

**Reviewer A**

This manuscript is very timely and is comprehensive in the content that it provides, introducing AI in scientific writing and the current state, providing context by detailing the history of AI-assisted writing technologies as well as available methods, challenges, and recommendations. The conclusion was very strong, detailing that while the innovation and technology is neutral, the use will determine how positively or negatively it impacts the world and scientific community, making it imperative to be cautious and ensure that in both diagnostics and scientific writing, ethics are constantly re-assessed, goals are adjusted, and checks and balances are maintained to appropriately leverage the revolutionizing technologies.

**Reply: Thank you very much for this comment and for the recommendations given. We are pleased that our manuscript has achieved its goal of viewing AI through a critical, cautious, yet optimistic lens.**

A few comments/recommendations are included below:

1. Propose possibly utilizing tables/graphics to synthesize the key information in the paper (maybe the history of technology, or the recommendation sections - 4.1 Strategies for better AI-Use, 4.2 Recommended Regulations for AI-Use)

**Reviewer A Reply 1:**

**We agree with this comment, as it makes things clearer and more concise.**

**Changes in the text:**

- **On Page 4 new Figure inserted: Fig. 2 Flowchart summarizing history of AI-Assisted Writing**
- **On Page 14 new Table inserted: Fig. 5 Summarization of Strategies and Recommendations**

**These have been uploaded with the revision.**

2. I think the structure/organization/flow of the section, Challenges of AI-associated manuscript writing and preparation, can be improved to more clearly communicate the challenges and synthesize or combine similar or related challenges, especially in section 3.2.

**Reviewer A Reply 2: After reviewing the section, we agreed with this conclusion and decided to re-structure according to the comment, as we feel this more directly communicates the challenges in a more concise and compact manner.**

**Changes to the text.**

**Chapter 3.1. (page 9) has a few sentence changes/additions. Chapter 3.2. has been**

restructured with several sentence additions as well as streamlining the challenges listed and explained as suggested by the reviewer (pages 9-12).

3. Are there any ethical guidelines to cite in #1 Follow ethical guidelines for using GPT in 4.2 Recommended Regulations for AI-Use, as well an ability to call to action a previous comment “Policymakers should create wide-reaching, clear guidelines and legal frameworks for using AI to remove the burden of consideration from educators and senior researchers”?

**Reviewer A Reply 3:**

Thank you for pointing out the necessity of giving an example – this makes it far better to demonstrate the point that there are no overarching policies by lawmaking bodies, only individual guidelines from, for example, universities. Making this change has made it clearer how we reach our later recommendation.

**Changes to the text:**

**Added following text on page 13 at suggested point:**

“Ethical guidelines such as the Recommendations proposed for researchers and users by Zhou et al.<sup>[35]</sup>, for ‘smart leaders’ by Weinstein in an article for Forbes<sup>[36]</sup>, or for on-Campus by Hackworth Fellows at the Markkula Center for Applied Ethics<sup>[37]</sup>, can serve as ethical guidelines. Policymakers, however, should strive to create overarching and comprehensive ethical guidelines for GPT, for researchers, users, academics, and relevant professions. This will create a unified, or more widely applicable set of guidelines that can be used by more, consistently.”

**Citations added:**

35 Zhou J, Müller H, Holzinger A, Chen F. Ethical ChatGPT: Concerns, Challenges, and Commandments [Internet]. 2023 [cited 2023 Jun 14]. Available from: <https://arxiv.org/pdf/2305.10646.pdf>

36 Ph.D BW. Why Smart Leaders Use ChatGPT Ethically And How They Do It [Internet]. Forbes. 2023 [cited 2023 Aug 26]. Available from: <https://www.forbes.com/sites/bruceweinstein/2023/02/24/why-smart-leaders-use-chatgpt-ethically-and-how-they-do-it/>

37 University SC. Guidelines for the Ethical Use of Generative AI (i.e. ChatGPT) on Campus [Internet]. www.scu.edu. 2023. Available from: <https://www.scu.edu/ethics/focus-areas/campus-ethics/guidelines-for-the-ethical-use-of-generative-ai-ie-chatgpt-on-campus/>

The citation list at the end has been adjusted

4. Recommend making “#3 Privacy concerns when using ChatGPT” more of a statement to communicate the recommendation, as done with “#1 Follow ethical guidelines for using GPT” and “#2 Acknowledge the use of GPT in manuscripts” in 4.2 Recommended Regulations for AI-Use.

