

ChatGPT and the Future of Academic Integrity in the Artificial Intelligence Era: A New Frontier

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ABSTRACT: ChatGPT is a state-of-the-art language model developed by OpenAI. It is part of the GPT (Generative Pre-trained Transformer) series, which are designed to generate human-like language output based on large amounts of input data. ChatGPT is one of the largest and most advanced language models to date, with 175 billion parameters. The article aims to examine the impact of artificial intelligence tools and techniques on academic research and their potential implications for academic ethics. In particular, this article will focus on the practices of ChatGPT in generating scientific research within the context of academic ethics. ChatGPT is a powerful tool that can generate text in different formats, conduct literature searches, and suggest titles for the created text. However, using ChatGPT to select topics with a low similarity score in similarity checkers may lead to ethical violations. This article finds that the use of artificial intelligence applications in academic research may raise concerns about academic ethics, and the limited availability of technologies that can detect such violations poses a significant challenge to academic writing.

Keywords: Artificial intelligence. ChatGPT. Machine learning. academic writing. GPT-3. GPT-4

1. INTRODUCTION

Artificial intelligence (AI) applications have become increasingly important in the development of electronic environments, and they are transforming the way we interact with technology [1-3]. Together with other cutting-edge technologies like Industry 4.0, the Internet of Things (IoT), blockchain, and augmented reality, AI is revolutionizing how we live and has a profound impact on our life. Artificial intelligence (AI) applications are overgrowing, and individuals and companies are exploring new ways to utilize them in various aspects of life [4][5]. Among the most prominent AI applications is ChatGPT, which was made accessible to the general public in the fourth quarter of 2022 [6-9]. As ChatGPT's popularity grows, questions have arisen regarding the accuracy of its outputs and their sources [10-12]. There is growing concern that originality is increasingly threatened in various domains, ranging from completing homework assignments to conducting academic research [13][14]. This has led to discussions about the importance of preserving authenticity and originality in all areas of intellectual work [15]. ChatGPT's introduction to the public domain coincided with the emergence of numerous other technologies and applications that leverage artificial intelligence algorithms to streamline processes across various industries [16-18]. These advancements have the potential to improve efficiency, save time, and enhance productivity across a broad spectrum of tasks and activities. At the same time, ChatGPT was used in research writing by writing the introduction, abstract, codes, conclusions, arranging references, improving writing language, and other things. In fact, ChatGPT has even been added as a co-author on academic studies due to its ability to generate insightful and high-quality content [19][20]. In 1988, demonstrations took place by a group of mathematics teachers in the United States of America to protest against allowing school students to use calculators in schools (see Figure 1.a). As of the year 2023, there is a growing

sentiment that the use of artificial intelligence technologies among school and college students should be restricted, as they may inadvertently spread false information and hinder students' abilities to learn, comprehend the curriculum, and explore new ideas. In 2023, Italy bans the use of ChatGPT over privacy concerns (see Figure 1.b). In this regard, we have opted to utilize the ChatGPT application in crafting a scientific article that highlights the significance of machine learning in the field of healthcare. To accomplish this, we have provided the application with a series of commands and instructions to generate the article's content. In addition, we have utilized this application to enhance the grammar and language of this article. Through this approach, we aim to assess ChatGPT's capacity to produce a concise and coherent scientific article, while also analyzing the ethical implications of utilizing AI in the creation of academic studies, with the assistance of similarity reports.



FIGURE 1. - (a) math teachers protest against calculator use in 1988 [downloaded from Google]; (b) Italy has become the first Western country to block advanced chatbot ChatGPT in 2023 [21]

Undoubtedly, ChatGPT possesses an exceptional capability to answer any question thrown its way, and its unprecedented popularity reflects an insatiable demand for this application. Within just five days of its launch on November 30, 2022, ChatGPT garnered over one million subscribers, as demonstrated in Figure 2, setting it apart from other platforms that took significantly longer to reach the same milestone. Moreover, in a mere six weeks since its launch, ChatGPT's valuation skyrocketed to \$29 billion, a testament to its remarkable potential and innovation in the field.

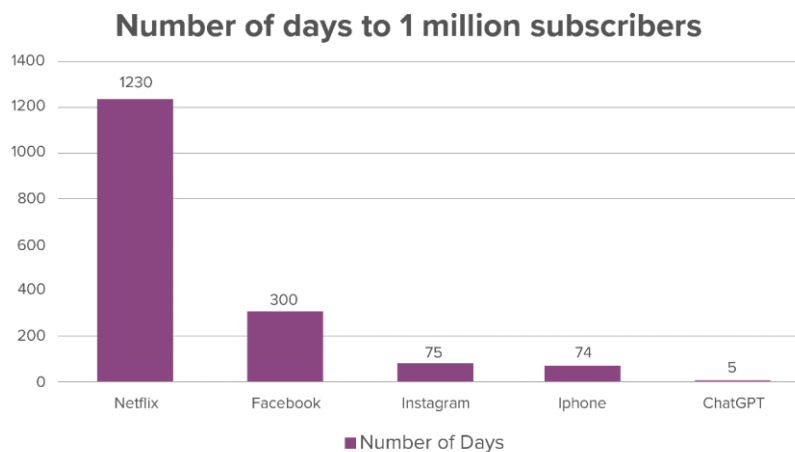


FIGURE 2. - ChatGPT and other platforms in terms of the time taken to amass over one million subscribers [22]

The use of artificial intelligence (AI) techniques raises concerns about the future generation's ability to critically evaluate information. As the next generation will have everything readily available to them, there is a risk that they may not be able to verify the accuracy of the information they receive from these technologies, resulting in a weaker generation that struggles to complete complex tasks. This is highlighted in Figure 3, which shows a contrast between the current generation that uses applications to improve their work and the next generation that may rely solely on AI to complete their tasks without exerting effort. Therefore, it's crucial to educate the next generation about the limitations and potential biases of AI and how to evaluate the information it provides.



