrity and scientific credibility, spotlighting the ethical challenges and regulatory gaps that have emerged with these novel technologies. By systematically examining the multifaceted impact of AI, this paper seeks to contribute to the evolving discourse on research ethics and provide a foundation for a comprehensive, multi-stakeholder approach to cultivating a fair and ethical academic environment.

This study is guided by the following research questions:

- What is the extent of artificial intelligence's impact on the methodologies and ethics of scientific research?
- How can the academic community ensure research practices adhere to established ethical standards in the era of artificial intelligence?
- Are current AI-based detection tools and institutional strategies sufficient to prevent AI-assisted academic misconduct, and what are the limits of their effectiveness?
- What specific guidelines for transparency, accountability, and data privacy are necessary for the responsible use of AI in the process of research and scholarly writing?



By addressing these questions, this study intends to furnish clear, harmonized guidelines that clarify the attendant ethical dilemmas. It advocates for a comprehensive framework involving researchers, educators, institutions, publishers, and technology developers to collectively confront the challenges posed by AI. Central to this proposed paradigm is the imperative of maintaining meaningful human supervision to safeguard ethical standards and ensure the continued integrity of the scientific enterprise. Ultimately, this work provides an essential foundation for future in-depth studies on researcher practices, motivations, and strategies in integrating AI, fostering a deeper understanding of how to responsibly harness its benefits while upholding the enduring principles of academic excellence and transparency.

1. Key Definitions

1.1. Conceptual Framework of Artificial Intelligence

Artificial Intelligence (AI) is a central pillar of the digital revolution; as a subfield of computer science, it is concerned with building systems capable of performing tasks requiring human intelligence, intersecting with disciplines ranging from mathematics and psychology to linguistics and philosophy (Resnik & Hosseini, 2025, p. 1502). The term was first introduced by John McCarthy in 1955, who defined it as “the science and engineering of creating intelligent machines” (Badir, 2025, p. 31; Himer, 2024, p. 206). From a technical standpoint, AI involves developing methods and tools that simulate human behavior complex to solve problems (Ocana Fernandez et al., as cited in Himer, 2024, p. 206). This view aligns with Bonnett (1993) further characterizes it as “a diverse assembly of technologies that emulate human capabilities, underscoring its potential for creativity and continuous learning” (Bonnett, 1993, p. 11).

Beyond mere computation, AI seeks to emulate human cognition like decision-making and adaptation so that systems can perform tasks autonomously and extends human problem-solving capacities (Resnik & Hosseini, 2025, p. 1502; Bonnett, 1993, p. 11). Researcher Umayyah Dakkak conceptualizes it as “a science that examines intelligent behavior in non-living entities”, encompassing perception, reasoning, learning, communication, and action within complex environments (Al-Asad, 2023, p. 165). Operationally, AI systems process vast quantities of data to generate predictions or decisions aligned with human goals (Himer, 2024, p. 206), dividing into “learning-based” and “pre-programmed” types that “store, analyze, identify patterns, and execute decisions (Lutfi & Al-Aklabi, 2023, p. 12). Grewal views it as “a mechanical simulation” synthesizing knowledge for practical use (Himer, 2024, p. 206), highlighting its dual identity as both “an academic discipline” and “a practical toolkit” for replicating human-like intelligence (Resnik & Hosseini, 2025, p. 1502).

In summary, AI is a multidisciplinary field that integrates hardware, software, and systems to replicate cognitive functions, enabling tasks that demand learning, reasoning, and problem-solving across diverse domains.

2.1. Defining Research Ethics

Before examining research ethics specifically, it is essential to establish a broad understanding of the concept of “ethics” and then narrow the focus to its application within scientific inquiry.

Ethics, at its core, refers to a system of moral principles governing behavior, encompassing both internal moral character and external societal rules (Al-Asad, 2023; Group of Specialists, ALECSO, 2023–2024, p. 9). More operationally, ethics constitute the set of rules, standards, and values adopted by a society or professional community to guide conduct (Himer, 2024, p. 200). This perspective highlights the social and contextual nature of ethics: it is not merely an internal compass but



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a collection of standards, procedures, and rules and rules adopted and agreed upon by a society" that delineate acceptable behavior (**Group of Specialists, ALECSO, 2023–2024, p. 9**).

Research ethics" refers to the specific moral principles and values governing the conduct of scientific inquiry, aiming to instill ethical standards among researchers, scholars, and students and to ensure the integrity of the research process (**El-Sayed, 2013, p. 17**). These ethics oblige researchers to follow established guidelines in all aspects of their work—from interactions with themselves, research subjects and peers to engagement with the broader community (**Himer, 2024, p. 201**). Their primary function is to preserve the integrity and credibility of science through a framework that oversees the entire research process, —from design and data collection to analysis and publication—ensuring accuracy, honesty, and respect for the rights of individuals and communities (**Bouali & Abidi, 2025, p. 42**). Core principles include honesty, respect, responsibility, transparency, and accountability (**El-Sayed, 2013, p. 17; China & Madaci, 2020, p. 263**). Historically rooted in biomedical fields, research ethics now encompass broader concerns such as methodological rigor, transparent scholarship, and the social responsibility of science (**Group of Specialists, ALECSO, 2023–2024, p. 11**).

