https://doi.org/10.15359/ree.28-S.20852
https://www.revistas.una.ac.cr/index.php/educare
educare@una.ac.cr
[Cierre de edición: 31 diciembre 2024]

The Heredia Declaration: Principles on the use of artificial intelligence in scientific publishing

Declaración de Heredia: Principios sobre el uso de inteligencia artificial en la edición científica

Declaração de Heredia: Princípios sobre o uso da inteligência artificial na publicação científica

Abstract

Introduction. The Heredia Declaration proposes, from the perspective of scientific publishing, a series of considerations for the responsible use of artificial intelligence (AI) in research processes leading to scientific publication. The use of AI as a tool must be evidenced and transparent for a clear, traceable, and reproducible exercise of knowledge. Attention is drawn to the challenges of incorporating AI into scientific publishing in terms of the diversity of options, the need to prevent the spread of bias and misinformation, and the respect for intellectual property. **Principles.** Principles are organized into four groups: general, roles of authorship, peer review, and editing. They highlight the importance of using AI as a tool whose results are filtered by humans who, from an ethical and responsible perspective, transparently report which model was used, what was consulted, and when the inquiry took place. **Final reflection.** The article highlights that this is a constantly evolving scenario whose ultimate goal must be human well-being and quality of life.

Keywords: Scientific publishing; editorial management; artificial intelligence; ethics; scientific communication.

Resumen

Introducción. La Declaración de Heredia propone, desde la perspectiva de la edición científica, una serie de consideraciones para el uso responsable de la inteligencia artificial (IA) en los procesos de investigación que llevan a la publicación científica. Se reconoce a la IA como una herramienta cuyo uso se debe evidenciar y transparentar para un ejercicio claro, trazable y reproducible del conocimiento. Se llama la atención sobre los retos que supone la incorporación de la IA a la edición científica en cuanto a la diversidad de opciones, el evitar la propagación de sesgos y desinformación, y el respeto a la propiedad intelectual. **Principios.** Están organizados en cuatro grupos: general, para los roles de autoría, revisión por pares y edición. Resaltan la importancia de utilizar la IA como una herramienta cuyos resultados son filtrados por seres humanos que, desde una perspectiva ética y responsable, reportan, de forma transparente, a qué modelo, qué se consultó y cuándo se hizo la consulta. **Reflexión final.** Pone de manifiesto que se trata de un escenario en constante evolución cuyo fin último debe ser el bienestar humano y la calidad de vida.

Palabras Claves: Edición científica; gestión editorial; inteligencia artificial; ética; comunicación científica.

https://doi.org/10.15359/ree.28-S.20852
https://www.revistas.una.ac.cr/index.php/educare
educare@una.ac.cr
[Cierre de edición: 31 diciembre 2024]

Resumo

Introdução. A Declaração de Heredia propõe, na perspectiva da publicação científica, uma série de considerações para o uso responsável da Inteligência Artificial (IA) nos processos de pesquisa que levam à publicação científica. A IA é reconhecida como uma ferramenta cujo uso deve ser evidente e transparente para um exercício de conhecimento claro, rastreável e reprodutível. Chama-se a atenção para os desafios colocados pela incorporação da IA na publicação científica em termos de diversidade de opções, de evitar a propagação de preconceitos e desinformação e de respeito pela propriedade intelectual. **Princípios.** Estão organizados em quatro grupos: gerais e para as funções de autoria, revisão por pares e edição. Destacam a importância da utilização da IA como ferramenta, seus resultados são filtrados por seres humanos numa perspectiva ética e responsável, reportando de forma transparente qual modelo foi utilizado, o que foi consultado e quando foi feita a consulta. **Reflexão final.** Mostra que se trata de um cenário em constante evolução, cujo objetivo final deve ser o bemestar humano e a qualidade de vida.

Palavras-chave: Publicação científica; gestão editorial; inteligência artificial; ética; comunicação científica.

Artificial intelligence is considered to provide the following conditions:

Tool: Artificial intelligence (AI) has emerged as a useful and versatile tool applicable to all human actions.

Benefits and risks: The existing experiences on the use of AI in the field of scientific publishing show the benefits that can be obtained, but also the risks posed by the extensive adoption of models that remain in evolution and under improvement.

Training and precision: The use of AI as a support tool for scientific publication and research processes involves interaction with models that, only through training, are calibrated and become more accurate.

Traceability and reproducibility: Transparency is a principle of scientific communication; therefore, making the use of AI transparent in the writing of scientific papers allows for traceability, facilitates understanding of interactions with the tool, and provides pathways to reproduce or replicate best practices and exploitation strategies.