FIGURE 3. - The difference between the current generation and the next generation in the use of artificial intelligence. This illustration has been generated by an artificial intelligence [23]

To provide a structured exploration of this topic, we have divided this article into several sections. Section 2 delves into the concept of academic ethics in essay writing, while Section 3 explores academic ethics within the realm of AI applications. Section 4 provides an overview of the ChatGPT application and its operational mechanisms, followed by Section 5 which details a practical example of writing an academic article through the use of this application. Finally, Section 6 summarizes the conclusions drawn in this article.

2. SCIENTIFIC RESEARCH AND PUBLICATION ETHICS

Scientific research and publication ethics are crucial to maintain the integrity and credibility of the scientific community [24][25]. These ethics are designed to ensure that research is conducted in a transparent, unbiased, and ethical manner, and that the resulting publications accurately and honestly report the research findings. Some key principles of research ethics include obtaining informed consent from research participants, protecting their privacy and confidentiality, avoiding conflicts of interest, and ensuring that the research is conducted with rigor and honesty. Publication ethics, on the other hand, focus on ensuring that research articles are published in reputable journals with a rigorous peer-review process. This includes avoiding plagiarism and self-plagiarism, ensuring that all authors have contributed significantly to the research, and accurately reporting the research findings without misrepresenting or manipulating the data. Violations of scientific research and publication ethics can have serious consequences, including damage to the reputation of the researchers, journals, and institutions involved. As such, it is crucial that all researchers and publications adhere to these ethical standards to maintain the integrity of the scientific community. The Committee on Publication Ethics (COPE) has developed a set of guidelines for academic publication ethics that are widely accepted in the international community [26-28]. These guidelines provide a framework for ensuring that academic publications are conducted and reported in an ethical and transparent manner. The COPE guidelines cover a wide range of topics related to academic publication ethics, including plagiarism, authorship, data sharing, conflicts of interest, and peer review. They provide specific guidance for journal editors, authors, and reviewers to ensure that their roles and responsibilities are clearly defined and that they adhere to ethical standards in their work. Adherence to COPE guidelines is important for ensuring the integrity and credibility of academic publications. By following these guidelines, journals, editors, and authors can help to maintain trust in the scientific community and ensure that research is conducted and reported in an ethical and transparent manner. The following practices are defined for publishers and journals [29]:

- Misconduct Allegations: Publishers should establish clear policies on misconduct and be prepared to investigate any allegations that may arise.
- Authorship and Contributorship: Journals should have transparent policies on the contribution of authors and a clear process for resolving disputes.
- Complaints and Appeals: Publishers should establish effective complaint management and appeal processes.

- Conflicts of Interest / Competing Interests: Journals should have clear policies on conflicts of interest and a process for managing them.
- Data and Reproducibility: Journals should have clear data policies and encourage the registration of study designs and guidelines to ensure reproducibility.
- Ethical Oversight: Journals should have policies on ethical conduct in research and the use of confidential data.
- Intellectual Property: Journals should have clear policies on intellectual property and a process for distinguishing between plagiarism and conflicting publications.
- Journal Management: Journals should have well-defined policies and processes, as well as a good infrastructure to support them.
- Peer Review Processes: Peer review processes should be transparent and journals should establish clear policies for peer review.
- Post-Publication Discussions and Corrections: Journals should establish mechanisms for post-publication discussions and corrections.

In recent years, technology, the Internet, and artificial intelligence have become pervasive in various areas of life. Artificial intelligence applications offer many advantages, including saving time in scientific research, providing rapid and unlimited access to information, easy literature access and summarization, and generating datasets for use in studies, and others. However, these practices also pose some threats to research and publishing ethics [30-32]. Therefore, it is advisable to use artificial intelligence tools cautiously and review any information generated with more than one person to verify its accuracy and validity. This is particularly important when dealing with sensitive or complex research topics, where errors or biases in the data could have serious consequences. Ultimately, the ethical use of artificial intelligence in scientific research and publishing requires thoughtful consideration of its benefits and drawbacks and a commitment to maintaining the highest standards of integrity and transparency.

