

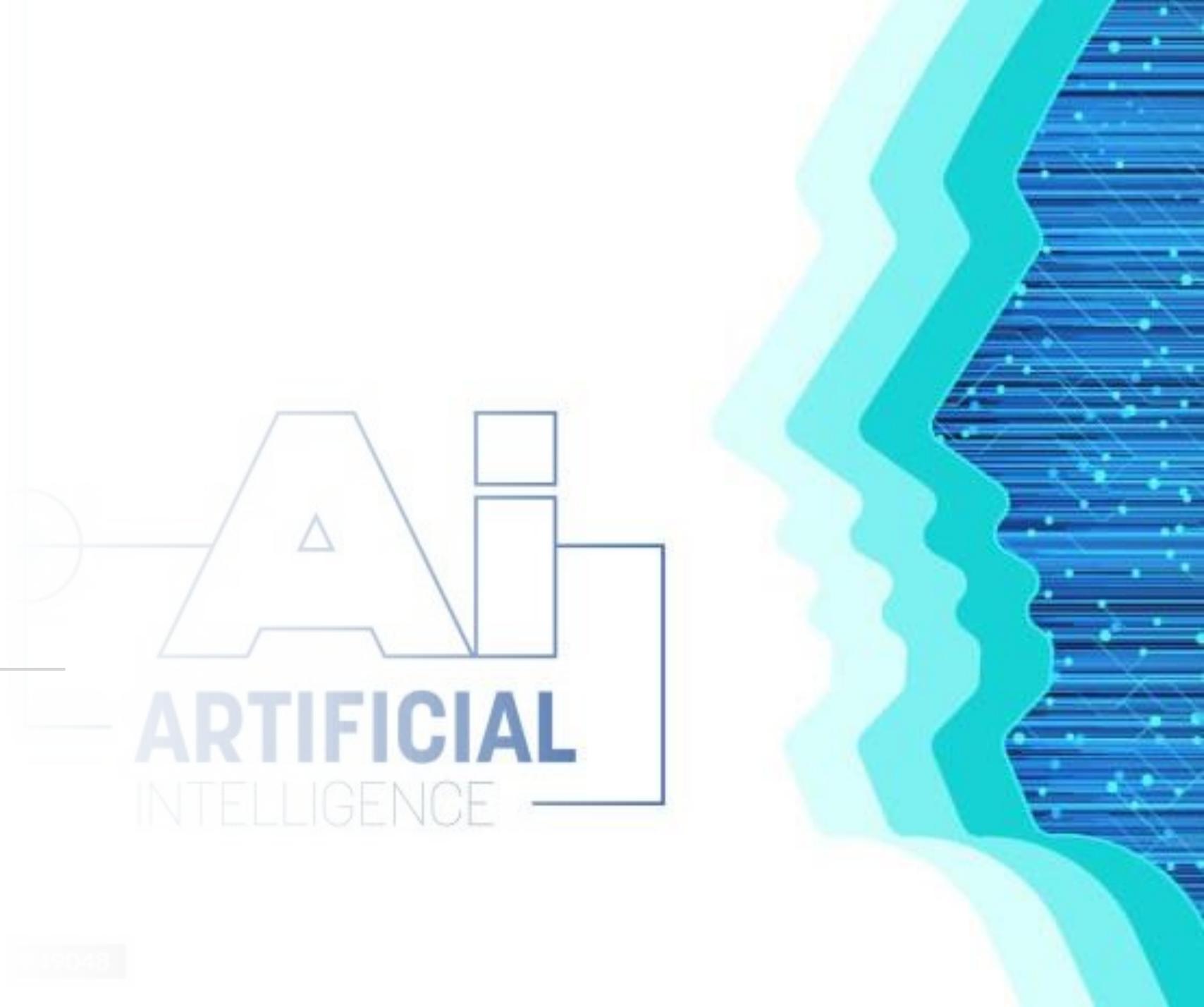


# How does LLM Shaping Research

FAQs

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Masoud Rezaei, MD



# Outline

1. How much LLMs were popularized among researchers?
2. What is the benefit of using LLMs in scientific research?
3. How should I declare the use of GenAI?
4. Is there any tool for detection of AI-written text?
5. How do I detect "hallucinations" in citations?
6. What is the best practices for using LLMs in research?
7. What should I do if I discover errors in AI-generated content that affects research I have published?



