THE CHINESE UNIVERSITY OF HONG KONG

Guidelines on the Responsible Use of AI for Research

Preamble

1. The Chinese University of Hong Kong (CUHK) is dedicated to advancing knowledge through the integration of technology with established traditions and ethical practices. CUHK acknowledges the transformative potential of Artificial Intelligence (AI), including Generative AI (traditional AI and Generative AI are collectively referred to as "AI tools" in these Guidelines), in enhancing research and creative activities for both students and staff. While we support and actively engage with AI tools, it is essential for CUHK members to recognise their limitations and use them responsibly. This document outlines a set of emerging guidelines for our students and researchers, including those participating in research activities. These guidelines apply to the ***entire research process, from the conceptualisation of the idea, preparation of grant proposals, and conducting the research to the publication, dissemination, impact creation, and other relevant research activities undertaken by researchers and by students and staff involved in the research under their supervision.*** Given the rapidly evolving AI landscape and the development of various new AI tools, these guidelines are expected to be periodically reviewed and updated.

Definitions

2. Definitions:

   (a) **AI:** Artificial Intelligence (AI) is the branch of computer science dedicated to developing systems or machines capable of performing tasks that typically require human intelligence such as learning, reasoning, problem-solving, understanding natural language, and perception. AI systems can either be rule-based or use machine learning to adapt and enhance their performance over time.

   (b) **Generative AI**: Generative AI refers to a type of artificial intelligence that creates new content, such as text, images, music, or videos, based on patterns and data that are used to train models known as deep neural networks.

   (c) **GPT**: A Generative Pretrained Transformer. Generative means that this model can create new data, such as text and images. Pretrained means that the model has been trained on extensive data to address a problem and perform a specific task. Transformer refers to the deep learning process in which an input is transformed into another type of output. GPT is a subset of Large Language Models (LLMs) that have learned mathematical relationships among vast amounts of data.

   (d) **Online AI tools:** AI tools that are accessible online and typically run by a third party (e.g., Google Gemini, ChatGPT), as opposed to locally hosted AI tools.

Challenges and Risks

3. Researchers should be aware of the following major challenges and risks associated with the use of AI in research:

   (a) **AI can be Error-Prone**: AI can and frequently does make errors. It can produce non-factual information, which is a phenomenon referred to as the generation of "hallucinations". Examples include creating false citations or producing seemingly plausible but untrue data, which can potentially mislead users. In addition, many AI tools lack reliability and consistency due to limited data access, inherent random factors in algorithms, and outdated training information, leading to varying responses to similar inputs. The same prompts may not yield the same results, even when the same dataset and algorithms are used.

   (b) **AI can Introduce Bias**: AI can also and frequently does introduce bias by reflecting and amplifying existing stereotypes. As AI lacks true understanding, it may produce inappropriate or offensive content without context.

   (c) **Concerns About Privacy**: The use of AI tools raises various privacy concerns, including data collection and use and individual privacy. Researchers must be transparent about how they collect, use, and secure their data, and must share it responsibly. Sharing data with AI tools may potentially lead to CUHK breaching its confidentiality obligations and exposing work to the public without permission.

   (d) **Concerns About Intellectual Property Rights**: Disclosing unpublished data and results may potentially jeopardise a researcher's claim to the intellectual property rights contained within the unpublished data and results. For example, a researcher may inadvertently negate the novelty of an invention through online disclosure, severely reducing the likelihood of obtaining protection through patent application.

Ethical Principles

4. AI tools must be used ethically and responsibly. The ***cardinal principle*** is that researchers and the students and staff under their supervision remain fully responsible for the work, regardless of whether any AI tools are used in arriving at the final results. The Hong Kong SAR Government and the United Nations have established principles and a framework for AI use, respectively, which can be summarised into the following core principles:

   (a) **Data Privacy**: Researchers must handle data responsibly. They are responsible for the conduct of the students working under their supervision, ensuring the protection of individuals' personal information, using only collected research data for their intended purposes, and maintaining confidentiality and security.

   (b) **Accountability**: Researchers are accountable for the accuracy and ethical implications of the results of their work. This includes work delegated to their students under their supervision and work produced with the aid of AI tools. Those who have engaged in unethical practices may be subject to disciplinary action.

   (c) **Beneficial AI**: AI tools should be used by researchers to improve society, meet community needs, and be aimed at having a positive impact on the common good. AI

tools may be used in a research environment, but researchers are reminded to keep the cardinal principle in mind at all times.

(d) **Cooperation and Openness**: AI tools should be used by researchers to encourage collaboration with other researchers and with stakeholders and the public to enhance transparency and knowledge sharing. Researchers are encouraged to share their findings, methodologies, and data with the broader research community and the public.

