

Guideline for the Responsible use of Generative AI in Research



These guidelines have been developed to support academic staff and Higher Degree by Research (HDR) candidates—both referred to as *researchers* in this guideline document—in the responsible adoption of Generative Artificial Intelligence (GenAI) tools in research. GenAI specifically refers to software systems that will generate ‘content’ (text, imagery, audio, or video) using generative models in response to user prompts. Generative models (typically deep neural networks) ‘learn’ underlying patterns and structure in large quantities of context-specific ‘training’ data and assemble the response to the user by mapping these patterns to the supplied prompt and generating data that has similar characteristics. As such, the effectiveness of any generative model is entirely dependent on the quality and diversity of the data the model is trained on; thus, responses may be subject to generating unreliable, inaccurate, and biased misinformation. Moreover, the source of the training data is often unknown to the user and may have been collected without consent or in a manner counter to ECU’s core values. The responsible use of software tools in academic research at ECU is the obligation of the individual researcher and must follow the [Australian Code for the Responsible Conduct of Research](#) and ECU’s [Ethical and Integrity policies](#).

1. INTENT

GenAI represents a diverse, and rapidly evolving field. There are numerous software applications, user interfaces, services, frameworks, plugins, extensions, and chatbots powered by an ever-growing number of GenAI tools developed through networks of independent stakeholders, infrastructures, and data supply chains. As such, the guidelines presented here should not be considered a comprehensive or exhaustive overview; rather, this document offers introductory guidance to promote effective integration of GenAI tools into existing research culture and practices.

2. ORGANISATIONAL SCOPE

ECU has an [Artificial Intelligence Framework](#) for the productive and ethical use of AI to advance our purpose, strategic vision, and values. The guidelines herein reflect on the potential risks of various GenAI uses including consideration of potential consequences. The AI Framework and these guidelines, enable members of the ECU research community to make informed choices about engagement with AI. This approach is informed by the CSIRO’s discussion paper ‘[Artificial Intelligence: Australia’s Ethics Framework](#)’ and aligns with ECU’s [Integrated Risk Management Framework](#).

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All researchers at ECU are required to comply with the expected behaviour and the policies and procedures that govern research activities at ECU. These are not specific to GenAI, but it is important to note that these policies and procedures are updated as the research landscape changes, so it is the researcher's responsibility to ensure that they are aware of and comply with the most recent versions. They also provide guidance to researchers regarding their responsibilities to report potential research and academic misconduct.

It is important that researchers undertake due diligence and engage with line managers, supervisors, and ECU's learning support services specific to their research disciplines and methodologies to ensure that their activities are appropriate for the discipline and comply with relevant legislation, rules, policies and procedures.

The University complies with its obligations under the:

- [Australian Code for the Responsible Conduct of Research](#)
- Tertiary Education Quality and Standards Agency ([TEQSA](#))
- [ECU's Core Values](#)
- [ECU's Staff Code of Conduct](#)
- [ECU's Student Code of Conduct](#)
- [ECU's Conducting Research with Integrity Policy](#)
- ECU's [Risk Assessment](#) & [Ethics Process](#) and Guidance

3. CONTEXT

3.1 GenAI in Research

Commonly used GenAI tools in research include those that assemble text using Large Language Models (LLMs) designed to assist with a broad range of language-based tasks. For example, GPT (Generative Pre-trained Transformer), developed by the research organisation OpenAI, receives and responds to prompts in natural language through its commonly used interface variant ChatGPT. Several LLMs exist such as BERT (Bidirectional Encoder Representations from Transformers), T5 (Text-To-Text Transfer Transformer), RoBERTa (Robustly optimized BERT approach), XLNet, ALBERT (A Lite BERT), and Turing-NLG. Each is powered by a range of interfaces specialising in its own text-based tasks, from data interpretation, conversational engagement, personal and educational assistance, content creation, information retrieval, and programming. GenAI tools also exist to assemble images by responding to text (or other) prompts (e.g., DALL-E, Midjourney, and Stable Diffusion). GenAI tools that specialise in assembling music and sound can include OpenAI Jukebox,

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Amper Music, AIVA (Artificial Intelligence Virtual Artist), Humtap, Boomy, Ecrett Music, and NSynth.

