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The Role of Artificial Intelligence in Scientific Writing

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ABSTRACT

Artificial intelligence (AI) has evolved rapidly in the last century. Once a futuristic concept with negative connotations, AI has now begun to permeate various fields, reaching academic and scientific writing. In scientific writing, AI applications promise to significantly improve writing accuracy, provide quality control, and thereby enhance manuscript evaluation, among other possible contributions. It is generally agreed that AI and machine learning tools may become writing assistants if involved in writing tasks.

Keywords: Artificial Intelligence, Scientific Writing

Main text:

Applications for AI in Scientific Writing

AI tools are available that use natural language processing to help researchers perfect their prose through a range of writing phases, including helping to craft manuscripts, tidying up writing, and formatting documents correctly. AI-driven proofreading services specialize in grammar and punctuation, and other tools identify relevant literature and draft manuscripts in English. Other AI-driven tools for scientific writing include those for generating summaries of biomedical literature and tools that help write, edit, and create documents for internal use, such as laboratory protocols, that improve with time [1, 2, 3].

AI can also be used in hypothesis generation and the analysis of research data. Some systems are co-developed by humans and AI and are hypothesis discovery systems that summarize diverse hypotheses made by authors, suggesting logically valid alternatives; or tools that help researchers articulate their ideas. The percentage of published papers written with AI assistance has grown significantly over the years, with certain highly technical journals seeing a notable portion of their papers written with AI. AI scientific papers have also been seen at several new high-impact and open access scientific journals [4].

Challenges and Limitations of AI in Scientific Writing

There are considerable challenges and limitations in relation to AI-based scientific writing that may reduce the prospects for application within the scientific community. Academic and scientific work require high quality, reliable information, and as such, there are grave concerns over the extent to which such content could safely be generated via AI tools. Academic publication typically requires precision, and it is thus likely that the errors commonly associated with AI-generated text might be seen as problematic [5].

Ethically, there are also concerns regarding the authorship and originality of AI-generated texts. It is quite possible that the autonomous creation of scientific texts might

be widely viewed as highly dishonest—merely demonstrating the technological capability without incursions into academic publication norms. It may be preferable for researchers to learn how to critically synthesize information themselves, to read and to think critically, then to begin to write critically before sliding into microscopic editorial control of their text at the final stages. AI-supported research and teaching should never replace rigorous teaching and training within any academic field [6-8]. Over-reliance on AI tools may also imply that in the future, we might not be able to spot obvious errors, which could obstruct the development of research frontiers and science [3].

The extent to which AI-supported scientific authoring is accepted varies widely, and some researchers and research organizations have been openly anti-AI. A potential concern is primarily about AI-based writings and edits as opposed to the automated recording and editing of papers or peripheries. It has been suggested that a balance between efficiency and quality should be struck when considering techno-scientific development, which would allow AI to write the majority of the report and researchers to write the important segments.

Future Prospects and Ethical Considerations

Recent advancements in AI for writing have shown the potential for AI models to assist researchers in real time, using their specific data and research questions in a user-friendly and intuitive way. In the future, research in AI for writing will likely also be driven by technological advancements in multimodal learning models, which are capable of processing and joint representation of data from multiple modalities, such as text and images. This area of research could enrich the types of data used in scientific writing and change the way texts are included with other data in academic publishing [9].

Like any tool, however, concerns and questions need to be addressed when implementing this AI technology. Ethical guidelines for data collection and use need to be established by AI researchers to ensure the data used in training AI models is widely available and traceable [10].

CONCLUSIONS

Ethical concerns around the over-automation of personalized writing need to be considered. As AI systems advance, it will also be important to ensure scientific integrity, such as through maintaining verification and interpretation of model outputs by a human writer. As AI and research practices continue to develop, it is important to engage researchers writing in ongoing dialogue about the implications and use of AI systems for writing. AI is advancing, but writing collaboratively with an AI assistant will become a more integral part of our writing future.

Declaration by Authors

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REFERENCES

1. Salvagno, M, Taccone FS, and Gerli AG. Can artificial intelligence help for scientific writing? Crit Care 27, 75 (2023). https://doi.org/10.1186/s13054-023-04380-2
2. Huang J, Tan M. The role of ChatGPT in scientific communication: writing better scientific review articles. Am J Cancer Res. 2023 Apr 15;13(4):1148-1154.
3. Májovský M, Černý M, Kasal M, Komarc M, Netuka D. Artificial Intelligence Can Generate Fraudulent but Authentic-Looking Scientific Medical Articles: Pandora's Box Has Been Opened. J Med Internet Res 2023;25: e46924. doi: 10.2196/46924
4. Nazari N, Shabbir MS, Setiawan R. Application of Artificial Intelligence powered digital writing assistant in higher education: randomized controlled trial.

Heliyon. 2021 May 11;7(5): e07014. doi: 10.1016/j.heliyon. 2021.e07014.
5. Dergaa I, Chamari K, Zmijewski P, Ben Saad H. From human writing to artificial intelligence generated text: examining the prospects and potential threats of ChatGPT in academic writing. Biol Sport. 2023 Apr; 40(2):615-622. doi: 10.5114/biolsport.2023.125623.
6. Godwin-Jones R. Partnering with AI: Intelligent writing assistance and instructed language learning. Language Learning & Technology. 2022; 26(2), 5–24. http://doi.org/10125/73474
7. Zhao X. Leveraging artificial intelligence (AI) technology for English writing: introducing Wordtune as a digital writing assistant for EFL writers. RELC Journal. 2023; 54 (3). pp. 890-894. doi:10.1177/00336882221094089.
8. Gayed JM, Carlon MKJ, Oriola AM, Cross JS. Exploring an AI-based writing Assistant's impact on English language learners. Computers and Education: Artificial Intelligence. 2022; 3, Article 100055. doi: 10.1016/j.caeai.2022.100055.
9. Celik I, Dindar M, Muukkonen H, Järvelä S. The Promises and Challenges of Artificial Intelligence for Teachers: A Systematic Review of Research. TechTrends. 2022; 66, 616–630 (2022). doi: 10.1007/s11528-022-00715-y
10. AlZaabi A., ALamri A., Albalushi H., Aljabri R., and AalAbdulsallam A. ChatGPT applications in academic research: A review of benefits, concerns, and recommendations. bioRxiv. 2023; p. 2023-08 193 p. doi: 10.1101/2023.08.17.553688.

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