

Artificial Intelligence Technology (AI Technology) in scientific research writing: A Boon to Authors, Reviewers and Editors in Modern Era

Shobha V. Huilgol*

Department of Pharmacology, Co-Ordinator MEU, AI Ameen Medical College and Hospital,
Athani Road, Vijayapur-586108, Karnataka, India

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Abstract: Authors wish to use Artificial Intelligence tools or technologies (“AI Technology”) when preparing a manuscript or other material for publication in journals. AI enables authors to maintain high editorial standards, safeguard intellectual property and other rights, and fosters transparency with readers. Authors remain fully accountable for their Material and any Technologies or sources they use in its creation, thus recognizing AI Technology’s growing role in manuscript preparation. Generative AI tools are rapidly transforming the research, offering new ways to analyze data, refine writing, and accelerate process. Ensures your work remains original, ethical, and aligned with scholarly standards. This article is to guide / support journal authors, editors, and peer reviewers across disciplines in making informed decisions about AI’s role in research and writing.

Keywords: AI T, Research Writing, Tools, Editing/Review, Disclosure.

Introduction

Article addresses common questions about using AI tools while safeguarding intellectual property rights and maintaining the integrity of your research. Authors may only use AI Technology as a companion to their writing process, not a replacement. As always, authors must take full responsibility for the accuracy of all content, and verify that all claims, citations, references, and analyses are aligned with their expertise and research. Before including AI-generated content in their Material, authors must carefully review it, to ensure the final work reflects their expertise and originality while adhering to ethical and editorial standards [1].

Before choosing the AI Technology that can best support their research and manuscript development, authors should carefully review the terms and conditions, terms of use, or any other conditions or licenses associated with that technology. Authors must confirm that the AI Technology does not claim ownership of their content or impose limitations on its use [2].

AI in peer review

Authors’ trust in peer review depends on maintaining strict confidentiality of unpublished work. Manuscripts under review are confidential and must not be uploaded to AI Technologies, whether in full or in part. Authors have not given permission for reviewers or editors to share their unpublished work with AI Technologies [3]. However, there are meaningful ways reviewers can use AI while protecting manuscript confidentiality

- Getting started with AI Technologies
- Basic testing recommendations
- Start with familiar tasks
- Compare multiple tools
- Keep track of results

AI testing - starter checklist [4]

1. Test accuracy in field Ask the AI to explain 2-3 concepts from your research area.
2. Test source reliability Ask the AI to find papers and verify responses against primary sources.

3. Test privacy, security, and data settings Check the account settings and terms of service for data use policies.
4. Test file format compatibility Upload non-sensitive documents such as published papers, public datasets, or sample text from your field (*Note: Be aware that AI Technology may train on or learn from any content you share.*)
5. Test output capabilities Ask the AI to provide example outputs for you to assess, for example, “create a table comparing X and Y” or “format this citation in APA style”.
6. Test practical limitations work with the AI for an extended period to understand session constraints.
7. Test collaboration and workflow integration Try saving and sharing outputs and test if the tool integrates with your commonly used software platforms.
8. Assess cost-benefit after testing Start testing by using free versions of AI Technology to understand capabilities. For the AI Technology you prefer, research what additional features are available in paid versions, which often provide better privacy controls and enhanced capabilities.

Choosing the right AI Technologies for tasks[5]

The "best" AI Technology depends on specific research needs. This helps to make systematic, informed decisions rather than following general recommendations.

After testing, consider:

- Which Technologies for generating ideas or challenging assumptions.
- Which Technologies for such as data analysis, manuscript formatting, or literature summaries.
- Which Technologies can be set aside.

The goal is to build a set of tools that support your work.

Types of AI Technologies available for research authors

There are many types of AI Technologies available to support research and writing tasks. Most authors start with a basic LLM and gradually explore more specialized options.

General purpose Large Language Models [6].

LLMs are versatile, conversational AI Technologies trained on vast datasets. They enable users to ask questions, generate ideas, and refine content through interactive dialogue example:

- Research questions or frameworks.
- Summarizing long documents.
- Drafting emails, abstracts, sections of manuscripts [6].

Task-specific AI Technologies [7]

Ex: citation management, plagiarism detection, transcription and note taking, or grammar checking. Domain-specific scientific AI Technologies

They may support experimental design, data analysis, lab management, molecular modeling, protein structure prediction, or visualization of complex systems. These AI Technologies require domain knowledge to use effectively [8]. AI-integrated features in established research tools Many research tools now include built-in AI features that help with writing, visualization, or project management.

Capabilities to look for in AI Technologies[8]

Advanced features such as extended reasoning, real-time tool access, and independent decision-making are enabling researchers and authors to use AI in new ways. Practical capabilities like source transparency and workflow compatibility make AI easier to use effectively. These capabilities can appear across any of the AI technologies described above, from basic LLMs to specialized technologies for research purposes [9]. Extended reasoning expands analytical range while keeping intellectual leadership and accountability with you.

Look for Technologies that can:

- Search the internet or scholarly databases during your session
- Retrieve and combine current data for analysis
- Cross-reference claims across sources and provide live links

- Execute code or run queries to produce verifiable results

Source transparency: Some AI Technologies provide links to primary sources, inline citations, or a list of reference materials. This allows you to quickly verify claims, trace ideas back to original works, and identify when outputs may over-rely on certain sources [10]. Workflow compatibility ensures AI supports your research without disrupting your established processes.

