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EDITORIAL COMMENT

Scientific publishing in the era of artificial intelligence: Integrity and responsibility

A publicação científica na era da Inteligência Artificial: integridade e responsabilidade

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Artificial intelligence (AI) is transforming the scientific process across all stages, making it an innovative tool that is used globally, influencing research generation, experimental design, data analysis, writing, and all the complex dynamics of peer review and dissemination of results.

The entire scientific community is incorporating AI into the research process to enhance efficiency. At the same time, developing regulations and effective algorithms to monitor the quality, accuracy, and integrity of data science is becoming a critical topic of discussion, given the fundamental role of scientific communication.

The potential of AI-assisted technologies, when used responsibly, to help researchers work efficiently and provide tailored support for tasks such as manuscript content organization, data analysis, text generation, language improvement, and readability is significant.[1] AI improves language polishing and data analysis but raises ethical concerns regarding text fabrication, as more submitted manuscripts contain AI-generated content.

The wide adoption of AI tools is largely expected. Science journals are now providing recommendations for best practices when using AI and applying detection tools to identify excessive use of AI in manuscript preparation.[2]

A structured automatic workflow must be used as an initial exploratory test to check for adequate formatting, missing data, or files. The next step, even before the editor's evaluation, is to check for plagiarism, submission duplication (which is not uncommon), image manipulation, statistical anomalies, and language clarity. This AI screening assists editors by highlighting potential risks and concerns. It may also support editors' work by suggesting reviewers with expertise in specific fields or with similar papers published.

Publishers like Elsevier, Wiley, and Taylor & Francis are now providing AI usage guidelines for manuscript preparation but require a declaration statement disclosing the name of the AI-assisted technology used and the extent of its application.[3]

It is accepted that AI-assisted tools support researchers during the lengthy scientific process but can also work as a strong contributor to assist publishers and editors in identifying excessive reliance, undisclosed use, plagiarism, or inaccurate content detection during the peer review workflow. The expansion of AI tools in scientific publishing is accompanied by the risks of ''AI authorship'', manipulated content, the emergence of papermills, and the trustworthiness of solid communication.

The scientific community must take active measures to define ethical boundaries, with clear policies regarding

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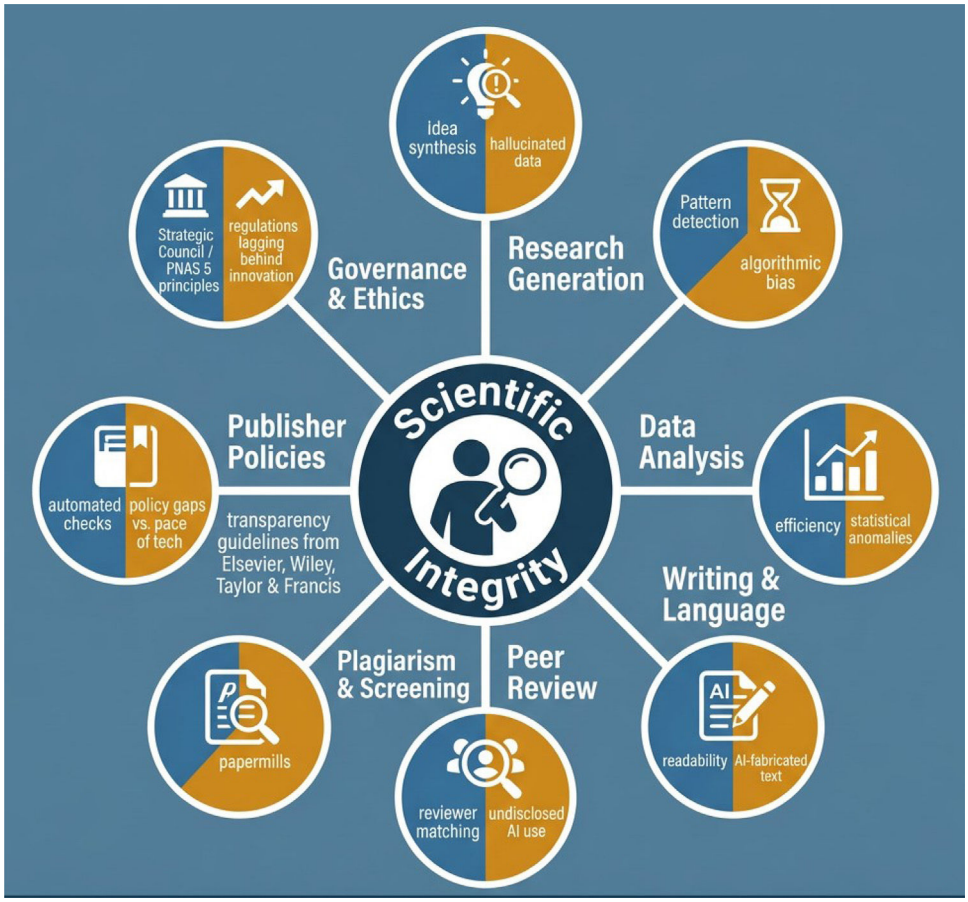
the quality of data sources, authorship, disclosures, and transparency.[4] The use of complex AI algorithms raises concerns about bias, transparency, and accountability, requiring the development of new ethical rules to protect scientific integrity. However, the development and writing of ethical codes cannot keep up with the pace of development and implementation of technology.[5]

The PNAS editorial, authored by an interdisciplinary group of experts, emphasizes that generative AI (e.g., tools like ChatGPT) must not erode the core norms of science. It builds on the National Academies' recommendations to prioritize human oversight, urging the creation of a strategic council for ongoing AI guidance. These principles ensure transparency, verification, and ethics amid the rapid incorporation of AI into manuscripts. They must be applied across all research stages (e.g., writing, data analysis, peer review) and align with publisher policies, such as Elsevier's, which bans AI authorship but requires declarations. They counter risks such as bias amplification and eroded trust and call for education and institutional oversight.[6]

The use of AI should not replace human expertise, ethical oversight, and responsibility, but be used as a powerful tool that contributes to improving the quality of data science and, ultimately, as an innovative technological support to maintain trust in journals, editors, and institutions.[7,8]

It is our responsibility – and the time – to foster a strong collective commitment to integrity standards for scientific publishing. Policies regulating the use of AI in universities and publishing groups require extensive debate, applicability, and validation. There is a need for clear recommendations to support publishers, editors, and peer reviewers in navigating this challenging scientific task.

AI must support – not replace – human expertise, ethical oversight, and responsibility.



Central figure: Integrity and responsibility in the era of artificial intelligence in scientific publishing.

Conflicts of interest

The authors have no conflicts of interest to declare.

Declaration of generative AI and AI-assisted technology usage

During the preparation of this editorial comment, the authors used Gamma AI-assisted technology in order to create the central figure.

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