(e) **Sustainability and Just Transition**: Researchers should take into account the environmental and social impacts of AI research, and develop strategies to reduce any adverse effects on communities. Communities with smaller digital footprints and limited access to AI tools should be considered so that AI can be used more equitably.

(f) **Transparency and Explainability**: Researchers should openly disclose information on their use of AI tools and the process behind generating the results, and explain how outcomes can facilitate better understanding. They should also be able to articulate the assumptions, processes, and limitations of this approach.

(g) **Oversight**: Researchers should ensure that human judgment remains central to the decision-making processes concerning AI tools.

(h) **Lawfulness and Compliance**: Researchers must follow the laws and regulations that govern the use of AI in research.

(i) **Continuous Monitoring and Evaluation**: Researchers must regularly evaluate the performance and ethical implications of applying AI in research.

Guidelines on the Use of AI in Research

5. CUHK expects its researchers and their supervised students and staff to follow these guidelines when using AI in research:

Authorship

6. Researchers must acknowledge the contributions, if any, of AI tools to their work. However, AI tools cannot be considered as authors or co-authors in research publications[1], nor can AI be credited as a Principal Investigator (PI), Co-PI, or collaborator in any research publications or grant applications.

7. Researchers must ensure compliance with the guidelines of their target publications. Different publishers and disciplines have different requirements for the utilisation of AI. Some publishers may require an explicit acknowledgment of AI use or prohibit its use in certain parts of the research process and peer review.

8. Researchers should ensure that they understand the funding agencies' standards and criteria for using AI in grant applications and peer reviews. Grant proposals are expected

[1] The Hong Kong government has recently completed a two-month consultation on copyright issues arising from the use of Generative AI. The law on copyright (e.g., authorship) may be amended. There is currently no legislative timeline for the amendment of the Copyright Ordinance (Cap. 528).

to demonstrate original ideas. AI can generate plagiarised or misleading content, so researchers must exercise caution when using content generated by AI. They are reminded that plagiarism constitutes serious academic misconduct.

9. Reviewers should not solely rely on AI to evaluate manuscripts or grant proposals. Using AI for reviews increases the likelihood of inaccurate, incomplete, or biased judgements regarding a paper or grant application. Reviewers are ultimately responsible for the accuracy and quality of the content within their review reports.

Data Privacy and Protection

10. Researchers should avoid sharing confidential information, personal details about the university's employees, students, and faculty, or sensitive data with third-party AI tools (especially online AI tools such as the various publicly available versions of GPT), which often do not offer sufficient privacy and security guarantees, as this could lead to data breaches and privacy violations. This may result in civil or even criminal liability under the applicable law.

11. Researchers must prioritise and protect the privacy and security of research data when processing or analysing such data. They must adhere to all relevant data privacy laws[2], regulations, and institutional guidelines. Researchers must ensure that they understand the risks associated with using AI tools, especially those concerning data storage, sharing, and retention.

Accountability

12. The researcher (and the students and staff they supervise) is the ultimate person responsible and accountable for the content of research outputs (and grant proposals), including content generated or supported by AI.

13. AI outputs may be inaccurate or misleading. It is important to verify any information from AI tools with trusted sources before using it in research. Researchers should also keep detailed records of how they use AI tools in their research. Proper record keeping (including the name and version of the AI tool used, the date, and the task performed) is vital for defending against any allegations of misuse and for protecting the researchers and CUHK from reputational damage.

Acknowledgements and Disclosure

14. Researchers should acknowledge the contributions of AI tools to their research outputs when appropriate. They should also document the use of AI to ensure transparency (bearing in mind the importance of proper record keeping, as stated above). As more AI tools are developed, specifying the use of AI in the methodology description will become integral to research studies. Researchers should always initially refer to the guidelines of

[2] Researchers should be aware that China's Personal Information Protection Law ("PIPL") and the EU's General Data Protection Regulation ("GDPR") have extra-territorial effect. This means that processing personal data outside of China and the EU may still be governed by the Chinese PIPL and the EU's GDPR under certain defined circumstances. Violations of either law may potentially expose CUHK to substantial financial penalty and significant reputation damage.

publishers and funders, as they may vary in their policies on the appropriate use of AI. This may include the need for acknowledgement, or concerns about the confidentiality of submitted work and reviewer feedback.

15. Please also refer to the University's Guidelines for Publication Ethics and CUHK Library website on the format of in-text citations and references.

