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Recommendations for a Classification of AI Use

in Academic Manuscript Preparation

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DEVELOPED BY THE STM ASSOCIATION TASK & FINISH GROUP ON
AI LABELLING TERMINOLOGY FOR RESEARCH CONTENT DECLARATION

INTRODUCTION

This document presents a classification of various ways that artificial intelligence (AI) can be used to assist in the preparation of academic manuscripts. It is intended to serve as a framework for publishers to individually develop policies on how AI may be used and should be declared by authors.

Publishers are encouraged to consider whether declarations by authors may be needed at the submission stage, as well as whether declarations should be included in a manuscript and final publication in accordance with their own guidelines and policies.

This classification was developed by the STM Association Task and Finish Group on AI Labelling Terminology for Research Content Declaration.

Context

Publishers often provide guidelines for authors to transparently declare any human assistance in manuscript preparation (for example, professional language editing services).

However, recent developments in AI – particularly generative AI – have led to rapid expansion in the capabilities of machine tools to assist with writing, editing, and even enhancing research manuscripts with images and diagrams. Publisher guidelines have not kept pace with these technological developments, leading to uncertainty amongst:

- Authors, about their obligations to declare their use of AI assistance;
- Peer reviewers, about acceptable AI use and declarations in manuscripts; and
- Readers, about AI- vs. human-generated content in publications.

This uncertainty, especially the lack of transparency around AI contributions to publications, poses a risk to the integrity of academic publishing. Clear definitions and terminologies are needed to facilitate the development of guidance regarding the declaration and use of various kinds of AI assistance in manuscript preparation.

Clear definitions and terminologies are essential for developing guidance and policies on the declaration and use of AI assistance in manuscript preparation.

Limitations of Scope

This classification explicitly does not aim to:

01 **Provide an unambiguous definition of AI.**

A broad range of machine tools exists for analysing and generating content, and opinions vary on when computer assistance is considered AI as opposed to, for example, traditional spell-checkers or statistical software. In ambiguous cases, we recommend encouraging authors to declare what tools they have used, and how they have used them. We also encourage research communities to adopt established definitions of what is considered AI, such as the OECD's definition of an AI system.

02 **Classify uses of AI in research processes.**

There are many ways in which machine tools can be used in research processes (for example, to gather or analyse raw data). This classification addresses only the use of AI assistance for the preparation of manuscripts intended for publication in the scholarly communication ecosystem.

03 **Recommend or harmonise publisher policies around any use and/or declaration of the use of AI.**

The 2023 STM guidelines outlined ethical and practical considerations regarding the use of AI in the publication process. This work further defines and classifies various AI activities undertaken by authors. However, actual policy decisions about what is permitted or expected to be declared – to what level of detail, how, and where – remain the responsibility of publishers (in collaboration with research communities), as expectations and standards may vary in different fields.

Recommendations

We recommend that publishers of academic research consider each of the AI-assisted activities defined in this classification, in conjunction with the 2023 STM guidelines if appropriate, and:

- **Determine whether each activity is permissible for authors to use when preparing manuscripts.**

- **Determine which permitted AI activities must be transparently declared during the submission process (e.g. to editors and peer reviewers).**

- **Determine which permitted AI activities must be declared in the content of manuscripts, to be included in the final publication and visible to all readers.**

- **Provide clear policies and guidance to authors regarding the use and declaration of AI assistance in preparing manuscripts.**

We further recommend that policies and guidance for authors clearly specify the required level of disclosure – for example, whether particular tools or technologies, or the exact prompts used with generative AI tools, must be explicitly reported.