AI integration into scientific research urgently demands strict adherence to ethical principles. AI acts as a powerful tool within the research lifecycle, capable of tasks ranging from data analysis to content generation, thereby necessitating the active application of established ethics—particularly transparency, accountability, and fairness—to govern its use (**Lutfi & Al-Aklabi, 2023, p. 12**). Ethical controls are essential to maintain public trust and ensure responsible outcomes (**Bonnett, 1993, p. 365, as cited in Naem, 2024, p. 638**). Thus, while AI introduces novel challenges, it does not alter the core ethical framework of research; rather, it demands its vigorous reaffirmation and adaptation to ensure human-centered, rigorous, and fair scientific practice (SDAIA, 2023, as cited in Naem, 2024, p. 638).

3.1. Defining Research Practice and Academic Writing

Effective **research practice** rests on a robust framework of scientific and methodological principles that guide the generation of high-quality, credible knowledge. It can be understood as “the collection of procedures and methods that researchers employ to guarantee integrity, accuracy, and transparency throughout all phases of their work” (**Bouali & Obeidi, 2025, pp. 44–45**).

Various institutions underscore this foundation. The U.S. National Council for Research defines it as “the scientific and methodological basis for producing superior research, including adherence to ethical rules and the meticulous documentation of data and results”. Similarly, **the National Academy of Sciences (NAS)** emphasizes the use of reliable processes to ensure integrity, highlighting researchers’ commitment to transparency in design, execution, and analysis, with a focus on objectivity and scientific responsibility. **Francis Crick Institute** also frames research practice as “a system governing the transparent and honest conduct of science” (**Bouali & Obeidi, 2025, pp. 44–45**).

A critical component of this commitment to honest and transparent reporting is **academic writing**, which serves as the primary vehicle for disseminating research findings. In its most specific sense, **scientific writing** refers to the composition of a research paper in a standardized format for publication in a scholarly journal. In a broader context, it encompasses scientific reviews that synthesize previously published work, grant proposals, and both oral and illustrative presentations at academic conferences. This broader definition also includes efforts to communicate scientific knowledge to non-specialist audiences through books and other media, often referred to as science writing (**Day & Gastel, 2008, p. 17**). While academic writing often adheres to structured and standardized formats, the act of writing itself is fundamentally a creative endeavor. Creativity, in conjunction with critical thinking, is



identified as a key determinant of success and one of the most vital qualities a researcher can possess (Al-Rabban, 2020, p. 21).

Together, research practice and academic writing form the core pillars of scholarly work: the former governs the ethical and methodological conduct of inquiry, while the latter ensures the clear, honest, and effective dissemination of its findings. Both are guided by shared principles of integrity, transparency, and responsibility to the academic community and society at large.

2. The Contributions of Artificial Intelligence to Academic Writing and Scientific Research (Benefits of AI in Research Writing):

The integration of artificial intelligence (AI) into scientific research has profoundly reshaped the scholarly landscape, yielding significant benefits across the entire research lifecycle by enhancing efficiency, objectivity, and accessibility (Lutfi & Al-Aklabi, 2023, p. 6). AI serves as a powerful complementary tool to traditional methods, helping researchers achieve accurate and trustworthy results more swiftly while conserving significant time, effort, and cost without compromising quality (Himer, 2024, p. 208; Lutfi & Al-Aklabi, 2023, p. 6). This contributes to more robust and competitive scientific work (AlSamhori & Alnaimat, 2024, p. 261).

1.2. Accelerating Discovery and Innovation:

- AI acts as a powerful catalyst for discovery and innovation by enhancing researchers' capabilities and providing immediate insights derived from the vast global corpus of scientific knowledge (Himer, 2024, p. 208; CU-AI NEXSUS Team, 2025, pp. 33-34).
- It automates the classification and indexing of scientific references, significantly improving knowledge organization and retrieval, which in turn fuels new investigations and accelerates the design of novel products and solutions (Himer, 2024, p. 208; CU-AI NEXSUS Team, 2025, pp. 33-34).
- Moreover, this technological empowerment fosters a more robust, equitable, and efficient research ecosystem, the entire by accelerating scholarly process from idea generation and experimentation to the timely dissemination of findings (Ugwu et al., 2024, p. 31; CU-AI NEXSUS Team, 2025, pp. 33-34).
- It also cultivates dynamic educational and research environments through interactive digital platforms that support inquiry-based learning (Himer, 2024, p. 208).
- In addition, AI applications generally boost research productivity and accessibility through intelligent automation, advanced analytical capabilities, and optimizing access to digital scientific resources, leading to substantial cost reductions (Himer, 2024, p. 208; CU-AI NEXSUS Team, 2025, pp. 33-34).
- It further contributes to predicting technological trends and analyzing patents, thereby improving institutional research and development processes (CU-AI NEXSUS Team, 2025, pp. 33-34).
- AI also provides advanced solutions to complex problems that would be challenging for humans to resolve with comparable speed or accuracy, fostering the development of new technologies that enhance productivity and elevate the quality of life (Bonnet, 1993, p. 11).