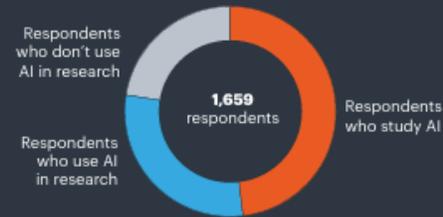
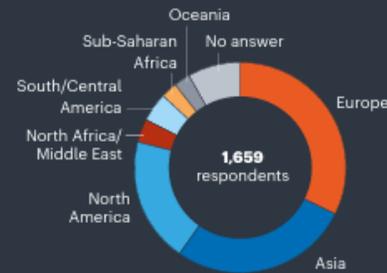
1.

How much LLMs were popularized among researchers?

more than half expected the AI tools to be 'very important' or 'essential' in next decade.

## AI AND RESEARCH: SURVEY RESULTS

More than 1,600 respondents took *Nature's* survey on artificial intelligence (AI) and research. Just under half of respondents said they studied or developed AI themselves. Around one-third were from Europe, 28% from Asia and 20% from North America.



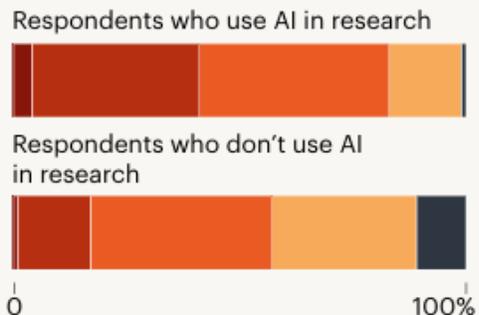
For more about the survey and results, see [go.nature.com/45232vd](https://go.nature.com/45232vd)



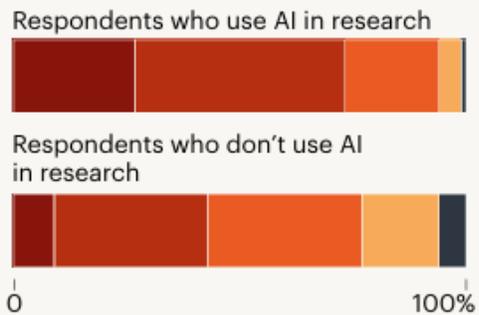
## AI AND SCIENCE: WHAT 1,600 RESEARCHERS THINK

## AI ANTICIPATIONS

Q: How useful do you think AI tools are for researchers in your field?

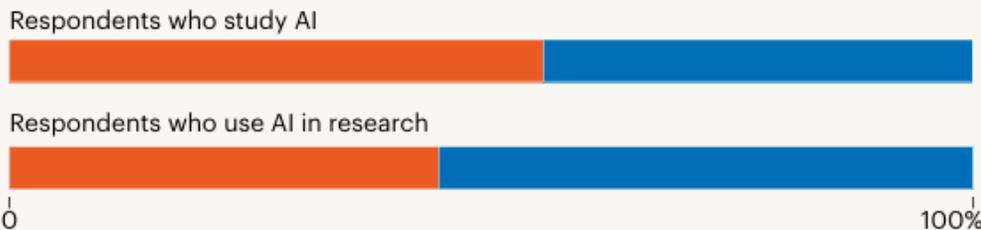


Q: How useful do you think AI tools will become for researchers in your field in the next decade?