Diversity and intellectual property: It is necessary to be aware that, given the diversity of options of AI models and applications available, combinations should include not only the most useful or efficient ones, but the most responsible ones in the use of materials with intellectual property. This covers various manifestations of protection of human creation, for example: patents, images, or sound material, among others. Consequently, the possible derivation and transformation of the material used by an AI model to provide answers to queries should be clear.

Mitigation of bias and misinformation: The creation and programming of AI models is human, and so is the intellectual work creating the databases used by AI. Therefore, bias coming from the human condition is implicit. People must be aware of this so that, when interacting with AI, they do not magnify, prolong, or propagate biases and consequent misinformation.

https://doi.org/10.15359/ree.28-S.20852
https://www.revistas.una.ac.cr/index.php/educare
educare@una.ac.cr
[Cierre de edición: 31 diciembre 2024]

Human well-being: From the most altruistic spirit —as well as from bioethical principles— human well-being must be the force that guides decision-making when incorporating AI tools into research processes and their subsequent publication.

Dimension of the scope: We are just beginning to measure the scope and impact of incorporating AI into knowledge management. We are facing an evolving scenario where there are open debates to be paid attention to in order to strategically channel the actions that guide the ethical and responsible use of this tool.

Principles of scientific publishing on the use of artificial intelligence

These principles refer to the segment of knowledge communication related to editorial management, where the roles of editing, peer review (or arbitration), and authorship interact. The person who takes the role of editing has the responsibility to lead and mediate the process leading to publication so that the use of AI —the central theme of this declaration— is clearly explained. Although we start from the perspective of individuals in the role of editing, we hope these ideas support other parts of the knowledge generation process and other activities related to the scientific publication process, such as translating or writing and editing.

General

1. The roles of editing, peer review, and authorship are performed by human beings who can mediate the publication process of scientific papers. When performing these roles, individuals must be trained to adopt and become literate in responsible practices of scientific communication and artificial intelligence.

2. AI should not replace the responsibilities or accountability of individuals in these roles, nor should the editorial process depend exclusively on AI-related actions.

Role of authorship

3. It is human beings who exercise the role of authorship. These individuals are recognized for their ability to —in the exercise of their intellect— create, make decisions, and assume responsibility for the work generated. Therefore, language models, whether chatbots or generative AI, cannot be considered authors, as they cannot comprehensively assume these three conditions.

4. Explicitly declaring the use of AI in the processes of research and preparation of scientific papers during any stage of the scientific publication process is a sign of transparency that adds to best practices to ensure the reproducibility of science. In this regard, it is necessary to consider a sound explanation that mentions, at least:

https://doi.org/10.15359/ree.28-S.20852
https://www.revistas.una.ac.cr/index.php/educare
educare@una.ac.cr
[Cierre de edición: 31 diciembre 2024]

- The AI model, version, and date of use.
- How it was used, identify the interactions and combinations that can be articulated between models.
- Which products and formats —from those generated by this interaction— were integrated into the publication of results.
- Quotation and reference of the model used understanding the diversity and potential complexity of the interactions and combinations that can be articulated when using this tool.

5. We hope that authors have filtered the information on the contents provided in response to an AI model and that from these inputs they generate new knowledge. Validating the accuracy of the information obtained is even more relevant in the current context. The answers offered by AI cannot be assumed as true or absolute. Preventing plagiarism, misinformation, the spread of bias or other academic fraud is part of the actions that authors must take when interacting with AI models. Ensuring that inputs are used in a legitimate way must be a permanent interest of those who exercise the role of authorship.

6. Personal, confidential, sensitive, or third-party data must be protected when there is no explicit authorization to use it as part of queries to an AI model.

7. It should also be mentioned if there has been funding from a third party for the implementation or use of AI models in the research or publication process.

Role of peer review

8. The criterion to recommend, or not, the publication of a scientific paper —or to propose corrections and improvements— is the responsibility of the person in the role of peer review. Interaction with AI does not replace their expert judgment or accountability.

9. When AI was used to complement the peer review, the editorial team must be informed and, through them, the authors. Stating at least the model's name, version, and date of use, as well as the statement of work as an evaluation instruction is part of the transparent and traceable exercise of the content evaluation.

10. Reviewers must be able to explain the interaction they have had with AI, what inputs they have received, and how much of these inputs have been considered in the observations, comments, recommendations, and any correction request they have issued as evaluation criteria of a scientific article.

https://doi.org/10.15359/ree.28-S.20852
https://www.revistas.una.ac.cr/index.php/educare
educare@una.ac.cr
[Cierre de edición: 31 diciembre 2024]

Role of editing

11. The editing process is the responsibility of the editor and the accompanying editorial team. The use of AI should not replace the responsibility of human beings or their accountability when editing or following up on actions by reviewers and authors. Editing scientific articles does not depend on the use of AI.

