Case Report

The ethical aspects of AI in scientific publishing

Joris R. Delanghe[1*]

[1]*Department of Diagnostic Sciences, Ghent University, Belgium*

Article Info

[*]***Corresponding Author:***
Joris R. Delanghe
Department of Diagnostic Sciences, Ghent university, Belgium
E-mail: joris.delanghe@ugent.be
ORCID: 0000-0002-5702-6792

Keywords
artificial intelligence, ethics, medical publishing

Abstract

Introduction: Printing allowed the scientific revolution. Scientific journals established peer review. AI is driving the next wave of scientific progress. Ethical aspects of AI in publishing are an emerging area of concern.

Key issues: AI tools are used in generating papers. This raises questions about authorship and accountability: who is responsible? If AI contributes, should they be credited as authors? Are researchers accountable for AI-generated content? If AI is involved in writing, this should be disclosed to maintain transparency. Otherwise, there could be concerns about misrepresentation or lack of rigor.

Another consequence is intellectual property: if AI generates portions of a paper, who owns the rights to that work? Frameworks for intellectual property were designed for human creators, so these might be rethought. Many journals require a written statement regarding AI use. AI use in publishing could exacerbate inequality in research access, leading to a divide between well-funded and less-funded institutions. Global inequality in science sharpens: AI might skew research toward countries with more technological resources.

AI can be used to assist peer review. This challenges peer review integrity: relying on AI could undermine the integrity of human oversight. AI does not replace but complements reviewers' expertise. AI-driven tools might lack the nuanced human understanding. Over-reliance on AI could compromise publishing quality.

Conclusion: AI offers possibilities to speed up and to improve scientific publishing, but it is essential to judge and to address the ethical implications. This requires guidelines and rules warranting an honest, transparent and integer approach of publishing.

Introduction

Book printing allowed for the mass distribution of scientific ideas, kicking off the scientific revolution. Scientific journals established formal peer review and standardized scientific communication, accelerating the exchange of knowledge. The internet exponentially increased access to research and fostered global collaboration, making scientific progress faster and more inclusive.

When OpenAI launched ChatGPT - a natural language processing chatbot driven by generative Artificial Intelligence (GenAI) - in November 2022 [1], it became the fastest-growing consumer application in history, reaching 100 million active users in just two months after its launch [2]. AI is now driving the next wave of scientific progress, enabling faster analysis, discovery, and innovation, and changing how research is conducted and applied. There are definitely potential benefits and challenges associated with the use of AI in scientific writing [3]. As data generation increases, AI is employed to handle the complex analysis required. AI enables the analysis of enormous datasets from large scale experiments in ways that were previously impossible. AI has been helping accelerate discoveries by processing vast amounts of data at speeds far beyond human capabilities. This is especially visible in rapidly progressing fields like drug discovery and genomics e.g. AI-driven tools like AlphaFold (predicting protein structures) have revolutionized medicine, solving a problem that had stumped scientists for decades. AI became a significant force in scientific progress in the 2000s with the advent of machine learning and deep learning technologies. AI has brought profound changes to how research is conducted, from data analysis to hypothesis generation.

AI and research

AI tools are increasingly automating many aspects of research (e.g., in areas like hypothesis generation, experimental design, and simulation). In medical research, AI is used not only for analyzing patient data and predicting disease outcomes but also for creating personalized treatment plans. AI can identify potential drug candidates more quickly than traditional methods. The COVID-19 pandemic spurred AI applications for vaccine development, epidemiological modeling, and diagnostics.

Researchers are leveraging AI to predict outcomes and guide experiments, reducing the time needed for testing and discovery.

AI - based tools are being used to assist in scientific writing, generating reports, and proposing new research directions. Integration of AI in science is driven by significant investment. Research organizations/universities are building AI-focused units to foster this growth. Venture capital is flowing into AI-powered startups in science, aiming at tackling complex problems and bringing innovations to market faster. In recent years, the ethical aspects of AI in scientific publishing are an important and emerging area of concern [4, 5, 6]. A balanced approach to integrating AI into the writing process is advocated [3]. There are several key issues that need to be considered:

AI and authorship

First of all, authorship and accountability require attention: AI tools are increasingly being used to assist in writing, data analysis, and even generating papers [6]. This raises questions about authorship and accountability: Who is responsible for the research? If AI tools contribute significantly to the work, should they be credited as authors? Should the human researchers be held accountable for AI-generated content? Also, transparency is of importance: if AI is involved in the analysis or writing of a paper, this should be clearly disclosed to maintain transparency. Otherwise, there could be concerns about misrepresentation or lack of rigor. There is potential for AI-generated text to resemble existing research too closely, leading to accusations of plagiarism. It could also be difficult to detect AI-generated work unless proper tools and safeguards are in place. Most scientific journals still rely on the fact that good manuscript reviewers can (still) detect stylistic differences between paragraphs or text parts.