3. CHATGPT AND ETHICS

Artificial intelligence refers to a field of computer science that was first conceptualized in the mid-twentieth century [33-37]. It encompasses a range of techniques and methods that enable computers to exhibit intelligent behavior, such as problem-solving and decision-making, which were previously thought to be the exclusive domain of human beings. AI algorithms and systems can analyze and interpret vast amounts of data, learn from patterns, and improve their performance over time, making them increasingly capable of handling complex tasks and making accurate predictions [38-42]. AI finds applications in a wide range of fields, from healthcare and finance to transportation and manufacturing [43-47]. It is a multidisciplinary science that seeks to develop intelligent machines that can perform tasks that typically require human-level cognition. These tasks include reasoning, problem-solving, perception, natural language processing, and learning from experience. AI algorithms and systems can analyze and interpret vast amounts of data, identify patterns and trends, and make predictions with a high degree of accuracy. By automating routine and complex tasks, AI can improve efficiency, productivity, and decision-making across various industries. The primary objective of AI is to replicate human intelligence using algorithms that can provide efficient and practical solutions to complex problems. Through the use of powerful computing devices, AI systems can process and analyze vast amounts of data, learn from patterns and trends, and make accurate predictions and decisions in real-time. AI can improve the reliability, safety, and speed of various processes and applications by reducing or eliminating errors that may arise from human limitations, such as fatigue or cognitive biases. However, AI is about more than just mimicking human intelligence but also creating new forms of intelligence that can augment human capabilities and solve challenges beyond the reach of human intellect. Today, AI techniques are widely adopted by companies and individuals across various industries, enabling them to automate and optimize complex processes, improve efficiency, and make informed decisions. AI applications are capable of analyzing vast amounts of data, detecting patterns and anomalies, and making accurate predictions, even in highly dynamic and uncertain environments. They can assist specialists in various fields, such as healthcare, finance, and engineering, by providing insights and recommendations based on data-driven analyses. However, AI is not a panacea for all problems, and its applications and limitations must be carefully considered to ensure ethical, responsible, and effective use. Furthermore, AI should be developed and used in a way that aligns with human values and supports human well-being, rather than replacing or marginalizing human intelligence and autonomy. AI comprises several techniques that seek to develop intelligent machines capable of performing complex tasks (see Figure 4). Some of the most important AI techniques include neural networks, which enable machines to learn from large amounts of data and make predictions based on patterns; robotics, which aims to create machines that can sense and interact with their environment and make autonomous decisions; and machine learning, which builds algorithms that can automatically improve their performance over time through experience. While AI has made significant progress in recent years, it still falls short of replicating the full spectrum of human intelligence. Nonetheless, AI can outperform humans in several domains, such as:

- Processing and analyzing large amounts of data quickly and accurately.
- Identifying patterns and anomalies in data that may be imperceptible to humans.

- Performing repetitive and monotonous tasks with high precision and consistency
- Making decisions based on data-driven insights and logic rather than subjective biases or emotions.
- Predicting future outcomes and trends based on historical data and real-time inputs.



FIGURE 4. - A set of images generated by artificial intelligence, showing human interaction with computers [48]

The ChatGPT, developed by OpenAI, is a state-of-the-art neural network that utilizes generative pre-training and transformer architecture to process vast amounts of data and generate human-like scripts. It is capable of handling inputs and outputs of various lengths, making it suitable for applications such as language modeling, question answering, and chatbots. The ChatGPT model has achieved impressive results in several natural language processing tasks, such as generating coherent and relevant responses to text prompts, summarizing long documents, and even creating original writing. However, like all AI models, the ChatGPT has limitations and potential biases that must be carefully considered when using its outputs. Overall, the ChatGPT represents a significant advancement in AI technology and has the potential to revolutionize how we interact with machines and process large volumes of text data. The ChatGPT model is trained on a diverse range of data sources, including articles, books, and websites, to ensure that it has access to a broad spectrum of language styles and topics. The data used in ChatGPT is carefully curated to exclude low-quality and redundant information, and to avoid any biases that may result from a single point of view. As a result, ChatGPT is capable of generating high-quality text that is contextually relevant and free from subjective biases. One of the strengths of ChatGPT is its ability to adapt to different topics and generate text that is consistent with the topic content. By analyzing the input prompt and drawing on its vast knowledge base, ChatGPT can generate text that is informative, coherent, and engaging. This makes it a powerful tool for a variety of applications, including language modeling, question answering, and chatbots. However, it is important to note that the quality of ChatGPT's outputs can be affected by the quality and diversity of the input data, as well as the complexity of the task. Additionally, like all AI models, ChatGPT has limitations and potential biases that must be considered when using its outputs. Nonetheless, ChatGPT represents a significant advancement in AI technology and has the potential to transform how we interact with machines and process natural language data.

The increasing use of artificial intelligence in various fields of science has raised significant ethical considerations, and ChatGPT is no exception. The app's potential to generate high-quality text that mimics human writing raises the possibility of unethical usage. For instance, it can be used to fabricate research or disseminate false information, which can have serious implications for scientific progress and public trust in research. However, from an ethical standpoint, ChatGPT can also be viewed as a valuable tool that can support scientific writing and knowledge shaping. By providing researchers with a means to generate and organize ideas efficiently, ChatGPT can help streamline research processes and facilitate collaboration among experts. Additionally, ChatGPT can assist in the translation of technical language and enhance accessibility to scientific knowledge for non-experts. As the use of AI continues to expand in scientific

research, it is essential to consider the ethical implications of such technologies carefully. It is crucial to ensure that AI models are developed and used in a manner that is transparent, fair, and equitable. This requires ongoing collaboration between researchers, developers, and policymakers to establish ethical guidelines and best practices for the responsible use of AI.

