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The use of the Artificial Intelligence in the writing of scientific articles

Uso de la Inteligencia Artificial en la redacción de artículos científicos

Uso da inteligência artificial na redação de artigos científicos

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In recent times, with the advance of Information and Communication Technologies (ICT), we have witnessed the impact that Artificial Intelligence (AI) has had on the improvement of services, efficiency, personalization and automation in different areas focused on human development and welfare.

AI in the context of computer science refers to the technology by which a computer, device or other automated system is able to perform tasks that require human cognitive capabilities, i.e., it becomes a computer system that can make decisions based on algorithms and learn according to the information it receives, all this in a few seconds or minutes, issues that would normally take a researcher days or even years to accomplish, which significantly accelerates the process of publication and dissemination of scientific advances that becomes a crucial need in these times.(1)

AI has proven to be proficient in generating quality content in different fields. Among its new competencies is the writing of scientific articles, as it can serve as support when writing the method used in the study, justifying the sample size, describing data analysis techniques and correct grammar and spelling. In addition, the adaptability it possesses to the format and language requested, rewriting a particularly complex sentence in a clearer way and even in the creation of the abstract.(2)

Among the most widely used in this area is ChatGPT, developed by Generative pre-trained Transformer (GPT), which understands and responds to natural language input; others such as Perplexity, QuillBot and TRINKA stand out as having more specific functionality.

With the help of AI, researchers can process large amounts of data quickly and efficiently, allowing them to identify patterns and trends that might otherwise have gone unnoticed. AI marks a before and after in higher education, especially in research and scholarly writing.[3]

From an ethical point of view, it has become a valuable tool in the detection of plagiarism by analyzing large volumes of information quickly and efficiently in search of literal similarities, paraphrases and subtle modifications between articles, which would not be possible with manual methods. Proof of this has been the popularity achieved by Copyleaks, ZeroGPT and PlagScan which are AIs specialized in detecting academic plagiarism, however, it should be noted that their decision is not infallible and still requires human supervision to interpret the results and make final decisions on cases of plagiarism, since it is necessary to respect the author's rights and academic integrity.[4]

On the other hand, most AIs belong to technology companies, which makes accessibility to the veracity of the operation of the same complex, besides there are differences in the free and paid versions as in the case of ChatGPT, the paid version ChatGPT Plus has more advanced features such as duplicate identification, classification, organization and automatic translation of articles that the free one does not have.

Despite these advantages, it has been discovered that it usually provides old and false references, since they were created in 2022 and the database with which they operate dates back to 2021. Likewise, it offers answers that seem real but once they are analyzed, they do not match the knowledge in the relative area, giving rise to the "artificial hallucination" that occurs when large amounts of data are trained without supervision.[5]

It enters to the concern of critics the abusive use of it, which includes the complete writing of an article without respecting the balance that should exist between the use of AI and the researcher's contribution, which gives way to ethical problems and risks in the final result such as:

-Lack of originality and creativity.
-Lack of critical perspective and unique approach that can only be provided by the researcher.
-Inaccurate content with risk of artificial hallucinations.
-Cybersecurity problems.
-Limited knowledge and risk of infodemic.[1,5,6]

On the other hand, phantom citations are also frequent. Phantom citations in scientific communication refer to an increasingly common problem nowadays. This occurs when authors include bibliographic references in their scientific articles, but without having actually consulted the works to which they refer. In recent years, AI has been one of the techniques most commonly used to generate phantom citations in scientific articles.[7]

Some questions arise then related to authorship, originality, transparency and reproducibility of the research; if an article is entirely written by AI: Who should be considered as the author? How is the originality and reliability of the content guaranteed? How is it guaranteed that the processes and decisions involved in its writing are transparent and reproducible? Will it be safe to reproduce a ghost research?

As for the researcher, the excessive use of artificial intelligence can diminish their ability to write scientifically, establish hypotheses, corroborate theories and understand their field of study. Many students rely on these tools for their work, without even reviewing the results due to the reliability they believe they offer, so professors and journal reviewers appear to be the most affected, since it is difficult to recognize the true cognitive and scientific capabilities of the author. In addition, AI detection tools such as GPTZero, Writer and Sapling AI Detector have emerged to help with this problem, but they are equally unreliable.

The use of AI should be as a complement not a substitute for human ingenuity and human cognitive ability. It is necessary to understand that the tools are very useful, but there is no better way to do research than self-management, research and human-to-human interaction. One of the premises in conducting research is to take care of scientific engagement; an approach that combines AI capabilities with human judgment should be encouraged. If this is achieved, the existence of a sustainable science can be guaranteed and conflicts between researchers and AI creators can be avoided.

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