Statement of Principles

Research Management in the Era of Artificial Intelligence

Preamble[1]

Research funding agencies worldwide play a pivotal role in steering and directing research activities by prioritizing research themes, designing research funding programs, formulating calls for proposals, building databases of scientific examiners, and establishing robust peer-reviewing /merit-reviewing processes. They also manage research contracting and fund awarding processes, examine periodic research reports, measure the impact of funded research, and establish policies/guidelines for research funds. AI may be used to enhance and expedite these processes. When operated according to rigorous governance, AI systems have the potential to automate some of these processes effectively while respecting ethical and legal framework conditions.

AI has witnessed considerable advancements in the past five years. This has led to building systems that can generate contents that are, in different aspects, indistinguishable from those generated by humans. Current AI systems, especially foundation models[2], encode a vast amount of human knowledge and are being used extensively to automate many tasks that require human-level inference.

To uphold excellence and fairness in research funding processes, the GRC provided a worldwide agreement on the core, high-level principles necessary for a rigorous and transparent review system, aiming to build trust between trans-nationally collaborating funding agencies[3]. This agreement also serves as the foundation for tolerance to differences in the peer/merit review system, and research communities. Henceforth, the principles of adopting AI in research management, provided herein, are drawn in alignment with the GRC merit review principles.

The GRC participants recommend that research funding agencies should adopt the following principles.

AI Adoption

AI is increasingly embedded in various domains where it has the potential to significantly improve efficiency and optimize processes. Its adoption presents a valuable opportunity to enhance research workflows, streamline decision-making, and drive innovation. Research funding organizations should understand the importance of AI. However, to maximize its benefits while minimizing the risks, AI adoption should be

[1] The Global Research Council is a voluntary, participant-based organization that recognizes the different missions, mandates and remits of its participant organizations within their respective national research eco-systems. Its positions, decisions or statements are non-binding on participant organizations. Endorsement of such reflects that–participant organizations may adopt statements in ways that are consistent with national policies and priorities.

[2] Bommasani, R., Hudson, D., Adeli, E., Altman, R., Arora, R., Arx, S., Bernstein, M., Bohg, J., et al. (2022). On the Opportunities and Risks of Foundation Models, ArXiv.

[3] GRC, "Statement of Principles on Peer/Merit Review," 2018. [Online]. Available: https://globalresearchcouncil.org/fileadmin/documents/GRC_Publications/Statement_of_Principles_on_Peer-Merit_Review_2018.pdf.

regulated and aligned with best practices. A governed AI integration will ensure its responsible and effective use in research management.

Decision Making

Final decisions on research proposals should be made by humans. Due to challenges involving unpredictable behaviors by AI systems, decisions should not be made solely by these systems and human oversight is necessary. AI systems should be supporting humans and should not be replacing them.

Bridging the Digital Divide

The adoption of AI in research management should not exacerbate existing digital inequalities. AI development and deployment require substantial infrastructure and specialized skills, which pose significant challenges, particularly in developing regions. Addressing these disparities is essential to ensuring equitable access to AI technologies. To mitigate the digital divide, access to advanced infrastructure, resources, and AI technologies should be expanded to support under-resourced regions. Encouraging the adoption of open-source AI systems and fostering inclusive and globally accessible AI training programs will help build local capacity and enable broader participation in using AI for research management. Additionally, improving connectivity in under-resourced regions is crucial to ensuring reliable access to AI services and tools.

International Collaboration

Fostering international collaboration is essential for advancing the adoption of AI in research management. By sharing best practices, resources, and expertise across borders, GRC participants can collectively enhance AI integration, particularly in regions with limited technical capacity and resources. Strengthening global cooperation will ensure more equitable access to AI tools, support capacity-building efforts and promote responsible and effective use of AI in research management worldwide.