4. INTRO TO CHATGPT

ChatGPT is a cutting-edge artificial intelligence application that utilizes the GPT-3.5 architecture, developed by OpenAI, to facilitate natural language conversations between humans and machines. It is a chatbot that can answer questions and provide information on a wide range of topics, including news, entertainment, science, technology, and more. The application's operational mechanisms are sophisticated, relying on advanced machine learning algorithms to comprehend the context of the user's questions and generate coherent, human-like responses. ChatGPT is built on a neural network that is trained on vast amounts of data, ranging from news articles and encyclopedias to social media posts and online forums. This training enables the chatbot to understand the nuances of language, including grammar, syntax, and context, and to generate responses that are not only accurate but also natural-sounding. Additionally, the application can adapt to user preferences and learn from previous interactions, making it increasingly personalized and intuitive over time. The operational mechanisms of ChatGPT can be broken down into several key components, including input processing, context comprehension, response generation, and feedback learning. Each of these components is vital to the application's functionality and plays a critical role in delivering a seamless and engaging user experience.

Input processing is the first step in the chatbot's operational process. When a user inputs a question or query, the application uses natural language processing (NLP) techniques to parse the text and identify the most relevant keywords and phrases. This process involves breaking down the input into smaller components, such as words and phrases, and analyzing their relationships to each other. Context comprehension is the next step in the operational process. Once the chatbot has identified the most relevant keywords and phrases, it uses its neural network to analyze the context of the input. This involves analyzing the user's previous interactions, understanding the user's intent, and predicting the user's preferences based on past behavior. By understanding the context of the user's input, the chatbot can generate more accurate and relevant responses. Response generation is the third step in the operational process. Once the chatbot has comprehended the context of the user's input, it uses its neural network to generate a response. The response is based on the information that the chatbot has learned from its training data and from previous interactions with the user. The response is designed to be natural-sounding and engaging, utilizing a range of language styles and tones to create an interactive conversation. Feedback learning is the final step in the operational process. After generating a response, the chatbot uses feedback from the user to improve its performance over time. The application's machine learning algorithms analyze the user's responses, identifying patterns in user behavior and preferences, and adjusting its responses accordingly. This feedback loop enables the chatbot to learn from its mistakes, adapt to changing user preferences, and continuously improve its performance. Figure 5 shows the ChatGPT framework.

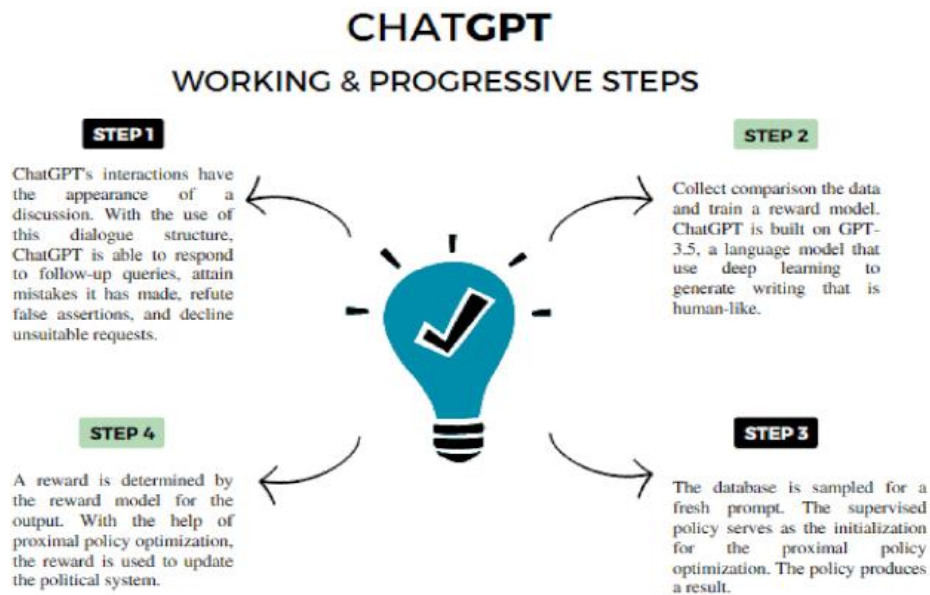


FIGURE 5. - ChatGPT framework [49]

Announced in March 2023, the upcoming GPT-4 is an enhanced version of its predecessor, GPT-3, and is currently in development. According to a report by Semafor, the new model will be approximately six times larger than GPT-3, boasting a trillion parameters (see Figure 6). This makes it the most powerful language model to date, capable of performing complex tasks such as writing articles, generating art, music, and even 3D images. The difference between GPT-3 and GPT-4 is illustrated in Figure 7. With its advanced capabilities, GPT-4 is set to revolutionize various fields, including natural language processing and artificial intelligence. In addition, GPT-4 has the capability to interpret images, allowing users to insert any image into an application and inquire about specific objects or details within the image. Furthermore, it is integrated with other applications to enhance the creation of three-dimensional games. Besides, it is important to note that the number of parameters alone does not necessarily reflect the quality or effectiveness of a language model. Other factors, such as the architecture design, training data quality, and optimization techniques, can also significantly impact a model's performance. Therefore, while GPT-4 may have more parameters than GPT-3, it does not necessarily mean that it will be a better model. Additional research and testing will be required to determine how GPT-4 compares to GPT-3 and other language models.