2.2. Streamlined Research Tasks and Workflow

- AI fundamentally transforms research workflows by automating routine and repetitive tasks, thereby liberating researchers to concentrate on higher-order intellectual endeavors (AlSamhori & Alnaimat, 2024, p. 261). Specifically, AI can assist with preliminary language checking and initial draft formulation, accelerating the writing process and generating near-error-free foundational texts (AlSamhori & Alnaimat, 2024, p. 261). This automation allows scholars to redirect their efforts toward critical analysis, profound interpretation, and the generation of original, creative thought (AlSamhori & Alnaimat, 2024, p. 261).



- Furthermore, AI substantially enhances the research process through its assistance in study design and hypothesis formulation. It can analyze extensive literature to pinpoint research gaps, generate novel research questions, process large datasets, detect subtle patterns, propose innovative hypotheses, and assist in selecting appropriate variables and data collection methodologies for experiments (CU-AI NEXSUS Team, 2025, p. 76).

3.2. Enhancing Academic Writing and Editorial Quality

- AI contributes substantially to manuscript preparation and quality assurance (Ugwu et al., 2024, p. 31). It offers various applications that enable researchers to meticulously audit and review their work, preventing errors that could compromise quality (Ugwu et al., 2024, p. 31). AI-based tools can support manuscript drafting, streamline citations, and create bibliographies (AlSamhori & Alnaimat, 2024, p. 261; Ugwu et al., 2024, p. 31).
- AI-powered grammar and style checkers, such as Grammarly and Hemingway Editor, enhance the clarity, coherence, and fluency of scholarly texts by identifying grammatical errors and improving writing style (AlSamhori & Alnaimat, 2024, pp. 260-261; Dinçer, 2024, p. 141; Ugwu et al., 2024, p. 31).
- Advanced language models like Google's Gemini and OpenAI's GPT-4 can generate human-like text, enable cross-lingual translation via multilingual chatbots, and draft structured content (AlSamhori & Alnaimat, 2024, pp. 260-261; Dinçer, 2024, p. 141).
- Additionally, AI tools aid in identifying suitable sources, providing pertinent lists from documents or databases, assisting in selecting appropriate journals, and analyzing research impact through citation tracking (CU-AI NEXSUS Team, 2025, pp. 33-34; Dinçer, 2024, p. 141).
- The integration of AI tools into institutional peer review mechanisms is also recommended to enhance the reliability, accuracy, and credibility of scientific outputs (CU-AI NEXSUS Team, 2025, pp. 33-34).

4.2. Improving Data Analysis, and Interpretation:

- AI fundamentally transforms data analysis and interpretation through its capacity to rapidly and efficiently process vast datasets,
- accelerating scientific discovery and supports more informed decision-making by uncovering complex patterns and generating insights that may elude manual detection (Dinçer, 2024, p. 140); Bonnet, 1993, p. 11). This contribution is particularly evident in fields such as biomedicine and the social sciences (Dinçer, 2024, p. 140; AlSamhori & Alnaimat, 2024, pp. 260-261).
- AI also enhances practical research instruments, for instance, systems such as ChatGPT to improve medical survey design, accelerate data processing, and modernize reporting practices for better healthcare outcomes (AlSamhori & Alnaimat, 2024, pp. 260-261).
- Thus, while AI serves as a powerful tool for extracting meaningful insights and expediting the research lifecycle, its application must be guided by strict ethical principles to preserve the credibility of scientific inquiry.

5.2. Literature Review Automation:

- The automation of literature reviews by AI constitutes a “qualitative leap” in research methodology, enabling scholars to sift through vast volumes of publications to identify and synthesize pivotal findings with unprecedented efficiency (Himer, 2024, p. 208).
- Natural Language Processing (NLP) algorithms can rapidly analyze thousands of articles, identifying major trends, gaps, and relationships within the literature via tools such as Iris.ai and Scite (Himer, 2024, p. 208; Dinçer, 2024, pp. 140–141).



- By systematically classifying and analyzing studies, these tools significantly streamline the review process, scanning and summarizing extensive scholarly literature, allowing for rapid access to pertinent information and conserving valuable researcher time for deeper engagement with the latest scholarly developments. (AlSamhori & Alnaimat, 2024, pp. 260-261).

6.2. Upholding Academic Integrity through Plagiarism Detection:

- Advanced AI algorithms assist in maintaining academic integrity by automatically detecting plagiarism, fabricated data, or suspicious citations in scientific research (CU-AI NEXSUS Team, 2025, pp. 33-34).
- AI acts as a preventive tool against academic dishonesty by tracking and holding accountable those responsible for such acts (Himer, 2024, p. 209).
- AI-based plagiarism detection systems such as “Turnitin AI Writing Detection” and “Crossref Similarity Check” identify unoriginal or AI-generated content, leveraging machine learning to analyze patterns, structure, and originality in submissions against vast databases (Mpolomoka et al., 2025, p. 322; CU-AI NEXSUS Team, 2025, pp. 33-34).

In summary, AI serves as a transformative force in academia, augmenting human capabilities from conceptualization to dissemination. Its responsible application, guided by clear ethical standards, promises to democratize knowledge, boost productivity, and foster a more robust and efficient research ecosystem.

