

Generative Artificial Intelligence (AI) in Scientific Publications



Twenty-six years earlier in their famous chess rematch, an IBM Supercomputer called Deep Blue defeated then-world chess champion Garry Kasparov: it was the first-ever chess match won by a machine, a much celebrated milestone in the field of Artificial Intelligence. Just last year, the World Association of Medical Editors released the “WAME Recommendations on Chatbots and Generative Artificial Intelligence in Relation to Scholarly Publications,” a recognition of not just the expanding applications of AI in scholarly publishing but more so of the accompanying emergence of concerns on authenticity and accuracy.¹ In recognition of this relevant topic, our Vice Editor in Chief, Dr. Cecile Jimeno, provided a well-attended and interesting talk during the last ASEAN Federation of Endocrine Society Convention in Thailand on the “Emerging Issues on the Use of Artificial Intelligence for Scientific Publications” (Figure 1).

In recent years, AI – particularly Generative AI – has revolutionized numerous industries, and the realm of scientific and scholarly publications is no exception. The advent of AI-driven technologies offers immense potential for enhancing research processes, from literature review to data analysis to targeted dissemination of information. However, alongside these opportunities, are rising concerns that the academic community must face to safeguard the integrity, quality, and equity of scientific research.

AI algorithms can *analyze vast datasets* more efficiently than traditional methods, uncovering patterns and insights that might otherwise remain hidden. This capability can accelerate the pace of discovery and innovation, particularly in complex fields, such as genomics, drug design and development, and translational medicine, where large-scale data analysis is often crucial.

With appropriate prompts, AI-powered tools can *assist in literature review* and even the drafting of portions of manuscripts through large language models (LLMs). There are now published articles recognizing the use of LLMs in the process of manuscript preparation.



AFES 2023
2023 ASEAN FEDERATION OF ENDOCRINE SOCIETIES CONGRESS

JAFES SYMPOSIUM
16 NOVEMBER 2023
16:15-16:45 HRS.
Ballroom 1, Queen Sirikit National Convention Center
Bangkok, Thailand

WE ARE CORDIALLY INVITING YOU TO ATTEND
THE JAFES SYMPOSIUM FEATURING A BRIEF TALK ON AI AND ITS EMERGING IMPACT ON SCHOLARLY PUBLICATION.

 16:15-16:20 HRS. Dr. Elizabeth Paz-Pacheco Editor-in-Chief Welcome remarks (JAFES milestones and accomplishments)	 16:20-16:30 HRS. Dr. Cecilia A. Jimeno Vice Editor-in-Chief Topic: Emerging AI Issue in Scientific Publication	 16:30-16:40 HRS. Dr. Gabriel V. Jasul, Jr. Associate Editor Recognition of JAFES Top Authors and Reviewers
---	--	---

Figure 1. JAFES Session at the 2023 AFES Convention.

<https://doi.org/10.15605/jafes.039.01.01>

AI-powered tools can even *assist in the peer review process*, arguably providing more objective and efficient reviews. Automated systems can screen manuscripts for plagiarism, test data integrity, and even provide preliminary assessments of methodological soundness, albeit of subject matters with relatively large body of knowledge. This capability can streamline the review process, reduce the routinary burden on human reviewers, and enhance the overall quality of published research.

AI can *facilitate more effective dissemination and accessibility of research*. Machine learning algorithms can personalize content delivery, ensuring that researchers receive the most relevant studies and updates in their field, with little need of human prompting. Natural language processing tools can aid in translating research findings into multiple languages. Although at this point as AI translators lack “content awareness” and “accuracy of context,” we are amazed at how, and how fast, AI continuously learns and improves itself.

Despite these benefits, the integration of AI into scientific publication also *raises several concerns*. One of the primary issues is the potential for bias and stereotyping as could be unwittingly embedded in large sets of machine training data. Generative AI systems are only as good as the data they are trained on. If the training data reflects existing biases, the AI's outputs may perpetuate or even exacerbate these biases. This tendency can lead to skewed research findings and inequitable dissemination of knowledge, particularly disadvantaging researchers from underrepresented groups or less-resourced institutions.

Another concern is the transparency and interpretability of AI algorithms. Many AI models, particularly those based on deep learning, operate as “black boxes,” making it humanly difficult to understand how they arrive at specific conclusions and specific courses of action. In the context of scientific research, where transparency of data and reproducibility of methods are not just crucial but required (i.e., Open Data), this opacity can undermine trust in AI-generated insights and recommendations.

Ethical questions also arise from the use of AI in the peer review process. While automation can enhance efficiency, there is also a risk of dehumanizing the review process and overlooking the nuanced judgment that experienced human reviewers bring to their evaluations. There is also the danger of over-reliance on AI, potentially leading to the marginalization of critical human oversight and expertise. Arguably this concern is more crucial in leading-edge research where the “context awareness” by human experts remains paramount.

However we look at it, AI has reached a tipping point and is here to stay. Over time, AI powered tools will get “smarter,” more powerful, and more impactful, learning from wider use by humans. To balance the advantages of using these AI-powered tools in terms of efficiency, convenience, and speed, with the risks associated with inaccuracy, disinformation, data fabrication, stereotyping, and copyright infringement, among others, JAFES has begun revisiting and studying its policies and guidelines, from submission to peer review, from production to publication. We are actively engaging in conversations regarding Generative AI, learning with peers.

While AI has evolved and continues to evolve above and beyond that fateful chess match almost three decades ago, JAFES' commitment to publication ethics, scientific integrity, and high-quality medical publishing has grown even more.

Elizabeth Paz-Pacheco
Editor-in-Chief

Reference

1. Zielinski C, Winker MA, Aggarwal R, Ferris LE, Heinemann M, Lapeña JF, Pai SA, Ing E, Citrome L, Alam M, Voight M, Habibzadeh F, for the WAME Board. Chatbots, Generative AI, and Scholarly Manuscripts. WAME Recommendations on Chatbots and Generative Artificial Intelligence in Relation to Scholarly Publications. WAME. May 31, 2023. <https://wame.org/page3.php?id=106>