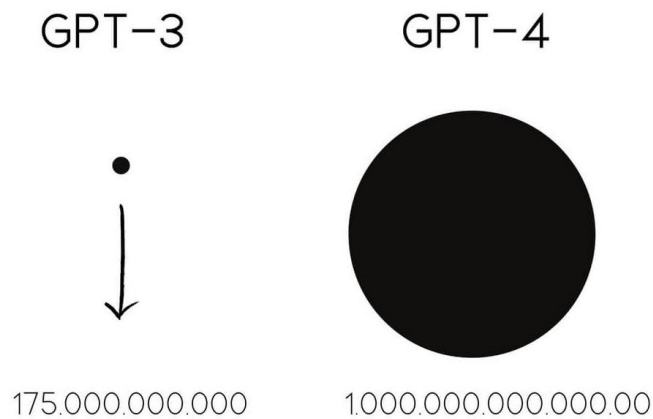


FIGURE 6. - The comparison between GPT-3 and GPT-4 based on the number of parameters used in their architecture [50]

Features	GPT-3	GPT-4
Parameters	175 billion	More than GPT-3
Capabilities	Language translation, summarization, question answering	Writing essays and articles, creating art and music
Performance	Generates human-like text, struggles with sarcasm and idiomatic expressions	Expected to significantly improve upon GPT-3's performance
Potential Applications	Chatbots, virtual assistants, content generation, research	Creative writing, art, improvement of existing applications

FIGURE 7. - The difference between GPT-3 and GPT-4 [51]

Overall, the operational mechanisms of ChatGPT represent a major breakthrough in the field of artificial intelligence and natural language processing. By combining advanced machine learning algorithms with sophisticated neural network architectures, the application is able to generate natural-sounding responses that are accurate, engaging, and personalized. As the technology behind ChatGPT continues to evolve, it is likely that the application will become even more intuitive, responsive, and human-like, paving the way for a new era of conversational computing.

5. CREATE AN ARTICLE BY CHATGPT

In this article, a set of questions including the creation of article sections on "The Importance of Machine Learning in Healthcare" were directed to the ChatGPT application. Where a group of questions were directed to this application, which includes the sections of the proposed article, and all the answers were collected from this application and a

scientific article was made from it. This article has been audited by researchers and confirms the ability of the ChatGPT application to write in a correct academic style. The following figure (see Figure 9) is the article.



FIGURE 8. – The article is authored and generated by ChatGPT

The article, authored by ChatGPT, consists of four sections including an Abstract, Introduction, Literature Survey, Machine learning confronts COVID-19, The significance of machine learning, and Conclusions, along with references. The article contains 1637 words and is presented in four pages. However, upon reading the article, it was found that the authoring method used by ChatGPT was not convincing and did not follow an academic style. The literature survey presented in the article was not properly summarized, and the conclusions reached were confusing and primitive. Although the article showed a low matching percentage when checked in a plagiarism program, it is noteworthy that ChatGPT has the impressive ability to compose an article in a very short time, not exceeding 3 minutes, which is quite remarkable. Moreover, the application was able to connect the questions in a way that made the article appear as one cohesive piece. It is important to note that the language used in the article is strong and free of linguistic errors and was written in an excellent style. However, there is room for improvement in terms of following an academic writing style,

summarizing the literature effectively, and providing clear and concise conclusions. Overall, ChatGPT's article has some strengths, but also some weaknesses that need to be addressed. In terms of the article's structure, it is commendable that ChatGPT divided it into several sections, which makes it easier for the reader to navigate through the different topics covered. The inclusion of references is also a positive aspect, as it shows that the article is based on reliable sources. However, it is important to note that academic writing requires a certain level of rigor and clarity that was lacking in the article. The literature survey presented in the article was not effectively summarized, which made it difficult to understand the key points being discussed. Additionally, the conclusions drawn from the article were confusing and not well-supported by the evidence presented. While it is impressive that ChatGPT was able to compose the article quickly, it is important to remember that academic writing is a time-consuming process that involves careful research, analysis, and revision. Therefore, it is recommended that the authoring method used by ChatGPT be used as a tool to aid in the writing process, rather than as a replacement for human writers. In brief, while ChatGPT's article has some strengths, such as its strong language and structure, there is room for improvement in terms of following an academic writing style, effectively summarizing the literature, and providing clear and well-supported conclusions.