3.2 Opportunities and Risks Associated with GenAI

The positive impact of GenAI in research is indisputable. There are many pathways available for researchers to adopt rudimentary GenAI tools to streamline and enhance research workflows. These include automating routine data collection; preprocessing and integrating data captured in multiple formats (e.g., text, image, video, audio); summarising vast amounts of literature; and helping write and debug computer code, to name a few. More recently, rapidly expanding opportunities have emerged around the use of GenAI tools for fundamental research skill development, tailored to the specific needs of an individual. These include:

- *Personalised and immediate learning support.* GenAI can act as a personal tutor/assistant providing guidance in domain-specific research questions, clarifying complex concepts, breaking down language barriers, and even help find inspiration for future potential research direction(s).
- *Brainstorming.* After presenting a basic research concept to the GenAI system, a researcher may receive suggestions on experimental approaches, possible methodologies, or possible refinements to the research question.
- *Critical thinking.* Using LLMs to ask questions of a researcher, not just answer them. Researchers may provide a research hypothesis with the GenAI used to generate counterclaims, alternative explanations, reservations, and qualifications.
- *Generating synthetic data.* GenAI can create high-quality data at a high-volume that simulates the characteristics of real data. This allows researchers to test new hypotheses, analytical methodologies or algorithms in an environment that may minimise data privacy concerns or participant burden.
- *Writing assistants.* Beyond common spelling and grammar checkers, GenAI can now be used to help structure prose, rewriting paragraphs to be more readable to specific audiences, or provide personalised feedback on writing style. Such assistance may play an important role in the translation of research across all areas of the community.

It is important to note that there are considerable risks associated with these more advanced GenAI tools. Over reliance on solution-based assistance may diminish critical thinking skills and/or result in technology dependence and raise questions over authorship and competence. Additionally, as previously discussed, LLMs are only as good as the data on which they are trained, so information generated can be biased, incomplete, or even factually

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incorrect. LLMs may fabricate answers (commonly referred to as ‘hallucination’) when lacking useful information matching. Furthermore, despite the name, GenAI systems do not have (generalised) intelligence. They cannot use experiential judgment to evaluate the quality of data they are trained on, provided by the user, or generated in output. Moreover, users must also be aware that any data submitted to a public LLM could then potentially be added to the training data of that generative model, so care must be taken with respect to ownership and confidentiality of data.

Beyond issues of reliability, bias and personal growth, there are several far-reaching ethical, legal, and integrity concerns that must be considered in the use of GenAI in all aspects of research. The ECU Framework for the Productive and Ethical Use of Artificial Intelligence provides researchers with an additional toolkit for reflecting on the ethical implications of research involving AI. The remainder of this document provides research specific guidelines on these issues.

4. GUIDELINE CONTENT

4.1 Use of Public GenAI versus Private GenAI in Research

Public GenAI refers to any publicly available GenAI tool. These tools are typically trained using publicly available data from across the internet (text, images, and videos). There is no guarantee that training data is collected with consent of the original author or whether the use of training data has contravened any copyright laws. The act of using a public GenAI tool may require the user’s query data to be subsequently used as training data. As such, public GenAI tools must be used with utmost caution whilst following the guidelines below. Public GenAI tools should be used **only** as assistive technology and not used to in the direct conduct of research (e.g. to produce research outputs).