**Reviewer A Reply 4: Yes, this makes things clearer and fits with the rest better.**

**Changes to the text:**

**On page 13 of 18 we changed the #3 to “Prevent privacy concerns when using ChatGPT”**

### **Reviewer B**

This is a very relevant paper which evaluates with systematicity the impact of LLM on the development of science inquiry and research. It includes an original use of Chat GPT to test such evaluation and gives a clear background of how it works, as well as a history of the use of computer tools to assist the development of scientific papers. The final recommendations for a ethical use of chatGPT are sound and well argued.

**Reviewer B Reply: Thank you for these comments, it is good to see that the intention of the manuscript is recognized.**

### **Reviewer C**

Thank you for the opportunity to review this interesting manuscript! AI and especially large language models both excite and terrify the scientific community. As it is noted in the manuscript, “AI shall be perceived and treated as a tool. Like a hammer, it can be used to create, or it can be used to destroy, but it cannot be judged as good or bad.” To follow on the tool analogy, it has also been said that “When you have a hammer, everything looks like a nail”. It is extremely important to look at these new technologies and ask ourselves, just because they are there, should we adapt the way we work to be able to use them? Or should we rather use our time developing technologies that truly function the way we want them to, complementing our work? ChatGPT shows potential in many tasks, however it should be considered carefully whether it actually works in our favor or not, or does its use lead us to making compromises that will eventually make us take a step backwards instead of moving forward.

**Reply: Thank you very much for reviewing the manuscript, we are glad it was interesting and clearly the messaging has come across well overall – we thank you also for your comments and recommendations, they helped us make the text clearer and place it better within the health sciences domain.**

Some considerations for the revisions of the manuscript:

lines 76-85: Which studies are the claims based on? For example, what UBS study? What examples are there of using ChatGPT as authors or co-authors, and which scientific fields? Any examples from health sciences? Who's opinion is it that scientific articles can become more accessible, engaging and understandable if using AI as a co-author?

**Reviewer C reply 1: Thank you for this comment – it is completely correct that examples and sources should be given here, which we have happily amended!**

**Changes to the text:**

**The source for the UBS study has been added on the appropriate line (page 2) and the citation list adjusted.**

**A source showing the use of ChatGPT as a co-author in several health sciences related research papers has been given: „The Tech Insider. ChatGPT on a Scientific Paper as a Co-author? Does It Even Make Sense? [Internet]. Medium. 2023 [cited 2023 Aug 27]. Available from: <https://pub.towardsai.net/chatgpt-on-a-scientific-paper-as-a-co-author-does-it-even-make-sense-a60de41bbaf6>“ and the citation list adjusted.**

**The opinion has been changed and replaced with “Scholars are quoted as saying that AI contributed on an intellectual level to the content of the writing, which is why co-authorship was given<sup>[4]</sup>. It is possible that the use of ChatGPT makes authoring papers much easier, which might make scientific writing and research work more accessible.”**

Chapter 2: This is a very interesting chapter, however I am missing the relevance of these methods to scientific writing, especially from a health science point of view. Have they been used, and how? A large emphasis has been given to methods generating handwritten texts – why is that?

**Reviewer C reply 2: We have decided that the emphasis on handwritten texts is unnecessary, and removed this emphasis somewhat, as well as shifting the view towards the health sciences more concretely.**

**Changes to the text:**

**In chapter 2.1 (page 6): The emphasis on handwritten texts has been changed/removed by shortening the explanation/detail of various programs. In the list of ‘The main functions of AI in this direction’, the health sciences/medical/healthcare context has been added to emphasise the relevance to health sciences, as well as a final sentence of chapter 2.1.**

**In chapter 2.2. (page 8) in the paragraph below the three-point list, a very current explanation of how GPT training on texts can be used in a health sciences research context. On page 9, in the paragraph below the diagram, the health science context has been added, as well as in the last paragraph of chapter 2.2.**

Chapter 3.1: The chapter touches the subject of misinformation due to biased datasets etc. However I am missing a bit more emphasis on the fact that these models can also hallucinate, meaning that the model makes up information that are not based on any prior knowledge.

All in all a fine manuscript, but I am missing more relevance and link to scientific writing, especially from health sciences point of view.

**Reviewer C reply 3: This is a really good point, as it has direct influence on the domain of health science manuscripts. We have added this and consider it a valuable addition to the text.**

**Changes to the text:**

**The first paragraph of 3.1. has now had this context added, including the implications for the health science domain, with a citation. The second paragraph of 3.1. has two sentences added (sentence 2 of the paragraph, and the final sentence of the chapter) to emphasize the risks hallucination pose once again.**