6. CONCLUSIONS

The primary purpose of this article is to investigate the ability of ChatGPT to produce a scientific paper and whether it adheres to academic writing conventions. Our testing revealed that while ChatGPT cannot produce academic writing that meets the standards required for publication in academic journals, it excels in providing fast and accurate information with excellent language that's free from grammatical errors. In fact, we used ChatGPT to assist in writing this article, which we then revised and edited to meet academic standards. It's important to remember that artificial intelligence applications such as ChatGPT are tools that support human work rather than replace it. While they can aid in completing tasks and improving the quality of writing, they cannot entirely replace human expertise in writing and critical thinking. Therefore, it's crucial to acknowledge the limitations of AI and to use it as a supplementary tool rather than a replacement for human effort.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest

REFERENCES

- [1] Dwivedi Y. K., Hughes L., Ismagilova E., Aarts G., Coombs G., et al., "Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy," *International Journal of Information Management*, vol.57, pp:101994, April 2021. <https://doi.org/10.1016/j.ijinfomgt.2019.08.002>
- [2] Mijwil M. M., Hiran K. K., Doshi R., and Unogwu O. J., "Advancing Construction with IoT and RFID Technology in Civil Engineering: A Technology Review," *Al-Salam Journal for Engineering and Technology*, vol. 02, no. 02, pp:54-62, March 2023. <https://doi.org/10.55145/ajest.2023.02.02.007>
- [3] Tseng M., Tran T. P. T., Ha H. M., Bui T., and Lim M. K., "Sustainable industrial and operation engineering trends and challenges Toward Industry 4.0: a data driven analysis," *Journal of Industrial and Production Engineering*, vol.38, no.8, pp:581-598, July 2021. <https://doi.org/10.1080/21681015.2021.1950227>
- [4] Mijwil M. M., Aljanabi M., and ChatGPT, "Towards Artificial Intelligence-Based Cybersecurity: The Practices and ChatGPT Generated Ways to Combat Cybercrime," *Iraqi Journal For Computer Science and Mathematics*, vol.4, no.1, pp:65-70, January 2023. <https://doi.org/10.52866/ijcsm.2023.01.01.0019>
- [5] Mijwil M. M., Sadıkoğlu E., Cengiz E., and Candan H., "Siber Güvenlikte Yapay Zekanın Rolü ve Önemi: Bir Derleme," *Veri Bilimi*, vol.5, no.2 pp:97-105, December 2022
- [6] Aljanabi M. and ChatGPT, "ChatGPT: Future Directions and Open possibilities," *Mesopotamian Journal of Cybersecurity*, vol. 2023, pp:16-17, January 2023. <https://doi.org/10.58496/MJCS/2023/003>

- [7] Aljanabi M., Ghazi M., Ali A. H., Abed S. A., and ChatGPT, "ChatGpt: Open Possibilities," *Iraqi Journal For Computer Science and Mathematics*, vol. 4, no. 1, pp: 62–64, January 2023. <https://doi.org/10.52866/20ijcsm.2023.01.01.0018>
- [8] Mijwil M. M., Aljanabi M., and Ali A. H., "ChatGPT: Exploring the Role of Cybersecurity in the Protection of Medical Information," *Mesopotamian journal of cybersecurity*, vol.2023, pp:18-21, February 2023. <https://doi.org/10.58496/MJCS/2023/004>
- [9] Sallam M., "ChatGPT Utility in Healthcare Education, Research, and Practice: Systematic Review on the Promising Perspectives and Valid Concerns," *Healthcare*, vol.11, no.6, pp:887, March 2023. <https://doi.org/10.3390/healthcare11060887>
- [10] Dwivedi Y. K., Kshetri N., Hughes L., Slade E. L., Jeyaraj A., "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy," *International Journal of Information Management*, vol.71, pp:102642, August 2023. <https://doi.org/10.1016/j.ijinfomgt.2023.102642>
- [11] Lund B. D., Wang T., Mannuru N. R., Nie B., Shimray S., and Wang Z., "ChatGPT and a new academic reality: Artificial Intelligence-written research papers and the ethics of the large language models in scholarly publishing," *Journal of the Association for Information Science and Technology*, vol. 74, no. 5, pp:570-581, May 2023. <https://doi.org/10.1002/asi.24750>
- [12] Haque M. U., Dharmadasa I., Sworna Z. T., Rajapakse R. N., and Ahmad H., "I think this is the most disruptive technology": Exploring Sentiments of ChatGPT Early Adopters using Twitter Data," *Arxiv*, pp:1-12, December 2022. <https://doi.org/10.48550/arXiv.2212.05856>
- [13] Dergaa I., Chamari K., Zmijewski P., and Saad H. B., "From human writing to artificial intelligence generated text: examining the prospects and potential threats of ChatGPT in academic writing," *Biology of Sport*, vol.40, no.2, pp:615-622, March 2023. <https://doi.org/10.5114/biolisport.2023.125623>
- [14] Rudolph J., Tan S., and Tan S., "ChatGPT: Bullshit spewer or the end of traditional assessments in higher education?," *Journal of Applied Learning and Teaching*, vol. 6, no.1, pp:1-22, January 2023. <https://doi.org/10.37074/jalt.2023.6.1.9>
- [15] Mijwil M. M., Filali Y., Aljanabi M., Bounabi M., Al-Shahwani H., and ChatGPT, "The Purpose of Cybersecurity in the Digital Transformation of Public Services and Protecting the Digital Environment," *Mesopotamian journal of cybersecurity*, vol.2023, pp:1-6, January 2023. <https://doi.org/10.58496/MJCS/2023/001>
- [16] Sallam M., Salim N. A., Barakat M., and Al-Tammemi A. B., "ChatGPT applications in medical, dental, pharmacy, and public health education: A descriptive study highlighting the advantages and limitations," *Narra J*, vol. 3, no.1, pp:1-14, April 2023. <https://doi.org/10.52225/narra.v3i1.103>
- [17] Wang F., Miao Q., Li X., Wang X., and Lin Y., "What Does ChatGPT Say: The DAO from Algorithmic Intelligence to Linguistic Intelligence," *IEEE/CAA Journal of Automatica Sinica*, vol.10, no.3, pp:575 - 579, March 2023. <https://doi.org/10.1109/JAS.2023.123486>
- [18] Talan T. and Kalinkara Y., The Role of Artificial Intelligence in Higher Education: ChatGPT Assessment for Anatomy Course, *International Journal of Management Information Systems and Computer Science*, vol.7, no.1, pp:33-40, March 2023. <https://doi.org/10.33461/uybisbbd.1244777>
- [19] O'Connor S. and ChatGPT, "Open artificial intelligence platforms in nursing education: Tools for academic progress or abuse?," *Nurse Education in Practice*, vol.66, pp:103537, January 2023. <https://doi.org/10.1016/j.nepr.2022.103537>
- [20] Biswas S. S., "Role of Chat GPT in Public Health," *Annals of Biomedical Engineering*, vol.2023, pp:1-2, March 2023. <https://doi.org/10.1007/s10439-023-03172-7>
- [21] McCallum S., ChatGPT banned in Italy over privacy concerns, BBC News, April 2023. Available online: <https://www.bbc.com/news/technology-65139406>
- [22] Narasimhan R. and Shekhar P., "ChatGPT: The next best thing after Google?," January 2023. Available online: <https://articles.xebia.com/chatgpt-the-next-best-thing-after-google?ref=Xebia>
- [23] Mateo M. P. P., Chat GPT, "la inteligencia artificial que escribe, remueve las aulas," *Heraldo*, 2023. Available online: <https://www.heraldo.es/noticias/sociedad/2023/02/12/chat-gpt-inteligencia-artificial-escribe-impacto-educacion-1630551.html>
- [24] Knapen J. H., Chamba N., and Diane Black, "How to write and develop your astronomy research paper," *Nature Astronomy*, vol. 6, pp:1021–1026, September 2022. <https://doi.org/10.1038/s41550-022-01759-z>
- [25] Kraus S., Breier M., and Dasí-Rodríguez S., "The art of crafting a systematic literature review in entrepreneurship research," *International Entrepreneurship and Management Journal*, vol.16, pp:1023–1042, February 2020. <https://doi.org/10.1007/s11365-020-00635-4>