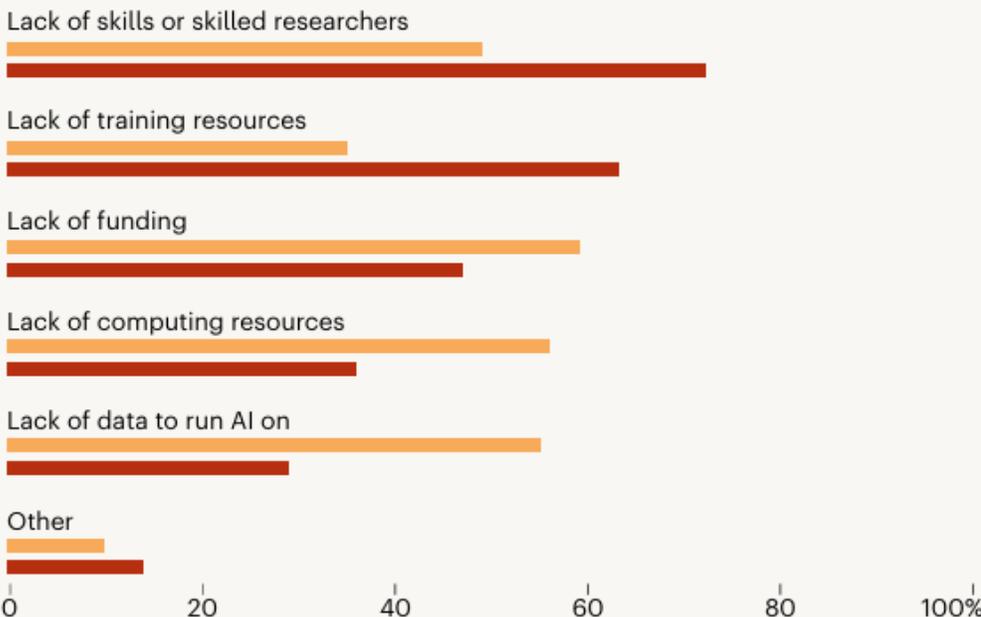


## BARRIERS TO PROGRESS

Q: Do you feel that there are barriers preventing you, or your research team, from developing or using AI as much as you would like?

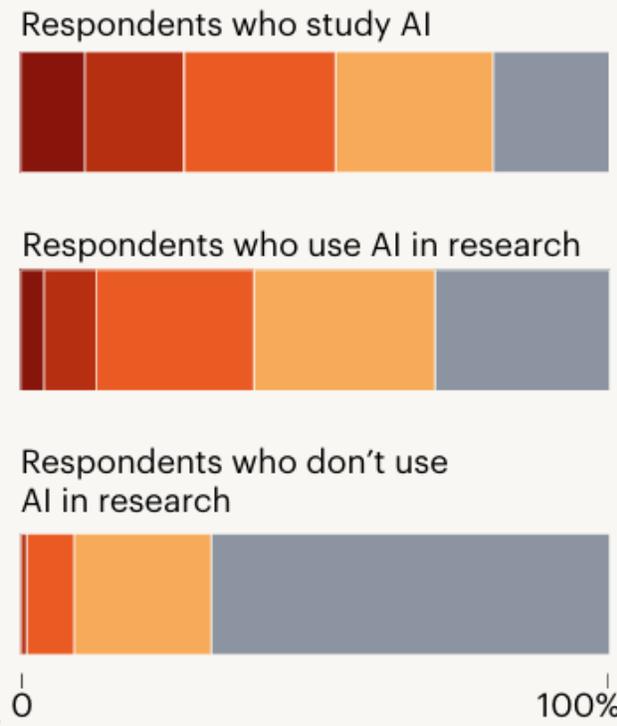
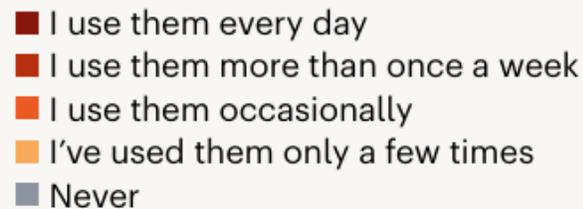