Intellectual property

Another consequence of the use of AI-generated content are the complex intellectual property questions: A first aspect is the ownership: if an AI system generates significant portions of a paper or analysis, there are questions about who owns the rights to that work - the developer of the AI, the user who directed it, or others?

AI has an impact on traditional copyright systems: The existing frameworks for intellectual property were designed with human creators in mind, so these might need to be adapted or rethought in light of AI's role. Many journals require in 2025 a written statement of authors and reviewers regarding the use of AI [7].

In a recent survey [8] 78% of 78 medical journals provided guidance on use of AI in peer review. Of these provided guidance, 59% explicitly prohibit using AI, while 32 allow its use if confidentiality is maintained and authorship rights were respected. Internationally based medical journals are more likely to permit limited use than journals' editorial located in the US or Europe, and mixed publishers had the highest proportion of prohibition on AI use. Among the journals that provided guidance, 91% prohibited uploading manuscript-related content to AI, and 32% permitted restricted use of AI that mandated reviewers disclose in review reports. Regarding the mention of AI tools, 47% cite chatbots, and 27% mention large language models; 32 journals (41%) link to the publisher's website, which had preferences in AI use. Seventeen journals (22%) also provide links to statements from the International Committee of Medical Journal Editors or World Association of Medical Editors that permit limited use of AI, although 5 journals' guidance contradict these statements. The main reason for prohibiting or limited use of AI

is confidentiality concerns (96%).

Funding of AI research

Furthermore, the use of AI in scientific publishing could exacerbate inequality in access to research. Not all researchers, particularly those from underfunded or underrepresented backgrounds, may have access to the cutting - edge AI tools in publishing. This could lead to a divide between well-funded and less-funded research institutions. The global inequality in science is sharpening AI's influence on the publishing process might skew research toward countries with more technological resources, leaving other regions behind. Open AI models (e.g., GPT-NeoX, BLOOM) could narrow the gap by allowing researchers in developing regions to experiment with state-of-the-art tools without major infrastructure investments. AI can help with coding, data analysis, literature reviews, and even experiment design -amplifying individual researchers' productivity.

Effect on publishing practices

In some cases, AI could be abused to manipulate data or present false conclusions, potentially leading to unethical publishing practices. The proliferation of AI-generated papers has also recently led to an increase in predatory publishing practices. Researchers, particularly those from underfunded institutions, may be exploited by publishers that accept low-quality AI-generated manuscripts for a fee. This not only dilutes the quality of scientific literature but also exacerbates inequalities by providing a platform for substandard research [9].

AI and peer review

AI can be used to assist in the peer review process by automating certain tasks like checking for plagiarism, errors, or suggesting improvements. However, this also brings challenges, for example peer review integrity: Relying on AI for parts of the peer review process could undermine the integrity of human oversight. It is essential that AI does not replace but rather complements the expertise and judgment of human manuscript reviewers. AI - driven tools may be fast, but they might lack the nuanced understanding that human reviewers bring to the process. Over - reliance on AI could compromise the quality of modern scientific publishing.

Conclusion

In conclusion, although AI definitely offers many possibilities to speed up and to improve scientific publishing, it becomes essential to judge and to address the ethical implications. This requires a collaboration between scientists, publishers, and ethicists to develop appropriate guidelines and rules which warrant an honest, transparent and integer approach of scientific publishing [3, 4, 8, 9, 10]. According to the International Association of Scientific, Technical and Medical Publishers (STM), the use of AI tools can be allowed for basic author support such as refining, correcting, editing, and formatting text and documents without disclosure, but disclosure becomes necessary when the AI use goes beyond basic author support [11]. The ETHICAL framework, a set of principles has been designed to guide the responsible use of generative AI in scientific research. It emphasizes the importance of ethical considerations such as transparency, accountability, and the mitigation of bias in AI - generated content. [12]. There is an urgent need for scientists to upskill in AI and modern data science to fully utilize the potential of these new tools.