- [26] Misra D. P. and Agarwal V., "Integrity of clinical research conduct, reporting, publishing, and post-publication promotion in rheumatology," *Clinical Rheumatology*, vol. 39, pp:1049-1060, February 2020. <https://doi.org/10.1007/s10067-020-04965-0>
- [27] Rupp M., Anastasopoulou L., Wintermeyer E., Malhaan D., Khassawna T., and Heiss C., "Predatory journals: a major threat in orthopaedic research," *International Orthopaedics*, vol. 43, pp:509–517, October 2018. <https://doi.org/10.1007/s00264-018-4179-1>
- [28] Sanders D. A., "How to write (and how not to write) a scientific review article," *Clinical Biochemistry*, vol.81, pp:65-68, July 2020. <https://doi.org/10.1016/j.clinbiochem.2020.04.006>
- [29] Core practices, COPE, Publication ethics, Available online: <https://publicationethics.org/core-practices>
- [30] Liebrez M., Schleifer R., Buadze A., Bhugra D., and Smith A., "Generating scholarly content with ChatGPT: ethical challenges for medical publishing," *The Lancet Digital Health*, vol.5, no.3, pp:e105-e106, February 2023. [https://doi.org/10.1016/S2589-7500\(23\)00019-5](https://doi.org/10.1016/S2589-7500(23)00019-5)
- [31] Ashok M., Madan R., Joha A., and Sivarajah U., "Ethical framework for Artificial Intelligence and Digital technologies," *International Journal of Information Management*, vol.62, pp:102433, February 2022. <https://doi.org/10.1016/j.ijinfomgt.2021.102433>
- [32] Ma Y., Liu J., Yi F., Cheng Q., Huang Y., Lu W., and Liu X., "AI vs. Human -- Differentiation Analysis of Scientific Content Generation," *Arxiv*, pp:1-18, 2023. <https://doi.org/10.48550/arXiv.2301.10416>
- [33] Mijwil M. M., Doshi R., Hiran K. K., Al-Mistarehi AH, and Gök M., "Cybersecurity Challenges in Smart Cities: An Overview and Future Prospects," *Mesopotamian journal of cybersecurity*, vol.2022, pp:1-4, 2022. <https://doi.org/10.58496/MJCS/2022/001>
- [34] Mijwil M. M., Salem I. E., and Ismael M. M., "The Significance of Machine Learning and Deep Learning Techniques in Cybersecurity: A Comprehensive Review," *Iraqi Journal For Computer Science and Mathematics*, vol.4 no.1, pp:87-101, January 2023, <https://doi.org/10.52866/ijcsm.2023.01.01.008>
- [35] Salem I. E., Mijwil M. M., Abdulqader A. W., Ismael M. M., Alkhazraji A., and Alaabdin A. M. Z., "Introduction to The Data Mining Techniques in Cybersecurity," *Mesopotamian journal of cybersecurity*, vol.2022, pp:28-37, May 2022. <https://doi.org/10.58496/MJCS/2022/004>
- [36] Mijwil M. M., Unogwu O. J., Filali Y., Bala I., and Al-Shahwani H., "Exploring the Top Five Evolving Threats in Cybersecurity: An In-Depth Overview," *Mesopotamian journal of cybersecurity*, vol.2023, pp:57-63, March 2023. <https://doi.org/10.58496/MJCS/2023/010>
- [37] Mijwil M. M., Doshi R., Hiran K. K., Unogwu O. J., and Bala I., "MobileNetV1-Based Deep Learning Model for Accurate Brain Tumor Classification," *Mesopotamian Journal of Computer Science*, vol.2023, pp:32-41, March 2023. <https://doi.org/10.58496/MJCSC/2023/005>
- [38] Bajao N. A. and Sarucam J., "Threats Detection in the Internet of Things Using Convolutional neural networks, long short-term memory, and gated recurrent units," *Mesopotamian Journal of Cybersecurity*, vol. 2023, pp:22–29, February 2023. <https://doi.org/10.58496/MJCS/2023/005>
- [39] Mijwil, M. M., Abttan R. A., and Alkhazraji A., "Artificial intelligence for COVID-19: A Short Article," *Asian Journal of Pharmacy, Nursing and Medical Sciences*, vol.10, no.1, pp:1-6, May 2022. <https://doi.org/10.24203/ajpnms.v10i1.6961>
- [40] Hussain Z. F. and Ibraheem H. R., "Novel Convolutional Neural Networks based Jaya algorithm Approach for Accurate Deepfake Video Detection," *Mesopotamian Journal of Cybersecurity*, vol.2023, pp:35–39, February 2023. <https://doi.org/10.58496/MJCS/2023/007>
- [41] Zamil I. and Kuffi E. A., "Sadik and complex Sadik integral transforms of system of ordinary differential equations," *Iraqi Journal For Computer Science and Mathematics*, vol. 4, no. 1, pp: 181–190, January 2023. <https://doi.org/10.52866/ijcsm.2023.01.01.0015>
- [42] Ismail R. and Ali S. M., "Design of Quality Improvement Technique Through Ridgelet Transform on Watermarked Video," *Iraqi Journal For Computer Science and Mathematics*, vol. 4, no. 1, pp. 204–210, January 2023. <https://doi.org/10.52866/ijcsm.2023.01.01.0017>
- [43] Hadjadj A. and Halimi K., "COVID-19 Patients' Health Monitoring System using Fuzzy Ontology and Internet of Things," *Iraqi Journal For Computer Science and Mathematics*, vol. 4, no. 1, pp:191–203, January 2023. <https://doi.org/10.52866/ijcsm.2023.01.01.0016>
- [44] Hephzipah J. J., Vallem R. R., Sheela M. S., and Dhanalakshmi G., "An efficient cyber security system based on flow-based anomaly detection using Artificial neural network," *Mesopotamian Journal of Cybersecurity*, vol. 2023, pp:48–56, March 2023. <https://doi.org/10.58496/MJCS/2023/009>
- [45] He X., Yang X., Zhang S., Zhao J., Zhang Y., Xing E., and Xie P., "Sample-Efficient Deep Learning for COVID-19 Diagnosis Based on CT Scans," *Medrxiv*, pp:1-10, April 2020. <https://doi.org/10.1101/2020.04.13.20063941>