12. Editors will state when they have used AI in any part of the editorial process. The model's name, version, and date of use, as well as the statement of work assigned, will be reported.

13. Prevention strategies will be established to avoid the spread of bias, misinformation, or inability to guarantee respect for or an ethical approach to personal data. In addition, the use of open, high-quality, and reliable data, supported by appropriate consents or authorizations for legitimate AI use of such information will be promoted.

14. In view of transparency, authors and readers will be informed when AI has been used in editorial or review tasks.

Final reflection

The research process and the communication of results are still essentially human tasks. We must not lose sight of the fact that the use of AI must be at the service of humanity, the generation of the common good, and the possibility of improving people's quality of life. Faced with the reality that every day more models are being used more frequently, academic debate should be enhanced, rather than replacing it with the results or products of the interaction between human beings and AI models.

It is especially important to be aware that biases are present both in the various stages or phases of model and algorithm construction and in the moments of interaction with such models and algorithms. Understanding that biases can manifest in different ways and that they must be identified leads to the development of strategies to mitigate them and the models' effective training and calibration.

Bearing in mind that the interaction of human beings with AI is a phenomenon that is evolving and transforming highlights the need to maintain a critical forward-looking vision that constantly updates the conditions guiding the use of this tool.

References

Academia de Propiedad Intelectual. (2023, December 5 & 6). *I Congreso Internacional de Propiedad Intelectual y Nuevas Tecnologías Digitales*. Registro Nacional de Costa Rica.

Appel, G., Neelbauer, J., & Schweidel, D. A. (2023, April 07). *Generative AI Has an Intellectual Property Problem*. Harvard Business Review. https://hbr.org/2023/04/generative-aihas-an-intellectual-property-problem

https://doi.org/10.15359/ree.28-S.20852
https://www.revistas.una.ac.cr/index.php/educare
educare@una.ac.cr
[Cierre de edición: 31 diciembre 2024]

Bhosale, U. & Kapadia, A. (2023, September 29). *AI Integration can Future-Proof Peer Review – But only if we define and drive the right principles*. Enago Academy. https://www.enago.com/academy/ai-integration-in-peer-review/

Cardoso Sampaio, R. (2024, February 07). Recomendações iniciais para editores de periódicos científicos sobre o uso de Inteligência Artificial generativa. *Dados* [Blog]. http://dados.iesp.uerj.br/recomendacoes-iniciais-para-editores-de-periodicoscientificos-sobre-o-uso-de-inteligencia-artificial-generativa/

Comisión Europea. (2021). *Propuesta de Reglamento del Parlamento Europeo y del Consejo por el que se establecen normas armonizadas en materia de inteligencia artificial (ley de inteligenciaartificial)ysemodificandeterminadosactoslegislativosdelaunión*2121/0106. https://eur-lex.europa.eu/legal-content/ES/ TXT/?uri=celex%3A52021PC0206

COPE. (2023, February 13). *Authorship and AI tools*. https://publicationethics.org/copeposition-statements/ai-author

Estévez, C. (2023, November 02). *Taller Scopus para Editores: Gestión Editorial*. Scopus; Conare.

Future of Life Institute. (2017). *Asilomar AI Principles*. https://futureoflife.org/open-letter/ai-principles/

International Committee of Medical Journal Editors (ICMJE). (2024). *Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals.* https://www.icmje.org/icmje-recommendations.pdf

International Committee of Medical Journal Editors (ICMJE). (2024, February 6). *Who is an Author? Defining the Role of Authors and Contributors.* https://www.icmje. org/recommendations/browse/roles-and-responsibilities/defining-the-role-ofauthors-and-contributors.html.

International Committee of Medical Journal Editors (ICMJE). (2024, February 6). *Artificial Intelligence (AI)-Assisted Technology*. https://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html.

Kaebnick, G. E., Magnus, D. C., Kao, A., Hosseini, M., Resnik, D., Dubljević, V., Rentmeester, C., Gordijn, B., & Cherry, M. J. (2023). Editors' Statement on the Responsible Use of Generative AI Technologies in Scholarly Journal Publishing. *The Hastings Center Report*, *53*(5), 3–6. https://doi.org/10.1002/hast.1507

Levene, A. (2023, February 23). Artificial intelligence and authorship. COPE. https://publicationethics.org/news/artificial-intelligence-and-authorshi+p

Nazer, L. H., Zatarah, R., Waldrip, S., Chen Ke, J. X., Moukheiber, M., Khanna, A. K., Hicklen, R. S., Moukheiber, L., Moukheiber, D., Ma, H., & Mathur, P. (2023). Bias in artificial intelligence algorithms and recommendations for mitigation. Plos Digital Health, 2(6), e0000278. https://doi.org/10.1371/journal.pdig,0000278

https://doi.org/10.15359/ree.28-S.20852
https://www.revistas.una.ac.cr/index.php/educare
educare@una.ac.cr
[Cierre de edición: 31 diciembre 2024]