3. ethical dilemmas of using artificial intelligence in research writing

The integration of Artificial Intelligence (AI) into academic writing and scientific research has introduced a complex landscape of ethical dilemmas, probing the fundamental principles of academic integrity and scholarly practice (Ugwu et al., 2024, pp. 31-32). These challenges extend beyond simple procedural matters to foundational questions concerning intellectual ownership, necessitating a careful and considered approach to ensure AI is used responsibly within the scientific community (Himer, 2024, p. 210; Ugwu et al., 2024, pp. 31-32).

1.3. Ethical dilemmas of the misuse of artificial intelligence

Core ethical dilemmas encompass a wide range of concerns, including **bias**, privacy, responsibility, and transparency, all requiring precise norms and diligent human oversight (AlSamhori & Alnaimat, 2024, p. 261). The potential for AI's misuse can detrimentally impact the ethical foundations and control mechanisms of scientific inquiry (Himer, 2024, p. 210). Specific unethical practices that parallel or are exacerbated by AI include coercion, manipulation, endangerment, deception, insensitivity, exploitation, false promises, privacy violations, academic plagiarism, concealment of research flaws, and disregard for negative results (Chinaz & Abdel Wahab, 2020, p. 271; Himer, 2024, p. 198).

Furthermore, the quality and reliability of AI-generated content demand rigorous fact-checking by human authors to prevent misinformation (Ugwu et al., 2024, pp. 31-32).

2.3. The Risks of Over-Reliance on AI in Scientific research

Conversely, these technological advancements pose a potential risk to fundamental human competencies. Excessive reliance on AI-generated information creates a danger of eroding critical thinking, problem-solving abilities, and creativity, a concern that also extends to researchers (AlSamhori & Alnaimat, 2024, p. 261; CU-AI NEXSUS Team, 2025, p. 20). Furthermore, the automation of professional tasks risks devaluing meaningful human contributions, potentially leading to a decline in expertise and diminished professional satisfaction within both scientific and artistic disciplines.



1.2.3. violation of integrity

The integration of AI has brought forth significant challenges to academic integrity, notably through the emergence of AI-related plagiarism, which involves presenting AI-generated content as original human work, thereby undermining intellectual honesty (Mpolomoka et al., 2025, p. 322). This issue manifests as “AI-giarism,” where AI-generated texts are incorporated into academic writing without proper attribution, constituting a clear violation of integrity, especially when used to produce entire reports (Dincer, 2024, p. 141). The use of machine-generated materials, such as fully automated articles or fabricated data to deceive reviewers, blurs the lines of authorship, complicates verification, and erodes the overall credibility of scholarly publications (AlSamhori & Alnaimat, 2024, p. 261). These challenges are compounded by technical limitations inherent in AI tools, such as the propensity to fabricate sources or misattribute content to non-existent studies, mandating meticulous human verification of all AI-suggested references to maintain scholarly rigor (Dincer, 2024, p. 141). Moreover, an over-reliance on AI for text generation risks diminishing a researcher's active and critical role in the knowledge production process, potentially undermining the depth of scholarly engagement (Dincer, 2024, p. 141).

To address these evolving challenges, ethical frameworks increasingly emphasize transparency as a cornerstone of responsible AI use. For example, the 2023 revision of the European Code of Conduct for Research Integrity mandates that researchers disclose their methodologies, including the use of AI tools, considering deliberate concealment a violation of integrity (Resnik & Hosseini, 2025, p. 1500).

2. 2.3. The problem of scientific plagiarism

The problem of scientific plagiarism also extends significantly amplified by AI. The consequences of scientific plagiarism are severe, eroding the capacity for honest research, fostering an indifference toward information sources, and cultivating academically fragile and intellectually weak mindsets competition (Chinaz & Abdel Wahab, 2020, p. 271). This ultimately leads to societies devoid of a research mentality and stifles creativity and competition (Chinaz & Abdel Wahab, 2020, p. 271).

Furthermore, scientific theft disrupts societal values by elevating undeserving individuals, impeding genuine scientific research by shifting focus from innovation to mere copying, and consequently stalling knowledge advancement and the development of beneficial insights (Himer, 2024, p. 212). This stagnation can leave societal problems unaddressed, exacerbating conditions in sectors reliant on research-based solutions (Himer, 2024, p. 212).

The prevalence of such practices reflects a shortage of competent researchers, hindering local participation in global scientific progress and delaying adaptation to rapid knowledge growth (Himer, 2024, p. 212). Scientific institutions, in such environments, fail in their role to foster capable researchers and contribute to societal advancement (Himer, 2024, p. 212). Critically, scientific theft, plagiarism, and deception violate intellectual property rights and tarnish both personal and institutional reputations (Himer, 2024, p. 212).

4- AI Best Practices in Academic Writing and Research

The integration of Artificial Intelligence (AI) into academic writing and scientific research presents significant opportunities for increased efficiency, precision, and data accessibility. However, it equally mandates strict adherence to ethical best practices to preserve research integrity. The ethical challenges primarily stem from researchers' conduct, as AI tools themselves are inherently neutral and can either enhance or compromise academic standards. To leverage AI effectively while mitigating its risks, a framework of best practices emphasizes the acquisition of skills over sole reliance on AI, clear



usage guidelines, and profound transparency (AlSamhori & Alnaimat, 2024, p. 37). The prevailing consensus is that AI in scientific writing is acceptable, provided that ethical considerations such as plagiarism, transparency, and proper disclosure are rigorously addressed (Ugwu et al., 2024, p. 31).

