

AI and science

(untitled)

LOGIC Show/hide trigger exists.

1. The term 'AI' refers to a suite of computer technologies. It could refer to machine-learning algorithms, often built using neural nets, that can find patterns in data or automate the process of gathering or processing data, for instance. It could also refer to large language models and other 'generative AI' systems that aim to produce fluent text, code or images.

Do consider all these in your responses in this section.

First (and whatever your field of research) does your research work directly involve studying or developing AI?

- Yes
- No

(untitled)

LOGIC Hidden unless: #1 Question "The term 'AI' refers to a suite of computer technologies. It could refer to machine-learning algorithms, often built using neural nets, that can find patterns in data or automate the process of gathering or processing data, for instance. It could also refer to large language models and other 'generative AI' systems that aim to produce fluent text, code or images.

Do consider all these in your responses in this section.

First (and whatever your field of research) does your research work directly involve studying or developing AI? " is one of the following answers ("No")

2. How useful do you think AI tools are for researchers in your field?

Not at all
useful

Slightly useful

Useful

Very useful

Essential

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Do consider all these in your responses in this section.

First (and whatever your field of research) does your research work directly involve studying or developing AI? " is one of the following answers ("No")

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

Not at all
useful

Slightly useful

Useful

Very useful

Essential

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Do consider all these in your responses in this section.

First (and whatever your field of research) does your research work directly involve studying or developing AI? " is one of the following answers ("No")

4. Do you or your research group use AI (whether machine learning or generative AI) in your own research?

Yes, regularly

Yes, sometimes

Yes, rarely

No

LOGIC Hidden unless: #4 Question "Do you or your research group use AI (whether machine learning or generative AI) in your own research?" is one of the following answers ("Yes, regularly", "Yes, sometimes", "Yes, rarely")

5. For what purposes do you use AI in your own research?

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Do consider all these in your responses in this section.

First (and whatever your field of research) does your research work directly involve studying or developing AI? " is one of the following answers ("Yes") OR #4 Question "Do you or your research group use AI (whether machine learning or generative AI) in your own research?" is one of the following answers ("Yes, regularly", "Yes, sometimes", "Yes, rarely")

6. What computing resources do you employ in order to use AI in your research? (Check all that apply).

- Laptop/desktop computer(s)
- University-provided cluster or cloud
- National computing facility
- Industry-provided cluster or cloud

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Do consider all these in your responses in this section.

First (and whatever your field of research) does your research work directly involve studying or developing AI? " is one of the following answers ("Yes") OR #4 Question "Do you or your research group use AI (whether machine learning or generative AI) in your own research?" is one of the following answers ("Yes, regularly", "Yes, sometimes", "Yes, rarely")

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

- Yes
- No

LOGIC Hidden unless: #7 Question "Do you feel that there are barriers preventing you, or your research team, from developing or using AI as much as you would like?" is one of the following answers ("Yes")

8. What are those barriers? (Tick all that apply)

- Lack of funding
- Lack of training resources
- Lack of data to run AI on
- Lack of skills or skilled researchers
- Lack of computing resources
- Other - write in

LOGIC Hidden unless: #4 Question "Do you or your research group use AI (whether machine learning or generative AI) in your own research?" is one of the following answers ("No")

9. Why don't you use AI tools in your research?

LOGIC Show/hide trigger exists.

10. For your research, do you collaborate with scientists at firms that develop AI, such as Google, Microsoft, Tencent, Meta, IBM, Amazon, OpenAI, Baidu, or any other firm?

- Yes
- No
- I work at a firm that develops AI

LOGIC Hidden unless: #10 Question "For your research, do you collaborate with scientists at firms that develop AI, such as Google, Microsoft, Tencent, Meta, IBM, Amazon, OpenAI, Baidu, or any other firm? " is one of the following answers ("Yes")

11. Which firms in particular do you collaborate with? (Leave blank if you would prefer not to say).

LOGIC Hidden unless: #10 Question "For your research, do you collaborate with scientists at firms that develop AI, such as Google, Microsoft, Tencent, Meta, IBM, Amazon, OpenAI, Baidu, or any other firm? " is one of the following answers ("No")

12. Do you feel that this places you at a disadvantage, compared to researchers who do collaborate with these firms?

- Yes
- No
- Prefer not to say

13. How important do you think it is for researchers using AI in science to collaborate with scientists at these firms?

- | | | | | |
|-----------------------|-----------------------|-----------------------------------|-----------------------|-----------------------|
| Very unimportant | Somewhat unimportant | Neither important nor unimportant | Somewhat important | Very important |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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Do consider all these in your responses in this section.