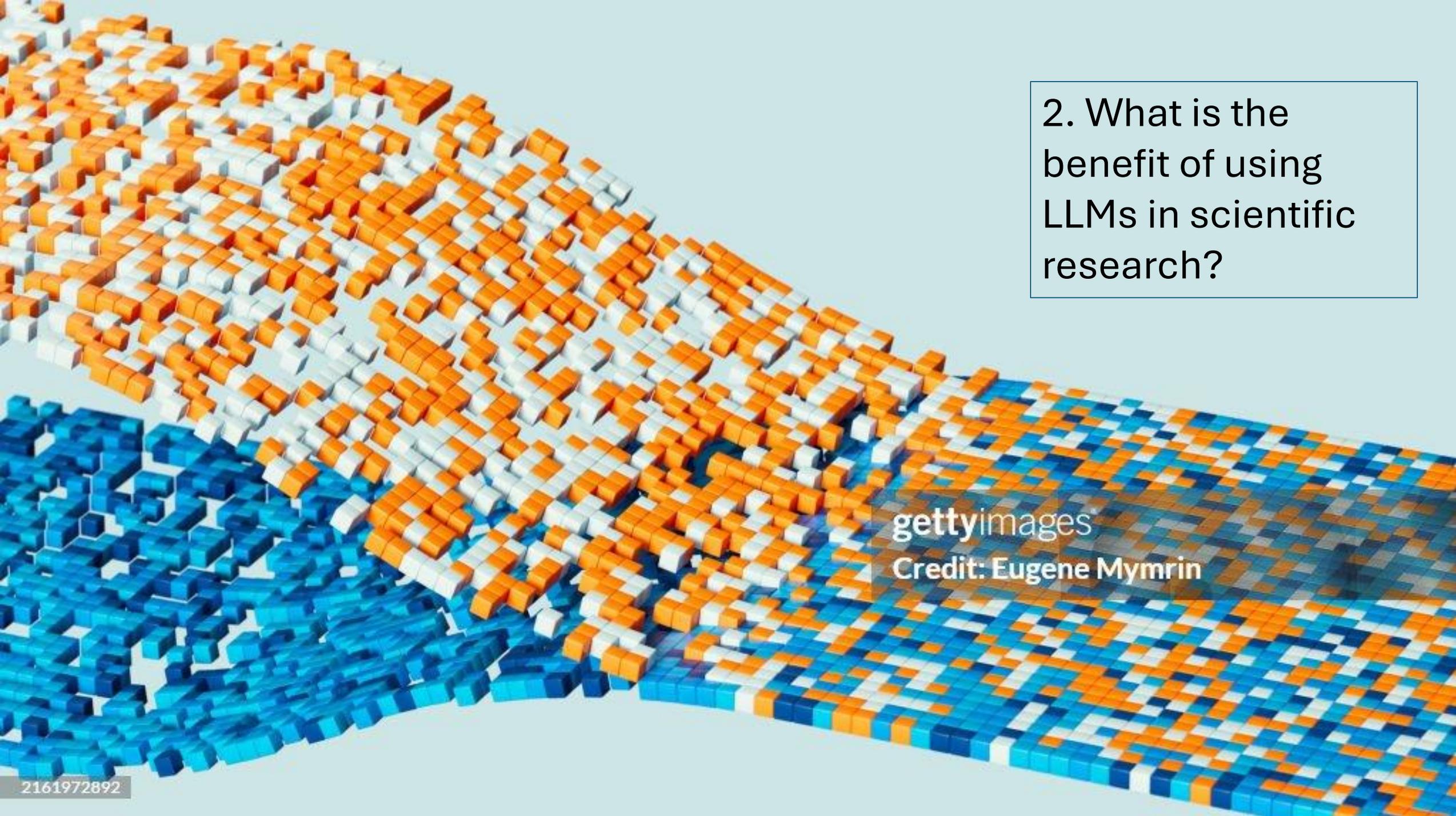
Q: What are those barriers?



## USING GENERATIVE AI

Q: How often do you use generative AI tools (such as ChatGPT) at work?





2. What is the benefit of using LLMs in scientific research?

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Credit: Eugene Mymrin

## POSITIVE IMPACTS OF AI

Q: Considering machine-learning methods, what do you think are positive impacts of AI in research? (Choose all that apply.)