Copyright and Intellectual Property

16. Researchers should avoid sharing copyrighted materials[3]. This includes their own material[4], that of CUHK, and more importantly any third-party's material[5] or licensed and open access works. Some publishers prohibit uploading content that could be used to train AI models.

17. Researchers must not claim AI-generated results as their original work. They should refrain from plagiarising or infringing on others' intellectual property rights when using AI tools. Such tools may also use or generate content that violates copyright laws. Researchers should consider specific factors when using AI tools for research that may be eligible for patent application, and must carefully evaluate the intellectual property implications of using AI tools.

18. Researchers should exercise caution when disclosing information or intellectual property to AI models through prompts or other methods such as upload functions[6]. For copyright to apply to original work, it must have originated from a human author who exerts intellectual effort. It is currently unclear if copyright protects materials created by AI tools under the current law governing copyright, and thus users may inadvertently infringe on copyright when using such tools.

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[3] This may occur for example when inputting a large section of copyrighted material into the AI tools as a single prompt or a series of prompts.
[4] Examples of a researcher's materials include but are not limited to laboratory notes, diagrams, and all original ideas that have been reduced into forms of writing.
[5] Sharing third-party copyright material without the third party's consent amounts to copyright infringement.
[6] Some tools allow users to specify their preferences for how their prompts are to be used, and researchers are encouraged to carefully examine the available options for intellectual property protection when using AI tools.

Appendix

1. CUHK Policies, Guidelines and Procedures

This document should be read in conjunction with CUHK's research-related policies, guidelines and procedures, including but not limited to:

- Policy on Research
- Policy on Intellectual Property
- Guidelines on Research Data Management
- Guidelines on Cross-border Transfer of Research Data from Mainland China
- Research Integrity - Guidelines of all of our ethics committees
- Guidelines for Publication Ethics
- Generative AI Policy for Teaching and Learning
- LibGuides on Using AI in Education and Research
- Honesty in Academic Work: A Guide for Students and Teachers

2. External Policies, Guidelines and Procedures

Researchers must familiarize themselves with international standards and practices, and ensure compliance with relevant regulations and guidelines, for examples:

2.1 Government

Code of Conduct for Responsible Research (2023) published by the Ministry of Science and Technology of the People's Republic of China.

- Includes disclosure of generative AI use and labelling of content, not using AI to generate research grant applications, not listing AI as authors, not listing references generated by AI unless verified, not citing AI-generated content as original references, not leaking material during peer review.

Ethical Artificial Intelligence Framework (2024) published by Digital Policy Office, HKSAR Government.

- Guides organizations in integrating ethical principles throughout the planning, design, and implementation phases of AI applications to ensure AI initiatives are ethically sound, transparent, and beneficial to society.

Living Guidelines on the Responsible Use of Generative AI in Research (2024) published by European Commission

- Outlines guidelines for the responsible use of generative AI in research, emphasizing the need for researchers, organizations, and funding bodies to adopt best practices that ensure integrity, transparency, and accountability in AI applications. It highlights the potential benefits of generative AI while also addressing risks such as misinformation and ethical concerns, advocating for a collaborative approach to develop a culture of responsible AI use in the scientific community.

2.2 Publishers

- Cambridge University Press – AI Contributions to Research Content
- De Gruyter – Publishing Ethics
- Elsevier – The Use of Generative AI and AI-assisted Technologies in Scientific Writing
- Emerald – Publishing Ethics - Authorship
- IEEE – Guidelines for Artificial Intelligence (AI)–Generated Text
- IOP Publishing – Use of Large Language Models/AI Writing Tools

- Sage – ChatGPT and Generative AI
- Science - Authorship & Image and Text Integrity (Artificial Intelligence)
- Springer Nature – Artificial Intelligence (AI)
- Taylor and Francis – AI-based Tools and Technologies for Content Generation
- Wiley – Artificial Intelligence Generated Content

2.3 Professional Bodies

Committee on Publication Ethics (COPE) does not allow GenAI as authors and requires disclosure of the use of AI tools in publication.

- "AI tools cannot be listed as an author of a paper."
- "Authors who use AI tools in the writing of a manuscript, production of images or graphical elements of the paper, or in the collection and analysis of data, must be transparent in disclosing in the Materials and Methods (or similar section) of the paper how the AI tool was used and which tool was used."

3. Useful Resources for Researchers

- Elicit
- Perplexity
- Research Rabbit
- Scite (The CUHK Library has subscribed to the paid version)
- Semantic Scholar

4. References

- Time - The A to Z of Artificial Intelligence
- United Nations - Principles for the ethical use of artificial intelligence in the United Nations system
- World Economic Forum - The Future of Artificial Intelligence