1.4. Mandatory Human Oversight and Ethical AI Integration in Academic Research

Mandatory human oversight is indispensable for the ethical integration of artificial intelligence (AI) in academic research, with authors retaining full responsibility for the content and ensuring adherence to ethical publishing standards (Ugwu et al., 2024, p. 37). Publishers universally underscore human accountability, data authenticity, and transparency in published work, reflecting a growing consensus on the necessity of ensuring ethics, transparency, and scientific integrity (Ugwu et al., 2024, p. 37; Cairo University, 2025, pp. 123-124).

Over-reliance on AI without human intervention poses substantial risks, as AI systems can produce content that appears credible but may contain factual inaccuracies or fabricated citations, potentially leading to "AI-assisted citation hacking" and undermining the evidence-based nature of academic research (Ugwu et al., 2024, p. 40). Fundamentally, AI tools inherently lack the higher-order reasoning, critical judgment, and contextual understanding crucial for ensuring the accuracy, integrity, and reliability of scholarly publications (Ugwu et al., 2024, p. 40; AlSamhori & Alnaimat, 2024, p. 262).

2.4. AI Authorship and Proper Attribution

There is a universal agreement that AI should not be listed as an author or co-author on research papers. This stance stems from AI systems being non-legal entities, incapable of fulfilling authorship obligations such as accountability, consent, and contractual assurances. While AI-generated content may possess an authoritative tone, it can be incorrect, biased, or incomplete, rendering human responsibility paramount. This position aligns with guidelines from leading organizations like the Committee on Publication Ethics (COPE) and major publishers (Ugwu et al., 2024, pp. 37-38; Cairo University, 2025, p. 110).

3.4. Mitigating Plagiarism: Reworking and Citation

AI-generated content is considered plagiarism if authors fail to acknowledge its use, primarily because AI models are often trained on existing human works without proper attribution. To prevent claims of plagiarism, authors are required to substantially rephrase AI-generated content in their own words and meticulously cite all original sources (Ugwu et al., 2024, pp. 37-38). A comprehensive strategy combining clear ethical policies, educational initiatives, and advanced detection technologies is essential to promote responsible AI adoption in academia (Mpolomoka et al., 2025, p. 322).

4.4. Transparency and Disclosure of AI Use in Academic Research

Transparency is paramount for academic integrity and the ethical integration of artificial intelligence (AI) in scholarly research, with its disclosure mandated by major international standards such as UNESCO and the Committee on Publication Ethics (COPE), as well as leading publishers like Elsevier and Springer (Cairo University, 2025, p. 110). Researchers are ethically obligated to explicitly declare when and how AI was utilized in any aspect of their work, including data analysis, writing, translation, or design, as failure to do so constitutes an ethical violation that may lead to publication retractions or academic sanctions (Cairo University AI NEXSUS, 2025, p. 111).

5.4. Foundational Principles for Responsible AI Integration

The ethical deployment of AI in research hinges on a shift in focus from the capabilities of the technology to the responsibility of its human users. As Demis Hassabis, CEO of Google DeepMind, suggests, "First solve AI, then use AI to solve everything else" (as cited in Russell & Norvig, 2021, p.



86), advocating for mastery before widespread application. Complementing this, Eric Brynjolfsson emphasizes that “The future is not preordained by machines. It’s created by” humans (**as cited in Russell & Norvig, 2021, p. 1834**), underscoring human agency and responsibility in directing AI ethically and safely.

5. Ethical Guidelines for AI Use in Research Writing

Despite the rapid increase in the use of Artificial Intelligence (AI) in scientific research, comprehensive ethical guidance for its application has not kept pace. While AI tools have become prevalent across various scientific tasks, specific ethical frameworks for their use are largely absent. Broader AI ethics codes, such as UNESCO's 'Ethics of Artificial Intelligence' and the Office of Science and Technology Policy's “Blueprint for an AI Bill of Rights”, offer general guidance on AI development and use, but they lack specific instructions for AI's role in scientific research (**Resnik & Hosseini, 2025, p. 1500**). The most detailed guidance available often pertains to AI's use in writing and editing scientific manuscripts. For instance, the National Institutes of Health (NIH) provides guidelines on using AI for this specific task, but not for other research applications (**Resnik & Hosseini, 2025, p. 1500**).

A comprehensive strategy combining clear ethical policies, educational initiatives, and advanced detection technologies is essential to promote responsible AI adoption in academia (**Mpolomoka et al., 2025, p. 322**).