Provides faster ways to process data

Speeds up computations

Saves researchers time or money

Automates data acquisition

Makes it possible to process new kinds of data

Provides faster ways to write code

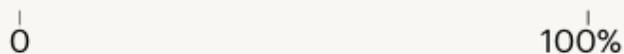
Answers questions that are otherwise very difficult to solve

Optimizes experimental set-ups for acquiring data

Makes new discoveries

Generates new research hypotheses

Other



## NEGATIVE IMPACTS OF AI

Q: Considering machine-learning methods, what do you think are negative impacts of AI in research? (Choose all that apply.)

Leads to more reliance on pattern recognition without understanding

Results can entrench bias or discrimination in data

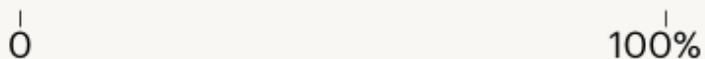
Makes fraud easier

Ill-considered use leads to irreproducible research

Exacerbates power imbalances: only scientists at well-resourced universities or firms can be at the cutting edge

Expensive or energy-intensive tool

Other



## HOW RESEARCHERS USE LARGE LANGUAGE MODELS

Q: What do you use generative AI tools (such as ChatGPT and other large language models) for? (Choose all that apply.)

For creative fun not related to my research

To help write code

To brainstorm research ideas

To help write research manuscripts

To help do research

To conduct literature reviews

Within scientific search engines

To help fill out work-related administrative e-mails

To help write presentations

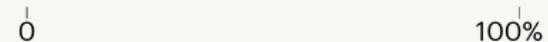
To help write grant applications

To help review research manuscripts

To help create graphics or pictures

To help write coursework or exam questions

Other



## PROBLEMS OF GENERATIVE AI

Q: Where do you think generative AI may have negative impacts on research? (Choose all that apply.)

May proliferate misinformation

Makes plagiarism easier, and harder to detect

May bring mistakes or inaccuracies into research texts (papers, code)

Makes it easier to fabricate or falsify research and harder to detect

May bring biases into literature searches

Makes it harder to assess student learning

May entrench bias or inequities into research texts

Raises energy consumption and carbon footprint of research

Other

0

100%

## BENEFITS OF GENERATIVE AI

Q: What do you think are currently the biggest benefits of generative AI for research? (Choose all that apply.)

Helps researchers without English as a first language (through editing or translation)

Makes coding easier and faster

Summarizes other research to save time reading it

Speeds administrative tasks

Helps write manuscripts faster

Improves scientific search

Helps creative work by brainstorming new ideas

Generates new research hypotheses

Helps peer-review manuscripts faster

Other

0

100%

## QUALITY OF AI REVIEW IN RESEARCH PAPERS

Q: Do you think that journal editors and peer-reviewers, in general, can adequately review papers in your field that use AI?

