#17 Artificial Intelligence and research outputs

Contents

1) About this sheet

This sheet in the Research Integrity Resource Sheet series discusses the responsible use of Artificial Intelligence (such as ChatGPT) in the production of research outputs.

Griffith University has produced a web page and resources that provides further guidance about the responsible use of ChatGPT.

2) National guidelines

The Australian Code for the Responsible Conduct of Research (2018) is the Australian standard for research integrity/the responsible conduct of research.

The Committee on Publication Ethics (COPE) has a website, position statement and resources on the responsible use of artificial intelligence in research outputs.

Currently, the are no other recognised

national guidance exists with regards to the responsible use of such systems. At the time of writing, some international publishers have released policy statements precluding the listing of an artificial intelligence system as a co-author.

3) Increasing use of smart tools

Machine learning and smart algorithms are increasingly present in our workflows and processes.

These include Spellcheck in software like Microsoft Word, services like Grammarly proofreading our work and suggesting word choices, voice-to-text systems, digital assistants, citation tools, plagiarism detection and programs like Microsoft Excel suggesting formula.

Recent developments in natural language processing (NLP)/Large Language Model systems (LLM such as ChatGPT) have the potential to radically change scholarly practices, not only during the writing process.

THINGS TO CONSIDER BEFORE USING AI SYSTEMS

1. As of April 2023, none of the commercially available systems appear to be General AI (AGI).

2. As such, the systems cannot genuinely understand their interactions with humans or the text they produce.

3. Systems such as ChatGPT produce their text by harvesting material from the internet without attribution, meaning that they can at least be committing compression plagiarism.

4. They have been known to hallucinate facts.

5. They can amplify the words of trolls, conspiracy theorists or extremist views populists.

4) Limitations of ChatGPT and other current LLM systems

The performance of ChatGPT, in its current iteration (ChatGPT-4 as of April 2023) and other current Large Language Models are not genuine General Artificial Intelligence (AGI).

Much as their predictive language engine can produce startling results that may seem to indicate intelligence, they do not genuinely understand their interactions with humans, or the text they produce.

The text they produce are based upon material compiled from the internet (without the permission of the authors and without appropriate attribution).

The systems can fail at basic reasoning and fail in other significant ways and their bloopers are quite revealing. The systems are known to hallucinate incorrect information and amplify the views of bigots and trolls.

5) Authorship

A number of academic publishers (e.g. Science) have issued policy statements specifically precluding the listing of ChatGPT and other artificial intelligence as a co-author.

This is a sound position because such systems cannot take responsibility for an output nor can it be held responsible when it breaches responsible research standards, such as reusing existing texts without attribution (i.e. plagiarism).

The COPE guidance material can be especially helpful in reflecting on authorship matters and artificial intelligence.

6) Research integrity

For the reasons discussed above, Griffith University researchers should be cautious about the use of such systems in their research outputs.

There is a significant chance that the text produced by such systems will be plagiarised, at the very least in a form of compression plagiarism.

It would be a form of breach of the Australian Code for the Responsible Conduct of Research and the Griffith University Code for the Responsible Conduct of Research for a University researcher to use text produced by an artificial intelligence and claim it as their own work.

7) Use as a tool

Despite the recent snap decisions by publishers and the problems discussed above, ChatGPT and other LLMs are useful tools that can be used constructively in the production of research outputs. But when they are used they should be only employd with a clear understanding

AI SYSTEMS AND AUTHORSHIP

1. Some academic titles have explicitly banned the listing of artificial intelligence systems as co-authors.

2. The same titles often require that there be specific mention of such systems in the preparation of research outputs submitted for publication.

3. Systems like ChatGPT can be helpful in the drafting of an output, but its work should be carefully reviewed and rewritten. Even if a title does not require disclosure of such a system good practice is to do so and comment upon the efforts to revise and refine the wording produced by the system.

4. Such systems cannot take responsibility for their work or be held accountable for any breaches of integrity standards.

of their limitations and problems.

They can be used to help write a section of an output, but the researchers should be prepared to carefully check the text that has been produced and ready to check it, paraphrase and refine it.

8) Detection

The academic paper service Turnitin has recently claimed that it has a detector that is 97% accurate in detecting if a submitted academic paper was produced by an artificial intelligence.

9) Disclosure

When an author utilises a tool like ChatGPT this should be disclosed in the notes on an output. This should also discuss the steps taken to refine the work of the artificial intelligence. Failing to do so could undermine the credibility of the output if it is later discovered that a smart tool was used.

10) Further reading

AI and Scholarly Publishing: A View from Three Experts – The Scholarly Kitchen (Anita De Waard | January 2023)

https://scholarlykitchen.sspnet.org/2023/01/18/guest-post-ai-and-scholarly-publishing-a-view-from-three-experts/

AI et al.: Machines Are About to Change Scientific Publishing Forever – ACS Publications (Gianluca Grimaldi & Bruno Ehrler | January 2023)

https://pubs.acs.org/doi/10.1021/acsenergylett.2c02828#

A.I. Like ChatGPT Is Revealing the Insidious Disease at the Heart of Our Scientific Process – Slate (Charles Seife | January 2023)

https://slate.com/technology/2023/01/ai-chatgpt-scientific-literature-peer-review.html

As scientists explore AI-written tehttps://www.nature.com/articles/d41586-023-00107-z?utm_source=Nature+Briefing&utm_campaign=2fd6fa2583-briefing-dy-20230120&utm_medium=email&utm_term=0_c9dfd39373-2fd6fa2583-43265497xt, journals hammer out policies – Science (Jeffrey Brainard | February 2023)

https://www.science.org/content/article/scientists-explore-ai-written-text-journals-hammer-policies

ChatGPT listed as author on research papers: many scientists disapprove – Nature (Chris Stokel-Walker | January 2023)

https://www.nature.com/articles/d41586-023-00107-z

Nonhuman "Authors" and Implications for the Integrity of Scientific Publication and Medical Knowledge (Papers: Annette Flanagin et al. | January 2023)

https://jamanetwork.com/journals/jama/fullarticle/2801170

Science journals ban listing of ChatGPT as co-author on papers – The Guardian (Ian Sample | January 2023)

https://www.theguardian.com/science/2023/jan/26/science-journals-ban-listing-of-chatgpt-as-co-author-on-papers

Scientists, please don't let your chatbots grow up to be co-authors – Substack (Gary Marcus | January 2023)

https://garymarcus.substack.com/p/scientists-please-dont-let-your-chatbots

What ChatGPT and generative AI mean for science – Nature (Chris Stokel-Walker & Richard Van Noorden | February 2023)

https://www.nature.com/articles/d41586-023-00340-6

11) Scope of these matters

These guidelines apply to all Griffith University research, researchers and research support staff, regardless of whether the work requires ethical or biosafety clearance, the expertise of the parties, the methodology/design used, and/or the funding for the work (if any).

12) Sources of advice

Researchers are urged to consult the other resource sheets produced in this series. Researchers with further questions should consult:

A Research Integrity Adviser (RIA) (whether in their Group or elsewhere in the University) or the Office for Research.

HDR candidates and supervisors can also contact the Griffith Graduate Research School for advice.

For data planning advice, contact library@griffith.edu.au

For data storage advice, contact eresearch-services@griffith.edu.au