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EDITORIAL

Artificial Intelligence (AI) and Scientific Publications

Artificial Intelligence (AI) emerged shortly after World War II with the development of the Turing test. The term was first coined by mathematician John McCarthy in 1955. It is a field of science based on computers and machines that can simulate intelligent behavior, including reasoning, learning, and acting in contexts usually requiring humans or involving data whose scale exceeds what humans can analyze. In recent years, artificial intelligence has experienced an exponential growth. The number of scientific publications on this subject tripled from 6,851 in 2000 to 51,085 in 2018. Since 2005, China has held the lead in the number of publications in the area; Chinese researchers published 25% of all publications in the area in the 2014–2018 period, followed by researchers from the USA, who participated in 15%. India has been in the third position since 2013. AI has proven to be very useful in different areas of science, such as diagnosis, imaging, histopathology, and surgery, as well as in writing and scientific publications [1, 2].

The introduction of Artificial Intelligence, Large Language Models (LLM), ChatGPT, Bard, and Bing have changed the scenario of writing, creating, and producing research papers, generating a revolution in the academic publishing world in an irreversible way. The adoption of AI raises critical ethical questions about the responsibility, obligations, and transparency of authors. AI tools are already being used in academic publishing, for example, in pre-peer review checks (language quality, confirmation that a submission is within the scope of the journal, etc.). The use of AI is not inherently unethical and can be helpful, for example, for authors who do not write in English as their first language. Although the use of AI tools for translations may raise separate copyright issues, it will be up to humans to take responsibility for ensuring compliance with regulations because, ultimately, the responsible application of technology requires human oversight, controls, and monitoring [3].

Using AI tools such as ChatGPT (Chat Generative Pre-Trained Transformer), Google Bard, or other tools that are certainly trained to write, translate, review, and edit academic manuscripts faces ethical challenges for researchers and journals. For this reason, some scholarly journals, such as Science, Nature, and many others, have prohibited using LLM applications in received articles. For example, AI tools cannot meet authorship requirements, as they cannot take responsibility for the submitted work because they are not "persons," nor do they have legal status. They also cannot assert the presence or absence of conflicts of interest or manage licensing and copyright agreements. For these and other reasons, the world of ethics is turning firmly against that idea, and it is easy to see why.

AI is a field of study that seeks to develop systems and algorithms capable of performing tasks that require human intelligence. Among its various applications, ChatGPT stands out as a next-generation language model that uses machine-learning techniques to understand and generate text coherently and naturally. ChatGPT is an open-access artificial intelligence (AI) chatbot developed in 2022 by OpenAI, which has revolutionized text generation by storing large volumes of information and capturing complex linguistic patterns. In this way, said model is capable of answering questions, completing sentences, editing images, and generating text based on the context and the information provided [4]. It is a model with more than 175 million parameters trained to perform language-related tasks, from translation to text generation, and it is being refined and grown through supervised and reinforced learning.

The most surprising thing about ChatGPT is that it can give accurate and complete answers and express itself naturally with very exact information, which makes it difficult to distinguish if a text has been generated by an AI, which revolutionizes the editorial process, because these programs use advanced techniques and natural learning and language processes [5]. Journals, editors, and referees are concerned because there is a real threat of the production of fake articles produced by machines that can stifle the scientific process. AI, at the moment, cannot generate new ideas. Still, it can organize and develop those provided to it, which is a starting point for developing "human" style texts in the not-too-distant future that could replace knowledge, creativity, and scientific thinking [6], since AI can participate in writing drafts, summaries and translations, in data collection and analysis, in bibliography and even recomposing texts to adjust them to the required size and formatting or rewriting the language to make it more intelligible, offering suggestions on its structure quickly and easily to write the complete work eventually [7]. Such a tool could also bridge the language gap by facilitating the publication of research conducted and written in other languages.

The question that continues with the facilities of AI is: How can you recognize if AI has generated a text? These texts often lack nuance, style, and originality. AI

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detectors or expert reviewers are also available. However, unfortunately, many similar defects can be found in texts written by "humans" ("copy-paste" of previous works, errors in translations of works written in languages other than the native one of the writers), so detection programs of plagiarism can be wrong [8]. For this reason, publishers and journals should provide themselves with AI detectors as part of the editorial process to protect themselves.

The Recommendations of scientific communities and journal editors regarding the publication of scientific works are [3]: i) only humans can be authors; ii) authors must acknowledge the sources of their materials; iii) Authors must assume public responsibility for their work; iv) authors should ensure that all cited material is appropriately attributed, including full citations, and that cited sources support the chatbot's statements (It is not unusual for chatbots to generate references to works that do not exist); v) any use of chatbots in the evaluation of the manuscript and the generation of revisions and correspondence must be expressly indicated; vi) publishers need appropriate digital tools to deal with the effects of chatbots on publishing; vii) when an AI tool is used to perform or generate analytical work, help report results (for example, generate tables or figures) or write computer code, this should be indicated in the body of the article, both in the Summary as in Methods, to allow scientific scrutiny, including replication and identification and vii) publishers need appropriate developments to help them detect content generated or altered by AI. Such tools should be available to publishers regardless of the ability to pay for them. This is even more significant to editors of medical journals, where the adverse consequences of misinformation include potential harm to individuals.

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