■ Yes ■ No  
■ Don't know/cannot tell

Respondents who study AI



Respondents who use AI in research



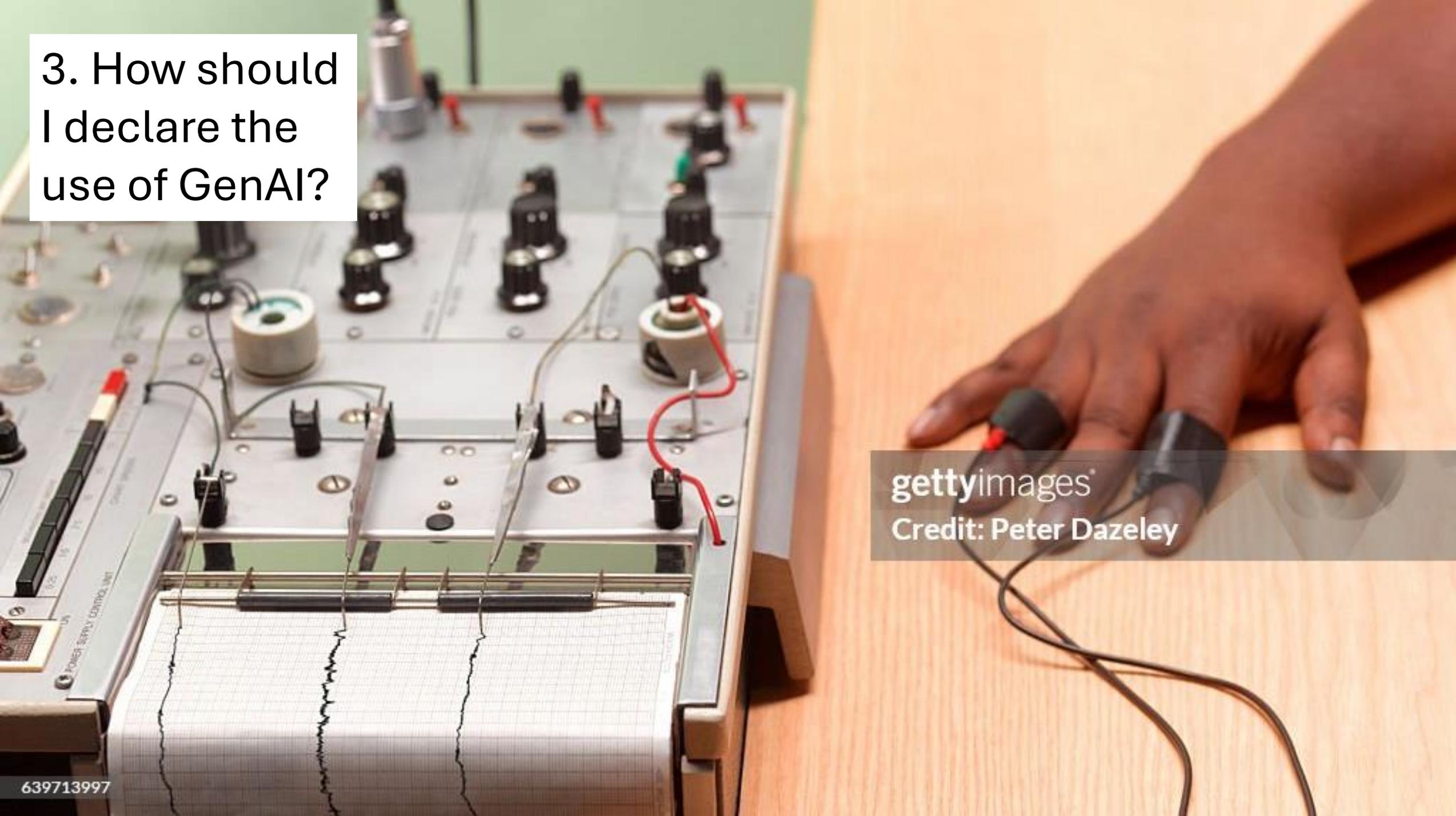
Respondents who don't use AI in research



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3. How should I declare the use of GenAI?



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Credit: Peter Dazeley

# Academic Publisher Policies on LLM Use & Declaration

Publisher	AI as Co-Author	Writing/Drafting Text	Basic Grammar/Spell Check	Image/Figure Generation	Data Analysis & Code	Peer Review (Reviewers)	Policy Link
Elsevier	No	Yes	N/R	No	Yes	No	<a href="#">[Elsevier AI Policy]</a>
Springer Nature	No	Yes	N/R	No	Yes	No	<a href="#">[Springer Nature Policy]</a>
Taylor & Francis	No	Yes	Yes	No	No (for data)	No	<a href="#">[T&amp;F AI Policy]</a>
Wiley	No	Yes	Yes	Yes	Yes	No	<a href="#">[Wiley AI Guidelines]</a>
Oxford (OUP)	No	Yes	Yes	Yes	Yes	No	<a href="#">[OUP AI Policy]</a>
SAGE	No	Yes	N/R	Yes	No (for data)	No	<a href="#">[SAGE AI Guidelines]</a>
Frontiers	No	Yes	Yes	Yes	Yes	Yes (to declare)	<a href="#">[Frontiers Ethics]</a>

**Table Key:**  
**Yes:** Mandatory Declaration  
**No:** Illegal/Prohibited  
**N/R:** Not Required (Assistive)



4. Is there any tool for detection of AI-written text?

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Credit: D-Keine

NEWS | 11 September 2025

# AI tool detects LLM-generated text in research papers and peer reviews



Authors and peer reviewers are failing to disclose the use of LLMs despite journal policies limiting their use.