1.5. Mitigating Scientific Misconduct in the Age of AI

Based on the analysis of policies and expert opinions, the integration of AI into scientific writing can be beneficial if certain ethical standards are upheld. Institutions must establish and enforce research charters that include clear guidelines on the appropriate use of AI tools, ensuring they augment and assist human effort rather than replace it, thereby upholding scientific honesty and ethics (**Himer, 2024, p. 213**). To guide this process, institutions or publishers should consider the following key components when adopting a policy on the use of AI:

1.1.5. Transparency and Disclosure Requirements:

The ethical integration of AI in academic research is fundamentally anchored in the principle of transparency, mandated by major international standards. Global bodies such as UNESCO and the Committee on Publication Ethics (COPE), alongside leading publishers like Elsevier and Springer, universally require the disclosure of AI use at any stage of the publication process and explicitly prohibit listing AI tools as authors (**Cairo University, 2025, p. 110**). Researchers are obligated to provide a clear, straightforward declaration regarding any application of artificial intelligence (AI) within their work to ensure scholarly integrity and facilitate the proper evaluation of the technology's impact (**AlSamhori & Alnaimat, 2024, p. 262**). This comprehensive disclosure should be situated in a relevant section of the manuscript, such as the methodology or acknowledgments, and must specify the exact tools employed—including the name, model, version, and manufacturer—alongside the specific extent and purpose of their application (**AlSamhori & Alnaimat, 2024, p. 261; Ugwu et al., 2024, p. 38**). Beyond mere technical documentation, a critical assessment is required to define how AI influenced the research processes and outcomes, a practice that aids in navigating privacy and integrity considerations and defining the AI's role within the study (**AlSamhori & Alnaimat, 2024, p. 262**).

2.1.5. Human Oversight and Critical Judgment:

A fundamental ethical principle governing the use of AI in academia is the indispensability of human oversight. Scholars assert that AI must serve as a tool to support, not supplant, human judgment and critical reasoning. Researchers must retain final control over the research process, utilizing AI to



aid their analysis while ensuring their own expertise remains central to drawing conclusions (AlSamhori & Alnaimat, 2024, p. 262). This principle is explicitly reflected in the editorial policies of major global publishers, which universally prohibit its use to supplant human intellectual effort or critical thinking, while permitting limited application for language polishing or grammatical improvement (CU-AI NEXSUS, 2025, pp. 123–124). This regulatory trend underscores a growing consensus on the necessity of ensuring ethics, transparency, and scientific integrity in research (Cairo University, 2025, pp. 123-124).

2.5. Ethical AI Development and Application: Technical Solutions

AI technologies must be developed and employed ethically, adhering to principles of accountability, transparency, and justice. This includes creating unbiased models with interpretable decision-making processes and utilizing such technologies, like plagiarism detection software, to safeguard research ethics, academic integrity, and the rights of all individuals involved (AlSamhori & Alnaimat, 2024, p. 262, Himer, 2024, p. 213). Reliable detection tools such as Copyleaks and Turnitin are recommended as a first layer of verification, followed by human review (CU-AI NEXSUS, 2025, p. 110).

3.5. Legal Measures:

1.3.5. Establishing Clear Policies and Guidelines for AI Usage

Clear, updatable policies and guidelines are essential for the responsible use of AI in various domains of research. These protocols should specify allowable applications in scholarly work, emphasize creativity preservation, and mandate proper citation to uphold scientific ethics (AlSamhori & Alnaimat, 2024, p. 262). Furthermore, such policies must undergo ongoing review and updating to keep pace with the rapidly evolving capabilities and applications of AI in the scientific domain (Ugwu et al., 2024, p. 41).

2.3.5. Intellectual Property Rights

Policies must clearly define how AI data and materials will be treated. This includes identifying who owns the research outcomes generated by AI and ensuring that its application does not infringe on intellectual property rights. AI should not be credited with authorship or co-authorship, as it is a non-legal entity that cannot be held responsible for the submitted content. (AlSamhori & Alnaimat, 2024, p. 262). Establish and enforce legal systems to combat scientific theft, including penalties like revoking academic titles for plagiarists and intellectual property violators (Himer, 2024, p. 213). Ultimately, the researcher is solely responsible for the integrity, originality, and accuracy of published texts (AlSamhori & Alnaimat, 2024, p. 262).

3.3.5. Overview of AI Governance Frameworks in Scientific Research

The ethical governance of AI in scientific research operates within a multi-tiered structure integrating global norms, regional law, and national policy, all prioritizing accountability, transparency, and risk management.

- **Global Level:** Foundational guidance is established by the “UNESCO Recommendation on the Ethics of AI (2021)”, the first international instrument mandating a human-rights-based approach for states and institutions, and the complementary “OECD AI Principles (2019)”, which promote values of robustness and safety for trustworthy innovation (Cairo University, 2025, p. 82). Given the importance of AI ethics, Article 106 of the UNESCO Recommendation stipulates that member states must develop AI ethics curricula for all educational levels, in line with their educational, social, and national traditions, and prepare e-lessons and digital resources for teaching AI ethics in local and indigenous languages (Badeer, 2025, pp. 31, 40).