To disclose the use of AI in research methodology: It requires disclosure when AI is used in research methodology, including study design and data collection, literature review, code development, and data analysis.

Table illustrates AI use to be disclosed [11].

AI use category	Requires disclosure
Study design and data collection	• Study design: • Image processing • Protocol development • Infrastructure support
Literature review	• Agentic search • Screening and selection • Synthesis (used in manuscript): • Citation extraction
Code development	• Programming: AI writes analysis scripts or algorithms • Software generation: AI develops custom research software or applications • Data pipeline design: AI builds automated workflows to clean, process, and integrate datasets • Modeling: AI develops or adapts computational or statistical models for research analysis
Data and analysis	• Qualitative analysis: • Quantitative/statistical analysis: • Exploratory or advanced analyses

AI use that requires disclosure, provide enough detail so reviewers and readers can evaluate process and, where appropriate, reproduce your work [12]. When disclosing AI use in methods, It require to share:

- AI Technology name and version
- Date/year of use

- The AI Technology's role in your work (image processing, code development, statistical analysis, etc.)
- The author's role in directing or reviewing the work of the AI Technology
- For sensitive, proprietary, or human subject data describe how privacy and compliance requirements were maintained

Example disclosure statements AI use in methods:

"AI-assisted analysis was conducted using LLaMA 3 (accessed May 2025) to extract themes from qualitative interview data. All AI-generated outputs were reviewed and validated by the authors, who confirmed the accuracy of the interpretations. Prompts and system settings are included in Supplementary File S2 for reproducibility. All data were de-identified in compliance with institutional privacy standards prior to analysis".

If AI contributed substantially to analysis or methodology, it is to provide supplemental documentation to support reproducibility and transparency, such as:

- Parameters used
- AI configurations
- Code repository
- Data protection approach
- Compliance with institutional requirements
- Bias in AI is not only a technical flaw but an equity concern
- By critically evaluating AI and deliberately countering its biases, help safeguard the quality [13].
- Common types of bias in AI technologies:
- Publication access bias
- Geographic and cultural bias
- Stereotyping and language bias
- Disciplinary and methodological bias
- Sustainability bias
- Temporal bias

Drafting and editing manuscripts with AI

The purposeful use of AI is for manuscript drafting and editing. When submitting to a journal, responsible for the accuracy of work and accountable for the integrity of any Materials submitted [14]. Current editorial

standards expect authors to maintain intellectual control and ownership over their manuscript development.

Table shows ways AI can support writing [15]

Grammar and language refinement
Document organization and formatting assistance
Research argument and methodology guidance
Messaging and communication strategy

AI technology is useful for creating research figures and illustrations. Research figures and illustrations such as process flows, workflow diagrams, conceptual frameworks, experimental setup illustrations, and flowcharts [16]. When using AI to generate or edit research figures and

illustrations, requires to disclose AI use and verify the accuracy of submitted image. Choosing the right AI Technologies for illustrations [17]. Ensuring accuracy and quality. Understanding licensing and permissions database

Use of AI to support literature review

AI can make your literature work more efficient and comprehensive through semantic search capabilities that help you discover sources beyond traditional keyword searches. When using AI for literature review, combine AI capabilities with established research practices and your own critical evaluation. Use AI to complement database searches rather than replace them [17].

The image below illustrates literature review workflow;



As you develop your AI-assisted literature review approach, look for features that provide direct links to original sources and indicate which databases they access. Technologies that connect to pay walled academic content through your institutional access offer more reliable citation verification than those working from limited training data. To be aware AI Technologies might generate fabricated or inaccurate references that appear real. Check whether a citation corresponds to an actual publication.

AI cannot be used to enhance photographs in manuscript. Photographs in research manuscripts serve as evidence and artifacts of research process. AI enhancement tools can introduce unintended alterations that compromise the reliability and reproducibility of research [17]. Use in research methods. AI Technologies may be used to analyze photographs as part of your research methodology. These uses should be disclosed in methods section and may also be included in supplemental materials [18-19].

Check rights: Review your publishing agreement to confirm whether you can adapt your work into

other formats (such as pod casts, blogs, or social media posts [20].

- *Protect your content:* Do not upload full articles or large portions of copyrighted text unless your agreement explicitly allows it. Use only AI Technologies that have privacy protections, such as “do not train” settings or enterprise-grade security
- *Review for accuracy:* AI-generated drafts may oversimplify, misrepresent findings. Always review in full and edit for accuracy, clarity, and alignment with your goals
- *Be transparent when needed:* If AI played a role in producing outreach materials, acknowledge its use in line with institutional or professional guidelines
- To conclude AI enables authors/ Reviewers to:
- *Use AI responsibly:* disclose AI use in manuscripts and peer review
- *Protect your work:* Maintain intellectual property rights and ensure privacy, data protection, and licensing compliance

- *Navigate policies confidently*: Understand copyright implications and publisher requirements for AI-generated content
- *Choose the right tools*: Evaluate, test, and select appropriate AI technologies
- *Apply AI effectively*: Leverage AI for literature reviews, manuscript drafting, data visualization, and research promotion

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Conclusion

This article is to guide / support journal authors, editors, and peer reviewers across disciplines in making informed decisions about AI's role in research and writing.

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*All correspondences to: Dr. Shobha V. Huilgol, Professor & HOD, Department of Pharmacology, Co-Ordinator MEU, AI Ameen Medical College and Hospital, Athani Road, Vijayapur-586108, Karnataka, India. Email: huilgol.shobha739@gmail.com