Private GenAI refers to the practice of training GenAI models using only data owned by a single individual, research team, or private organisation(s). The resulting GenAI tools are unique. As such, the associated generative intellectual property is often owned by the organisation(s). Private GenAI tools can either be built in-house by experts in the field or by downloading and installing an existing LLM software platform. Researchers involved in the development of private GenAI tools for specific research projects at ECU must undertake due diligence that their activities are appropriate for the discipline and comply with relevant legislation, rules, policies, and procedures. If the private GenAI tools are downloaded and partially pretrained using either public or proprietary data, then any resulting private GenAI tools may not be entitled to copyright protection or private ownership (see section 4.7).

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4.2 Higher Degree by Research

A crucial element of a successful Higher Degree by Research (HDR) candidature is the establishment of a constructive supervisory relationship. Supervisors, as the primary guides in HDR candidates' research endeavours, play a vital role in ensuring that these students are informed of the ethical and appropriate application of GenAI in their research activities.

It is essential for both supervisors and HDR candidates to have mutual understanding regarding the transparent use of GenAI in their research, thereby ensuring alignment and maintaining research integrity. It is strongly recommended that such agreement is provided in writing within the candidate-supervisor panel agreement (Milestone 1), publication plan (Milestone 4) and revisited throughout the candidate's enrolment. Initiating open and effective communication at the outset of the candidature, along with regularly assessing mutual expectations, can prevent potential disagreements and disruptions later in the research journey.

The required acknowledgement for any contribution by GenAI to a candidate's HDR is outlined in the [ECU Thesis Preparation Guidelines](#). Candidates should be aware that their own original contribution to the thesis or exegesis will be assessed. Therefore, the Candidate must ensure that any use of GenAI supports their learning and development rather than replacing an important skill required in their course. This includes the very important roles that reading, writing, and critical thinking play in the learning process and in research translation and communication. While it is the responsibility of HDR Supervisors to educate and guide their students in the responsible use of GenAI, HDR Students are ultimately responsible for the use of GenAI, their research and any content in their thesis, exegesis, assessments, and/or other research outputs.

4.3 Literature Reviews

Researchers should be vigilant towards the possible bias and inaccuracy of content generated using AI tools. This is critically important in the scoping and conduct of literature reviews. Researchers should also carefully consider the role and value of human-centered judgement and critical thinking required in the literature review process. While AI tools may facilitate researchers to conduct literature reviews more efficiently and effectively, their use to summarise content may impact researchers' own critical reflection and analysis of the available literature. Researchers, particularly HDR candidates, should remain cognisant of the fallibility of AI given the important role of literature reviews to consolidate ideas, generate

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hypotheses, establish theoretical frameworks, develop perspectives, and understand and learn from current knowledge. It is important to note that GenAI may fabricate non-existent references, so all generative outputs must be rigorously checked.

4.4 Research Outputs and Publication Preparation

GenAI can assist at numerous stages of the research publication process including formatting results, editing written content, aiding in literature reviews, collating references, identifying suitable journals, and identifying reviewers. The role of AI within these processes is rapidly evolving, with publishers, conference organisers and others seeking opportunities to leverage the potential of GenAI.

Researchers are responsible for ensuring that all content provided in their research outputs is their own work, or if derived from other sources, that its use is appropriately cited or acknowledged. Acknowledgement in the use of GenAI can take many forms and will depend on the use within the research and particular research output (e.g. creative works, thesis, peer reviewed publication).

Scientific journals and research disciplines have differing requirements regarding the appropriate use and acknowledgement of GenAI within research and the writing process. Researchers must agree to a given journal's GenAI policy before submitting their work. It is generally accepted by publishers that GenAI tools cannot be an author of a research output and that authors are responsible for the research and content of the output.

Researchers publishing work with a third-party (e.g. journal or book publisher) should also consider copyright requirements of the publishing company prior to considering the use of AI to generate any output.