- **Regional Level:** The European Union's pioneering “AI Act (2024)” enacts a binding, risk-based regulatory model, imposing strict transparency requirements on high-risk applications—including many research tools—with broad extraterritorial effect (**Cairo University, 2025, p. 82**). Complementary initiatives like the “Paris Call on Trustworthy AI (2023)” further urge academic bodies to implement concrete ethical oversight (**Cairo University, 2025, p. 83**).
- **Arab Level:** Egypt exemplifies the localization of these principles through its “National AI Strategy (Digital Egypt 2030)”, which sets tangible targets for capacity building and research development (**Cairo University, 2025, p. 84**). This strategic vision is supported by a domestic legal framework, including the “Personal Data Protection Law (2020)” and the “Cybercrime Law (2018)”, which provide crucial safeguards for data security and privacy in AI applications (**Cairo University, 2025, p. 83**). Operationalization within academia is achieved through specific guidelines like the “Egyptian Supreme Council of Universities' AI Guide (2025)”, which directs institutional policy to ensure research integrity (**Cairo University, 2025, p. 84**). Furthermore, institutional strategies, such as the “Cairo University AI Strategy (2024)”, demonstrate practical integration by focusing on the ethical and responsible embedding of AI across teaching, research, and community service, in alignment with national objectives (**Cairo University, 2025, p. 83**).
- Although Algeria is not yet featured in international artificial intelligence rankings and indicators, the country has already begun laying the foundational groundwork for progress in this field. According to a senior official within the Ministry of Higher Education, Algeria has developed its national AI strategy (2020–2030), which, under an ambitious programme, provides for the establishment of a national university dedicated to training top-performing secondary school graduates as engineers (**Al Asad, 2023, 173**).

4.5. Promoting Awareness and Education About Ethical AI Practices

A comprehensive educational strategy is essential for fostering ethical AI use in research. This strategy begins with integrating research and AI ethics into academic programs and increasing related seminars, conferences, and workshops to cultivate a foundational research mentality grounded in accountability and integrity (**Himer, 2024, p. 213**). These forums provide critical avenues for discussing current developments in AI ethics and best practices. The knowledge gained from such education is a key inducement for correctly utilizing AI tools in the long term, enabling the responsible adoption of AI's advantages (**AlSamhori & Alnaimat, 2024, p. 262**). For faculty members acting as primary supervisors and research evaluators, it is crucial to learn how to monitor and detect AI tool usage in student academic or research output within permitted limits.

- **Organizations** must complement academic efforts by offering targeted training programs for professionals, students, and researchers, addressing practical issues like data privacy and intellectual property rights (**AlSamhori & Alnaimat, 2024, p. 262**). Furthermore, establishing specialized programs to develop the creative capabilities and advanced research skills of faculty members is crucial, as it empowers them to utilize legitimate technological tools effectively and prevents recourse to unethical shortcuts (**Himer, 2024, p. 214**). These combined efforts work to develop a deep scientific conscience, fostering a sustained sense of ethical responsibility in researchers towards their work, field, and society (**Himer, 2024, p. 214**).
- **Ethical Review Boards:** Establishing AI ethics committees to review high-risk research and ensure compliance with ethical standards is critical. For universities, as entities responsible for implementing and monitoring compliance with guidelines for using these tools within their faculties and institutes, this is achieved by creating specialized AI ethics committees to review research projects, establish clear



internal policies, and organize training courses to increase awareness among students and faculty about responsible AI use (CU-AI NEXSUS, 2025, p. 16).

- **Characteristics of a Good Researcher (Religious and Creative Solutions):** Recommendations include preparing generations of researchers capable of exploiting AI tools and applications in accordance with religious and ethical values derived from Islamic belief (Naeem, 2024, p. 644). This involves revitalizing ethical and religious values to strengthen researchers' sense of moral and divine accountability, emphasizing proper attribution, and developing specialized programs to train researchers in advanced research skills.

6. Final conclusion AI ethics:

The profound implications of unbridled AI development are not to be underestimated; indeed, prominent thinkers like Stephen Hawking have cautioned that AI's rapid evolution could swiftly outpace human comprehension and control, potentially leading to an existential threat to humanity given our biological limitations (Othman, 2022, p. 227). Philosophically, this concern is amplified by Martin Heidegger's critique, which views technology, including AI, as an autonomous mental system oriented towards material interests, risking the depletion of natural resources, the erosion of cultural values, and an increasing alienation from the shared human experience and the natural world (Naeem, 2024, p. 637).

Ultimately, the overarching question remains: "What future do we desire?"

The complexities of this inquiry transcend purely scientific or technological solutions, demanding an enduring reliance on philosophy and ethics (Badeer, 2025, pp. 31, 44). While scientific ingenuity may resolve technical challenges inherent in developing autonomous AI, the paramount necessity is the cultivation of a responsible human researcher deeply rooted in ethical values (Badeer, 2025, pp. 31, 44). Such a researcher embodies a blend of ethical and cognitive virtues, including a profound understanding of epistemological systems—such as the Islamic epistemological system that bridges revelation and reality—and an awareness of humanity's role as stewards. This foundational understanding directs AI utilization to serve human and ethical values, thereby achieving a critical equilibrium between technological innovation and human ethics (Naeem, 2024, p. 640). Through this concerted effort, universities and research institutions can harness the vast potential of AI, forging a powerful synergy between human creativity and technological advancement that genuinely serves the cause of knowledge and sustainable development (Cairo University AI NEXSUS, 2025, p. 176).

References

AlSamhori, A. R. F., & Alnaimat, F. (2024). **Artificial intelligence in writing and research: Ethical implications and best practices**. *Central Asian Journal of Medical Hypotheses and Ethics*, 5(4), 259–268. <https://doi.org/10.47316/cajmhe.2024.5.4.02>

Dinçer, S. (2024). **The use and ethical implications of artificial intelligence in scientific research and academic writing**. *Educational Research & Implementation*, 1(2), 139–144. <https://doi.org/10.14527/edure.2024.10>

Himer, F. (2024). **Research ethics in the context of artificial intelligence**. *Critical Journal of Law and Political Sciences*, 19(3), 196–218.