9 Recommended Classifications of AI Activities

	Use of AI in the preparation of academic manuscripts (*)	Description of the activity	Examples of the activity	Activity does NOT include
1	**Refinement, correction, editing or formatting the manuscript to improve clarity of language (**)**	Machine tools were used to suggest language improvements within the manuscript	Using spell checkers, grammar checkers, and similar tools (such as Microsoft 365's inbuilt editing tools) to refine text written primarily by humans	Using AI tools to generate text from prompts or generate summaries of text; using AI tools to analyse or summarise textual documents as part of the research process
2	**Writing or drafting manuscript content**	AI tools were used to generate part or all of the manuscript text	Using AI tools to generate text from prompts; using AI tools to significantly expand on or rewrite text; using AI tools to generate machine summaries of text (e.g. to summarise arguments made in another publication)	Use of simple spelling and grammar checkers; analysing or summarising textual documents as part of the research process
3	**Translation of manuscript text for the purpose of publishing**	AI tools were used to assist translation of an author's original work into a secondary language for inclusion in the manuscript	Using AI tools such as Google Translate or ChatGPT to assist with translating a manuscript draft	Translation of materials (such as source documents) as part of the research process, unrelated to manuscript preparation
4	**Refining or formatting of data reported in the manuscript**	AI tools were used to assist with refinement of the presentation of data reported in the manuscript	Using AI tools to improve clarity or readability (e.g. on the level of language) or format research data submitted as part of the manu-script or its associated materials (e.g. in supplementary materials or appropriate repositories)	Using AI tools to visualise data sets (activity 6) or data manipulation; any generation, correcting, or editing of data used as part of the research process
5	**Generation, refinement, correction, editing or formatting of images, diagrams or other figures for illustrative purposes only**	AI tools were used to generate images, diagrams, or other figures in the manuscript for illustrative or aesthetic purposes only	Using AI tools to create an image of e.g. people farming in an ancient society – the sort of image that might otherwise be created by a human artist as an illustration	Visualisation of actual data or research outputs, editing of visualisations of actual data or results, presentation of generated images as research outputs in themselves or as representing research outputs

9 Recommended Classifications of AI Activities

	Use of AI in the preparation of academic manuscripts (*)	Description of the activity	Examples of the activity	Activity does NOT include
6	**Generation, refinement, correction, editing or formatting of visualisations of research data or results**	AI tools were used to visualise or refine visualisations of research data/results in the manuscript	Using AI tools to generate graphs, tables, or other visualisations of research datasets	Use of traditional statistical software (such as STATA, SAS, and R) to visualise data; generation of images or other content without any basis in real research data/outputs
7	**Refinement or formatting of code reported in the submitted manuscript**	AI tools were used to assist with refinement of the presentation of code used in the research process and reported in the manuscript	Using AI tools to improve the readability and clarity of code submitted as part of the manuscript or any associated materials (e.g. in supplementary materials or appropriate repositories), without altering its functionality	Using AI tools to generate new code for use in research processes, or alter the functionality of code used in research processes before manuscript submission
8	**Assisting with gathering references**	AI tools were used to suggest references to include in the manuscript's reference list	Using AI tools to find and identify articles that are likely to be related to the research reported in the manuscript	Using automated tools (such as BibTeX) to generate formatted citations for references identified by human authors; using AI tools to generate plausible-sounding references that do not exist; using AI tools to identify publications that may be useful to the research process
9	**Presentation of any kind of content generated by AI tools as though it were original research data/results from non-machine sources (***)**	AI tools were used to create data, text, images, graphs, spectra, or other content that is presented as though it were original research data/results collected or analysed from other, non-machine sources	Any content generated wholesale by AI tools without any basis in original research data/outputs, presented as though it is based on original data/results	Using AI tools to visualise original research data/results (activity 6); carrying out research on the outputs of generative AI (in which case outputs generated by the AI being studied can be considered research data)

(*) We reiterate that use of AI in other stages of research processes is outside the scope of this classification. This classification considers only activities that use AI tools to assist with the preparation of manuscripts.
(**) 2023 STM Guidelines recommend that disclosure is not necessary for this use of automated tools.
(***) 2023 STM Guidelines recommend prohibiting this use of AI tools.

The STM Task and Finish Group

AI Labelling Terminology for Research Content Declaration

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