Organization for Economic Co-operation and Development (OECD). (2023). Recommendation *of the Council on Artificial Intelligence, OECD/LEGAL/0449*. https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449

Organización Mundial de la Propiedad Intelectual (OMPI). (2020). *Diálogo de la OMPI sobre propiedad intelectual (PI) e Inteligencia artificia (IA)*. https://www.wipo.int/meetings/es/details.jsp?meeting_id=55309

ReviewersCredits. (2024, February 22). *AI in Peer Review: Reviewer Credits Discussion Webinar* [Video]. YouTube. https://www.youtube.com/watch?v=DWrrbwHLU8Q

Spinak, E. (2023, August 30). Inteligencia Artificial y comunicación de investigaciones. *Scielo Blog* [Blog]. https://blog.scielo.org/es/2023/08/30/inteligencia-artificial-ycomunicacion-de-investigaciones/

Tavira, R. (2023). Política editorial de revistas con relación a la IA: casos Elsevier, Springer Nature & Taylor/Francis. *Boletín SciELO-México*. https://boletinscielomx.blogspot.com/2023/08/revistas-frente-la-ia-casos-elsevier.html?spref=tw

The University of Utah. (2023, July 13). *Guidance in the use of AI in research*. https://attheu.utah.edu/facultystaff/vpr-statement-on-the-use-of-ai-in-research/

Unesco. (2019, May 16-18). *Consenso de Beijing sobre la inteligencia artificial y la educación*. https://unesdoc.unesco.org/ark:/48223/pf0000368303

Unesco. (2022). *Recomendación sobre la ética de la inteligencia artificial*. https://unesdoc.unesco.org/ark:/48223/pf0000381137_spa

Watson, R. & Štiglic, G. (2023, February 23). *Guest editorial: The challenge of AI chatbots for journal editors*. COPE. https://publicationethics.org/news/challenge-ai-chatbotsjournal-editors

Zielinski, C., Winker, M. A., Aggarwal, R., Ferris, L. E., Heinemann, M., Lapeña, J. F., Pai, S. A., Ing, E., Citrome, L., Alam, M., Voigh,t M., Habibzadeh, F., & WAME Board. (2023, May 31). *Chatbots, Generative AI, and Scholarly Manuscripts. WAME Recommendations on Chatbots and Generative Artificial Intelligence in Relation to Scholarly Publications*. WAME. https://wame.org/page3.php?id=106

Signed in Heredia, Costa Rica, on January 15, 2024

Liana Penabad-Camacho
Editor, *Revista Electrónica Educare*, Universidad Nacional
https://orcid.org/0000-0001-9381-182X

María Amalia Penabad-Camacho
Editor, *Revista Géneros, Feminismos y Diversidades*, Universidad Nacional
https://orcid.org/0000-0002-5095-577

https://doi.org/10.15359/ree.28-S.20852
https://www.revistas.una.ac.cr/index.php/educare
educare@una.ac.cr
[Cierre de edición: 31 diciembre 2024]

Andrea Mora-Campos
Academic Advisor, Vice-Presidency for Research, Universidad Nacional
https://orcid.org/0000-0001-9813-2674

Gerardo Cerdas-Vega
Editorial Director *Revista Perspectivas Rurales*, Universidad Nacional
https://orcid.org/0000-0003-3912-4193

Yuri Morales-López
Editor-in-chief, *Uniciencia*, Universidad Nacional
https://orcid.org/0000-0002-2973-4038

Mónica Ulate-Segura
Editor, *Perspectivas Rurales*, Universidad Nacional
https://orcid.org/0009-0005-7740-4980

Andrea Méndez-Solano
Editor, *Revista de Historia*, Universidad Nacional
https://orcid.org/0000-0001-5326-2088

Nidya Nova-Bustos
Editor-in-chief, *Revista Ciencias Marinas y Costeras*, Universidad Nacional
https://orcid.org/0000-0003-1966-0415

María Fernanda Vega-Solano
Editor, *Revista Economía y Sociedad*, Universidad Nacional
https://orcid.org/ 0000-0002-8104-8596

María Milagro Castro-Solano
Editor, *Revista Abra* y *Revista Economía y Sociedad*, Universidad Nacional
https://orcid.org/0000-0002-0516-5352

If you want to sign this Declaration, fill out the following form:

https://docs.google.com/forms/d/e/1FAIpQLSdtuGwcc3VDW3YUNaE5zVWQiFKptTRX81apm0_l3Xr6Tw60vw/viewform

Contact

Write to educare@una.ac.cr

Include in the subject: The Heredia Declaration

Image reproduced with permission of the PIEG-UNA team.