Mpolomoka, D. L., Luchembe, M., Mushibwe, C., Muvombo, M., Changala, M., Sampa, R. L., &



Banda, S. (2025). **Artificial intelligence-related plagiarism in education: A systematic review.** European Journal of Education Studies, 12" (4), 321–333. <https://www.oapub.org/edu>

Resnik, D. B., & Hosseini, M. (2025). **The ethics of using artificial intelligence in scientific research: New guidance needed for a new tool.** "AI and Ethics", 5", 1499–1521. <https://doi.org/10.1007/s43681-024-00493-8>

Russell, S. J., & Norvig, P. (2021). Artificial intelligence: A modern approach. (4th ed.). Pearson series in artificial Intelligence. Updated edition of popular textbook on Artificial Intelligence,

Ugwu, N. F., Igbinlade, A. S., Ochiaka, R. E., Ezeani, U. D., Okorie, N. C., Opele, J. K., Onayinka, T. S., Iroegbu, O., Onyekwere, O. K., Adams, A. B., Aigbona, P., & Ojobola, F. B. (2024). **Clarifying ethical dilemmas of using artificial intelligence in research writing: A rapid review.** Higher Learning Research Communications, 14" (2), 29–47. <https://doi.org/10.18870/hlrc.v14i2.1549>

UNESCO. (2018). Report of the COMEST on robotics ethics. United Nations Educational, Scientific and Cultural Organization.

- الأسد، صالح. (2023). **الذكاء الاصطناعي: الفرص والمخاطر والواقع في الدول العربية.** مجلة إضافات اقتصادية، 7" (1)، 184–165.

- الربان، موزة بنت محمد. (2020). **دليل الكتابة والنشر في المجلات العلمية.** (ط. 1). مؤسسة الربان للدراسات والبحوث.

- السيد، منى توكل. (2013). **أخلاقيات البحث العلمي.** جامعة المجمع، كلية التربية، قسم العلوم التربوية. الزلفي

- المنظمة العربية للتربية والثقافة والعلوم، إدارة العلوم والبحث العلمي (ألكسو). (2024–2023). **دليل أخلاقيات البحث العلمي العربي والذكاء الاصطناعي: المبادئ والأسس والضوابط.** ألكسو. - بدير، نازك سلمان. (2025، سبتمبر). **الذكاء الاصطناعي وأخلاقيات البحث العلمي.** أوراق ثقافية: مجلة الآداب والعلوم الإنسانية، 28–47.

- بوعلي، أصالة، وعبيدي، توفيق. (2025). **أخلاقيات الممارسة البحثية في ظل التحول الرقمي.** مجلة الحوار الثقافي، 14" (1)، 59–41.

- بونيه، آلان. (1993). **الذكاء الاصطناعي واقعه ومستقبله.** تر: علي صبري فرغلي. عالم المعرفة، - داي، روبرت أ، وجاستيل، باربرا. (2008). **كيف تكتب بحثاً علمياً وتنشره.** (محمد إبراهيم حسن وآخرون، مترجمين؛ ط. عربية أولى). الدار المصرية اللبنانية.

- شينار، سامية. ومداسي، عبد الوهاب. (2020). **أخلاقيات البحث العلمي في ظل التطور التكنولوجي.** مجلة سوسولوجيا، 4" (2)، 275–258

- عثمان، عبد المجيد بلدي. (2022). **آلان تورينغ والانتقال من آليات التفكير إلى آلة التفكير.** "مجلة الحوار الثقافي، 11" (2)، 231–217



فريق أكاديمي لإعداد الدليل من جامعة القاهرة (2025). (CU-AI NEXSUS). دليل استخدام الذكاء الاصطناعي في ممارسات البحث العلمي بجامعة القاهرة، استراتيجية جامعة القاهرة للذكاء الاصطناعي. جامعة القاهرة. اصدار نوفمبر.

- مجموعة من الباحثين. (2024). الذكاء الاصطناعي " رؤى متعددة التخصصات"، المركز الديمقراطي العربي للدراسات الاستراتيجية، الاقتصادية والسياسية، برلين – ألمانيا، الطبعة الأولى.

<https://democraticac.de>

- منظمة الأمم المتحدة للتربية والعلم والثقافة (اليونسكو). (2023). إرشادات استخدام الذكاء الاصطناعي التوليدي في التعليم والبحث، التعليم حتى عام 2030. تر: محمد حامد اسماعيل صدقي. فرنسا. نعيم، عرفة أحمد حسن. (2024). "أخلاقيات استخدام تطبيقات الذكاء الاصطناعي في البحث العلمي. مجلة التربية، 204". (2). 635-647.

- لطفي، محمد حسام، والأكلبي، علي بن زيب. (2023). دليل أخلاقيات استخدام تطبيقات الذكاء الاصطناعي في مجال البحث العلمي. (ط. 1). دار سهام للنشر والتوزيع. قسنطينة-الجزائر.

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