Declaration of Conflict of interests

The author of this article declares that there is no conflict of interest with regard to the content of this manuscript.

Submission declaration

The work described has not been published previously in this form. The article is not under consideration for publication elsewhere. The article's publication is approved. No funding of any kind has supported writing this manuscript.

Authorship

The authors have made contributions to all of the following: The conception of this paper. Drafting the article or revising it critically. Final approval of the version to be submitted

References

1. OpenAI.: Introducing ChatGPT. ChatGPT. https://openai.com/blo g/chatgpt (2022). Accessed 04 April 2025
2. U. Hoffmann-Burchardi, K. Dennean, A. Monnet, A. Stiehler, Gantori S, D.K. Limas, B. Chu, L. Mazziotta, N. Fostieris, A. Saryska. Artificial intelligence: Sizing and seizing the investment opportunity. UBS. https://www.ubs.com/global/en/wealthmanagement/chief-investment-office/features/artificial-intelligence /_jcr_content/mainpar/toplevelgrid_1631332_2034480029/col 3/innergrid/xcol1/linklistnewlook/link.1678347934.file/PS9jb25 0ZW50L2Rhb-S9hc3NldHMvd21hL3VzL3NoYXJlZC9kb2N1b WVudHM-vQXJ0aWZpY2lhbC1pbnRlbGxpZ2VuY2UtU2l6aW 5nL-WFuZC1zZWl6aW5nLXRoZS1pbnZlc3RtZW50LW9wcG9 ydHVuaXR5LnBkZg==/Artificial-intelligence-Sizing-and-seizin g-the-investment-opportunity.pdf (2024). Accessed 08 Jan 2025
3. W. Lambrechts, S. Sinha S, D. Pillay. (2023). The Challenges and Upsides of Using AI in Scientific Writing. IEEE Spectrum. https://spectrum.ieee.org/challenges-upsides-ai-scientific-writing
4. E.S. Rentier. To use or not to use: exploring the ethical implications of using generative AI in academic writing. AI and Ethics 2025; 5: 3421–3425. doi: 10.1007/s43681-024-00649-6
5. M. Sultana. Ethical Use of ChatGPT in Scientific Writing: A Call for Transparent Guidelines and Uniform Editorial Policies. 2023 Canadian Science Policy Centre. https://sci-

encepolicy.ca/posts/ethical-use-of-chatgpt-in-scientific-writing-a-call-for-transparent-guidelines-and-uniform-editorial-policies/
6. R. Thomas. Generative AI Ethics in Academic Writing. Enago Academy. 2023 https://www.enago.com/academy/generative-ai-ethics-in-academic-writing/
7. A.Tang, K.-K. Li, K.O. Kwok, L. Cao, S. Luong, W. Tam. The importance of transparency: declaring the use of generative artificial intelligence (AI) in academic writing. J. Nurs. Scholarsh. 2024;56(2): 314–318 .doi: 10.1111/jnu.12938
8. A. Flanagin, J. Kendall-Taylor, K. Bibbins-Domingo. Guidance for authors, peer reviewers, and editors on use of AI, language Models, and chatbots. JAMA. 2023;330(8):702–703. doi:10.1001/jama.2023.12500
9. D. Mills, A. Branford, K. Inouye, N. Robinson, P. Kingori. "Fake" Journals and the Fragility of Authenticity: Citation Indexes, "Predatory" Publishing, and the African Research Ecosystem. Journal of African Cultural Studies 2021; 33(3): 276–296.
doi: 10.1080/13696815.2020.1864304
10. E. Chetwynd. Ethical Use of Artificial Intelligence for Scientific Writing: Current Trends. SAGE Open 2024. https://journals.sagepub.com/doi/full/10.1177/08903344241235160
11. Generative AI in Scholarly Communications - Ethical and Practical Guidelines for the Use of Generative AI in the Publication Process: STM (International Association of Scientific, Technical and Medical Publishers); 2023 [cited 22/1/2025]. Available from: https://www.stm-assoc.org/wp-content/uploads/STM-GENERATIVE-AI-PAPER-2023.pdf.
12. D. Eacersall, L. Pretorius, I. Smirnov, E. Spray, S. Illingworth, R. Chugh, S. et al. Navigating Ethical Challenges in Generative AI-Enhanced Research: The ETHICAL Framework for Responsible Generative AI Use.2024 https://arxiv.org/abs/2501.09021