By [Miryam Naddaf](#)



A publisher has found that less than 25% of authors disclosed their use of AI to prepare manuscripts, despite the publisher mandating disclosure for submission. Credit: Nicolas Economou/NurPhoto via Getty

## AI Detection that actually works.

- Detect AI writing from ChatGPT, Claude, Gemini, Perplexity and more.
- Third-party verified results with a near-zero false positive rate.
- Developed by experienced AI researchers with backgrounds from Stanford, Tesla and Google.

# 5. How do I detect "hallucinations" in citations?



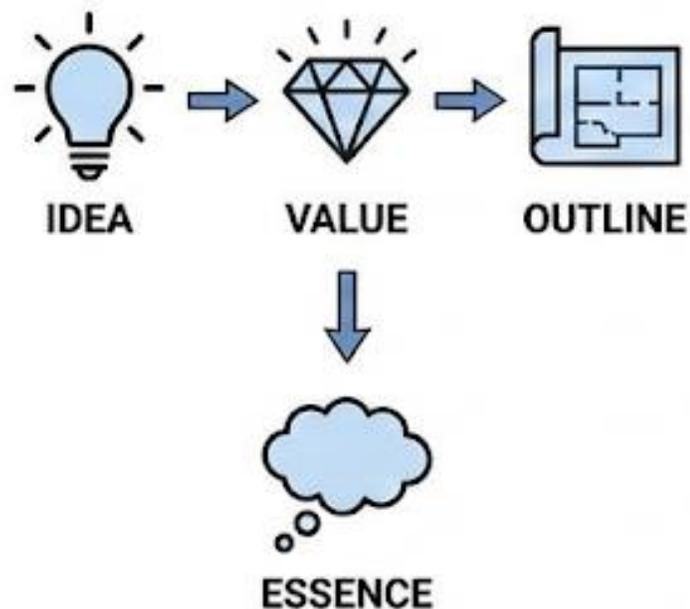
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Credit: Klaus Vedfelt

# TWO-STAGE COLLABORATIVE WRITING (Human + LLM)

“ You write because you’ve got **SOMETHING TO SAY.**” – F. Scott Fitzgerald

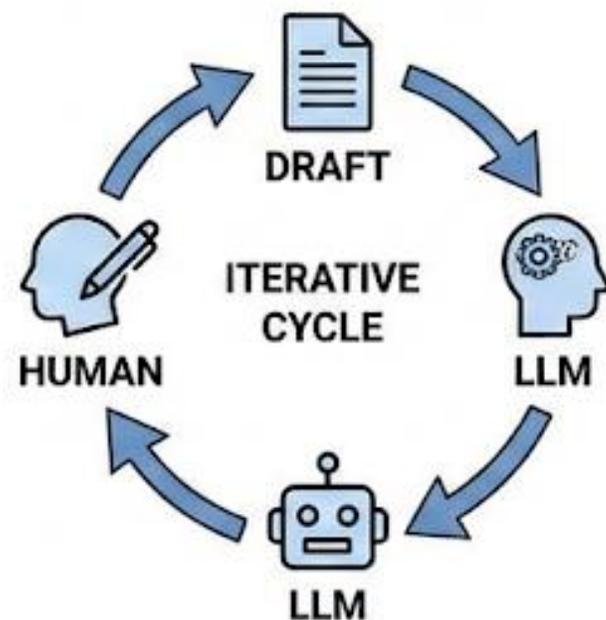
## STAGE 1: FOUNDATION



## THE ENGINE: LLM ASSISTANCE



## STAGE 2: ITERATIVE DRAFT



OUTLINE → THOUGHT? OR THOUGHT → OUTLINE?



7. What should I do if I discover errors in AI-generated content that affects research I have published?

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Credit: Sadik Demiroz

A woman in a white shirt is standing at the front of a room, presenting to an audience. Several audience members in the foreground have their hands raised, indicating an interactive session. The room has large windows in the background, and a whiteboard is visible behind the presenter. The overall atmosphere is professional and collaborative.

# Q&A

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