- [46] Vaid S., Kalantar R., and Bhandari M., “Deep learning COVID-19 detection bias: accuracy through artificial intelligence,” *International Orthopaedics*, vol. 44, pp: 1539-1542, May 2020. <https://doi.org/10.1007/s00264-020-04609-7>
- [47] Jain R., Gupta M., Taneja S., and Hemanth D. J., “Deep learning based detection and analysis of COVID-19 on chest X-ray images,” *Applied Intelligence*, vol. 51, pp:1690-1700, October 2020. <https://doi.org/10.1007/s10489-020-01902-1>
- [48] García-Peñalvo F. J., “La percepción de la Inteligencia Artificial en contextos educativos tras el lanzamiento de ChatGPT: disrupción o pánico,” *Education in the Knowledge Society*, vol.24, pp:e31279, June 2023. <https://doi.org/10.14201/eks.31279>
- [49] Haleem A., Javaid M., and Singh R. P., “An era of ChatGPT as a significant futuristic support tool: A study on features, abilities, and challenges,” *BenchCouncil Transactions on Benchmarks, Standards and Evaluations*, vol.2, no.4, pp:100089, October 2022. <https://doi.org/10.1016/j.tbench.2023.100089>
- [50] Why You Need To Try GPT-4 Today, Cash with AI, AI Chatbots News, March 2023. Available online: <https://cashwithai.com/why-you-need-to-try-gpt-4-today/>
- [51] Mohd Saqib, The Future of AI: GPT-3 vs GPT-4: A Comparative Analysis, Becoming human.AI, Available online: <https://becominghuman.ai/the-future-of-ai-gpt-3-vs-gpt-4-a-comparative-analysis-5ac525cb7ae1>