Artificial intelligence in scientific research

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Artificial Intelligence (AI), a term coined by John McCarthy in 1955. AI was defined as "the science and engineering of making intelligent machines"; today it refers to machines that can learn at least something similar to what humans do[1]. AI technologies can be of great use to humanity and that all countries can benefit from them [2].

AI has multiple applications in various areas of knowledge, including Health Sciences [3]. In the health field, numerous applications of AI have been described in health care and in various medical specialties [4] [5]. Before the COVID-19 pandemic, publications on AI applications in biomedicine already showed a growing trend [6]. During the COVID-19 pandemic, numerous clinical applications of AI were used to address the problem [7]; AI achieved high performance in diagnosis, prognostic assessment, epidemic trend prediction, drug and vaccine development for COVID-19 [8].

In recent years, the Open Artificial Intelligence Company (OpenAI) launched ChatGPT, an AI-based chatbot that performs language processing. Since its launch, ChatGPT has generated controversy, as expected. It is natural for both supporters and detractors to emerge as its operation and applications become more widely publicized. In academia and research, among digital natives, there are signs of good reception; among digital colonists, it seems to be poorly received because of its potential influence on the development of unethical behavior in research.

A few years ago, an editorial stated, "In the near future, it is possible that scientific articles will be written by typewriters and reviewed by reviewing machines, all driven by computer programs"[9]. Today, there are AI-based digital tools that have remarkable utility in research, although the early emergence of ChatGPT as an author in research papers was not expected [10].

The practice of science is too multifaceted, and its practitioners are too diverse to be captured in a single general description. Researchers collect and analyze data, develop hypotheses, replicate and extend earlier work, communicate their results with others, review and critique the results of their peers, train and supervise associates and students, and otherwise engage in the life of the scientific community. Science is also far from a self–contained or self-sufficient enterprise. Technological developments critically influence science, and opens up whole new areas of inquiry; societal forces also affect the directions of research [11].

In the Beijing Consensus on AI and Education, it was established that the implementation of AI should be at the service of people to improve human capabilities;

that AI should be conceived in an ethical, non-discriminatory, equitable, transparent, and verifiable manner; and that the impact of AI on people and society should be monitored and evaluated along value chains [12].

The appearance of ChatGPT is not a problem; moreover, for a responsible researcher, full reliance on ChatGPT is unlikely. ChatGPT simulates human intelligence and relies on training, so it can produce consistent and useful responses; however, it can also generate inconsistent or inappropriate responses.

AI has multiple applications; in the education and research environment, responsible and ethical use in teaching, teacher training, and e-learning is encouraged [2]. Key components of AI are Big Data and Machine Learning, whose applications in the health sciences have also been mentioned in our journal.

Today, countless tools used in everyday and academic activities are based on AI applications. In the near future, AI-based tools such as ChatGPT and similar tools are likely to achieve a high level of refinement and outstanding utility.

In the field of research, as long as the cognitive activity of the researcher predominates and the AI is a cooperative element, it can be considered positive. AI can develop multiple complex activities that are difficult for human beings; however, the role of the researcher is fundamental, who is understood to possess certain complex cognitive skills, such as critical thinking, reasoning, and creativity, among other qualities inherent to human beings. The researcher also has to be a guide and model for his disciples.

In research, there have always been unethical behaviors, and bad practices will continue to exist; only now the protagonists will have an additional tool to enhance dishonest work. Research in the hands of honest researchers will always be correct, with or without AI.

For now, we cannot draw definitive conclusions; in the future, we will know the benefits or detriments of AI. Rather, it can be considered an opportunity to open lines of research, and only time will tell the impact of AI on research.

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