4.5 Applying for Funding and Grant Writing

GenAI has the potential to assist researchers and administrators in the identification, crafting, and management of research grants and grant funding opportunities. Such opportunities may improve quality, success, and efficiencies in the grant application process. However, the use of GenAI in crafting research grants has important implications for honest, transparent, fair, and responsible research practices. Researchers are required to comply with the rules published by the relevant funding body regarding the responsible and ethical use of AI within the grant funding process. The [Australian Research Council](#) (ARC) and [National Medical and Health Research Council](#) (NHMRC) have policies that provide guidance

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on the use of GenAI for grant applicants. These policies focus on exercising caution when submitting data to any generative algorithm as it may not be possible to prevent data from being reused without permission. They also forewarn that the accuracy, authorship, and intellectual content of all data submitted must be certified by the administering organisation.

4.6 Peer review

The benefits and risks of AI within the peer review process are not yet clearly understood. However, among journals, AI is beginning to play an increasing role in areas of plagiarism prevention, formatting and compliance checks, and identifying potential reviewers.

Regarding the peer review process for journals and funding bodies, reviewers must treat submissions in-confidence and must not disclose any information in submissions under review. That includes disclosure to GenAI tools. [The Australian Code for the Responsible Conduct of Research](#) indicates that researchers are required to conduct the peer review process in a manner that is fair, rigorous, timely and adheres to relevant confidentiality requirements. As such, the guidelines for peer review of research outputs are even more strict than those outlined above in *Applying for Funding & Grant Writing*. When peer-reviewing, researchers must understand that providing any content or materials to GenAI tools (commercially available or third-party AI tools), even if anonymised, will likely be a breach of ECU's or any other organisations confidentiality regulations. This strict avoidance of GenAI also applies to grant assessment. The [National Health and Medical Research Council \(NHMRC\) Policy on Use of Generative Artificial Intelligence in Grant Applications and Peer Review](#) indicates that:

Peer reviewers must not input any part of a grant application, or any information from a grant application, into a natural language processing and/or artificial intelligence technology system to assist them in the assessment of applications.

The [Australian Research Council \(ARC\) Policy on the Use of Generative Artificial Intelligence in the ARC grants programs](#) also outlines similar considerations regarding confidentiality and integrity in relation to the grant peer review process.

Release of material into generative AI tools constitutes a breach of confidentiality and peer reviewers, including all Detailed and General Assessors, must not use generative AI as part of their assessment activities.

4.7 Copyright and Intellectual Property

Currently in Australia, there is no legislation overarching GenAI or AI copyright. Instead there are other relevant legislation and frameworks ([Australian AI Ethics Framework 2019](#)) which may regulate certain aspects, use cases or risks of an AI system on a case-by-case basis.

Researchers must only treat publicly available GenAI tools as assistive technology. Researchers should consider intellectual property ownership of their research and research outputs, and accountability of such outputs in accordance with ECU's policies and guidelines, as well as other terms of use for the GenAI services or tools.

Researchers using GenAI in the creation of any work should be aware that:

- The output may be subject to intellectual property infringement because GenAI models can use copyrighted material for training GenAI models.
- They may not be entitled to obtain copyright protection or ownership in the output due to the data set used to train the GenAI models or the issue of human authorship under the Copyright Act 1968 (Cth).
- Researchers must respect intellectual property rights and avoid unauthorised use of copyrighted materials in training GenAI models. If used it must be acknowledged as such, and IP issues resolved accordingly. Please refer to ECU's Legal and Integrity team if unsure.
- ECU Staff and Students must not submit the University's Intellectual Property or confidential Enterprise Data into a GenAI tool without the clear instruction and appropriate approval. Do not input any of ECU materials or resources or any confidential information into the GenAI tools.

Further details for both students and staff relating to copyright at ECU are available [here](#). The [Australian Copyright Council](#), [Arts Law](#) provide helpful factsheets, commentary and information relevant to GenAI and copyright.

4.8 Data protection, Confidentiality and Security

The collection, storage, use, archival, and destruction of research data or data generated or created through GenAI tools must, as a minimum, comply with the [University's Privacy Policy](#) and comply with all relevant consent and usage disclosure requirements.