Bias and Fairness

Ensuring fairness in AI-driven research management is critical to maintaining equity, integrity, and transparency in decision-making processes. While AI has the potential to mitigate human biases, it may also introduce other biases when trained on biased data leading to the marginalisation of underrepresented research communities. To uphold fairness, AI systems should be trained on diverse and contextually appropriate datasets, ensuring that they capture salient factors relevant to all communities, including minority communities, while avoiding discriminatory biases. When used in peer review and research evaluation, AI should align with established impartial review policies and guidelines, preventing undue influence over funding decisions or research priorities. Additionally, linguistic biases embedded in bibliometric data must be carefully assessed, as they can shape perceptions of research impact and field-specific advancements. AI-driven evaluations should be designed to recognize and support marginal research communities, ensuring that their contributions are visible, valued, and provided with adequate resources to thrive. Addressing these challenges requires a proactive approach to fairness, inclusivity, and responsible AI governance in research management by research funders.

Transparency and Accountability

Transparency and accountability are critical in the use of AI for research management to mitigate risks and ensure responsible deployment. It is essential to recognize that: AI systems can generate misleading or unexpected outputs, sometimes acting unpredictably; the inner workings of many AI models, particularly foundation models, remain insufficiently understood; and AI systems are susceptible to manipulation and malicious interference. To uphold transparency, AI usage guidelines should explicitly define when, where, and by whom AI systems may be used. Policies should incorporate measures to deter deceptive or manipulative use of AI. Additionally, all AI-driven decisions should be explainable and subject to validation. Any irrational

or unexpected outputs should be critically assessed, disregarded if unreliable, and formally reported to ensure accountability.

Privacy, Data Security, Intellectual Properties, and Knowledge

Using AI throughout the research management processes should ensure the protection of sensitive data and proprietary ideas from unauthorized access and use. Storing research proposals should comply with an author's consent and adhere to security standards that ensure confidentiality, integrity, and availability. The author's consent should state clearly how and where the data is stored, for how long the data is kept, and to whom the data will be visible. Research proposals should be processed in a way that is clear to the authors. Using research proposals to further enhance AI systems, including training them, should not be done without a clear author's consent. Furthermore, research proposals contain novel techniques, ideas, and knowledge proposed by researchers. The adoption of AI in research management should not cause any infringement on intellectual properties, misattribution of knowledge, or impediment to intellectual property management. Generative AI should not be exploited to generate new content based on the submitted proposals. Inventions, including but not limited to designs, charts, multimedia content, and creative texts, should not be manipulated.

AI Literacy

Increasing the awareness of AI systems and their limitations and training the people who will use them is essential to maximizing the benefits and reducing misuses and violations of the principles stipulated in any regulations and policies. People operating or using AI systems should have all the necessary training to ensure full compliance and be aware of the tools' limitations.

Sustainable Development

Some AI systems, especially foundation models, use specialized infrastructures that consume a vast amount of energy, water, and perhaps other valuable natural resources. The use of AI should uphold sustainable development. In general, AI adoption should not cause harm or negative effects to the environment or the ecosystem.

Actions

The GRC participants recommend that research funding agencies should take the following actions:

1. Promoting free and open-source AI models and making them available for other research funding agencies. Moreover, the GRC and its participants should support research on building AI models that require less computational power. This will increase international collaboration, help bridging the digital divide, and maintain sustainable development.

2. Maintaining public trust by publishing and making obvious how the employed AI system was trained, how it is used and how the user data and the research proposals are stored and processed. This will increase transparency, ensure human oversight, reduce bias, and preserve data privacy and security.

3. Encouraging publishing public training data in compliance with all the privacy and security protection agreements. Although, sharing training data is encouraged, it is necessary that any shared data should not violate the privacy of the users, infringe intellectual properties, or cause any security compromise to individuals or entities. Sharing public training data will increase the international collaboration, help bridging the digital divide, and increase the AI adoption.

4. Conducting continuous evaluation of the AI systems employed in research management and publishing their performances. This will increase the awareness of the limits of the AI systems and will help in deciding about how these systems are used in the decision making. It will also contribute to maintaining the public trust.

Furthermore, the GRC participants agree on:

1. Studying the feasibility of establishing a working group on AI. If the participants agree on establishing a working group, it is suggested that the champion of this working group is from the participants who have high maturity in AI adoption.