The University is committed to the responsible management of personal information or personal data collected. All researchers should be conscious of our obligations to protect

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the privacy of any individual who may be identifiable through any usage of personal information or personal data. Use caution and undertake due diligence before personal information or personal data is input into GenAI tools.

Publicly available GenAI tools (including commercially purchased/subscribed) may rely upon data entered for further training and improvement of the underlying generative model. GenAI tools may also extract sensitive information from provided data and chat histories, and reshare them with other users in the form of search results. Researchers should assume that any information they enter in these tools will become public.

There are several security risks associated with the use of GenAI tools, such as exposing personal information and manipulating it maliciously, as well as cyber and fraud attacks. Many publicly available GenAI tools lack the data security and regulation compliance requirements important in the management of research data. As with all aspect of data management, researchers must carefully consider their privacy and data security responsibilities when using GenAI tools.

Researchers must consider the impact of using GenAI on the management of data across all stages of the research journey. It is a responsibility of all researchers under [The Australian Code for the Responsible Conduct of Research](#) to establish and maintain a clear and accurate [Research Data Management Plan](#) (DMP). ECU's DMP is aligned with the ethics application process which considers aspects of data characteristics, storage and security, retention, access and reuse. More details on the data management responsibilities of researchers can be found [here](#).

4.9 Research Ethics and Integrity

All research projects undertaken at ECU must undertake appropriate risk assessment prior to commencement. ECU has established policies and processes for the management of risks in research, including but not limited to, the [ethics review](#) and [risk management](#). Such risk assessment processes are important in the identification and management of risks associated with the use of GenAI. Researchers should ensure that they are transparent and honest in their use or intended use of GenAI throughout these ethics and other risk assessment processes.

Integrity is a core value of ECU and integral to research conducted at the university. ECU has established processes for the management of [academic](#) and [research integrity](#).

The ECU [Framework for the Productive and Ethical Use of Artificial Intelligence](#) provides researchers with an additional toolkit for reflecting on the ethical implications of research

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involving AI. This framework is intended to assist researchers in recognising and mitigating potential ethical risks in the use of AI and can be used as a reference to support project governance, ethics, and risk processes.

4.10 Using GenAI Software

The University's governance process for any new digital services should be followed before purchasing or downloading GenAI software.

The IT Business Engagement team is the first point of contact for any technology request and are responsible for managing the [digital demand framework](#), including the intake and assessment of new digital initiatives. The team also works closely with Finance and Strategic Procurement during the assessment phase to ensure adherence to relevant policies, procedures, national guidelines and fit-for-purpose contractual terms around procurement or delivery of GenAI systems and to manage risks. Prior to contracting with any technology provider, Digital and Campus Services (DCS) is required to validate the requirement for the technology and complete the University's standard third-party service provider due diligence assessment to confirm the proposed solution is technically fit-for-purpose, aligned to ECU's Technology Architecture Principles and does not put the University at risk. To commence this process, please [submit a new digital initiative](#) via the IT Business Engagement Team for review. For more information, please refer to the [Engagement and Architecture page](#) on the [DCS Hub](#).

5. ADDITIONAL RESOURCES

Through Universities Australia (UA), the UA Deputy Vice-Chancellor (Research) Committee has developed a range of resources to support universities adapting to the rapidly evolving AI research applications within their institutions. These include:

- List of AI experts, researchers and policy specialists
- Overview of resources, guidelines and policies available at universities
- Common areas where AI tools are used in research
- Common themes across university guidelines on AI

These resources, which are regularly updated, can be accessed [here](#).

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6. ACCOUNTABILITIES AND RESPONSIBILITIES

This document was developed by the AI in Research Working Group, established as a working group of the ECU Research and Higher Degrees Committee (RHDC) in 2024. This version is dated October 2024 and will be updated on an annual basis.

The Guideline Owner has overall responsibility for the content of these Guidelines and their operation.

7. CONTACT INFORMATION

For queries relating to this document please contact:

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8. APPROVAL HISTORY

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