First (and whatever your field of research) does your research work directly involve studying or developing AI? " is one of the following answers ("No")

14. Do you feel under pressure to link your work to AI, or collaborate with AI researchers, in order to secure research funding or otherwise progress in your field?

- Yes
- No

15. What's the most impressive or useful example of AI tools in science that comes to your mind? (This could be your own use, or any other that you are aware of).

16. What's the most concerning example of AI in science that comes to your mind?

LOGIC Show/hide trigger exists.

17. Do you think that journal editors and peer-reviewers (referees), in general, can adequately review papers in your field that use AI, such as those that apply machine learning to collect or analyse data?

- No
- Don't know / cannot tell
- Yes

LOGIC Hidden unless: #17 Question "Do you think that journal editors and peer-reviewers (referees), in general, can adequately review papers in your field that use AI, such as those that apply machine learning to collect or analyse data?" is one of the following answers ("No")

18. Why not? (Do reviewers or editors lack training or skills? Do papers come without sufficient information, such as aspects of data or code?).

19. Machine-learning methods

Considering machine-learning methods, what do you think are positive impacts of AI in research? (choose all that apply). We are *not* asking about generative AI in this question.

- Generates new research hypotheses
- Provides faster ways to process data
- Provides faster ways to write or to improve code
- Saves researchers time or money
- Automates data acquisition
- Makes new discoveries
- Makes it possible to process new kinds of data not previously possible to collect
- Answers questions that would be otherwise be very difficult to solve
- Optimises experimental setups for acquiring data
- Speeds up computations that were not previously possible
- Other - write in

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

- Exacerbates power-imbalances: only scientists at well-resourced universities or firms can be at the cutting edge
- Expensive or energy-intensive tool
- Results can entrench bias or discrimination in data
- Leads to more reliance on pattern-recognition without understanding
- Ill-considered use leads to irreproducible research
- Makes fraud easier
- Other - write in

(untitled)

LOGIC Show/hide trigger exists.

21. Generative AI

This section now asks specifically about generative AI - that is, tools such as ChatGPT, GPT-4, PALM, MidJourney, LLaMA, or any products built using these tools.

How often do you use these tools at work?

- Never
- I've used them only a few times
- I use them occasionally
- I use them more than once a week
- I use them every day

LOGIC Hidden unless: #21 Question "**Generative AI**

This section now asks specifically about generative AI - that is, tools such as ChatGPT, GPT-4, PALM, MidJourney, LLaMA, or any products built using these tools.

How often do you use these tools at work?" is one of the following answers ("I've used them only a few times", "I use them occasionally", "I use them more than once a week", "I use them every day")

22. What do you use these tools for? (Choose all that apply).

- To conduct literature reviews
- To help write grant applications
- To help write coursework or exam questions
- N/A (I don't use them)
- To help write presentations
- To help review research manuscripts
- To help create graphics or pictures
- (If a student) - to help answer exam questions or coursework
- For creative fun not related to my research
- To help write code
- To help do research
- To help fill out work-related administrative emails
- Within scientific search engines
- To help write research manuscripts
- To brainstorm research ideas
- Other - write in

23. If you use other products for work that incorporate generative AI tools (such as particular search engines or services), what are they? (Please write in).

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

- Makes coding easier and faster
- Improves scientific search
- Helps write manuscripts faster
- Summarises other research to save time reading it
- Helps creative work by brainstorming new ideas
- Generates new research hypotheses
- Helps researchers without English as a first language (through editing or translation).
- Helps peer-review manuscripts faster
- Speeds administrative tasks
- Other - write in

25. In the future, where do you think generative AI will have the biggest beneficial impacts for research? (Choose all that apply).

- Improves scientific search
- Makes coding easier and faster
- Helps peer-review manuscripts faster
- Summarises other research to save time reading it
- Speeds administrative tasks
- Generates new research hypotheses
- Helps creative work by brainstorming new ideas
- Helps researchers without English as a first language (through editing or translation).
- Helps write manuscripts faster
- Other - write in

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

- Makes it easier to fabricate or falsify research and harder to detect
- Raises energy consumption and carbon footprint of research
- Makes plagiarism easier and harder to detect
- May bring mistakes or inaccuracies into research texts (papers, code)
- May entrench bias or inequities into research texts
- May proliferate misinformation
- May bring biases into literature searches
- Makes it harder to assess student learning
- Other - write in

(untitled)

27. Considering all kinds of AI, how much are you concerned by these possible current or future impacts on wider society?

	Not at all concerned	Slightly concerned	Concerned	Very concerned	Extremely concerned
Rising unemployment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AI-assisted surveillance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spread of misinformation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AI as an existential threat to humanity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Automated (AI) weapons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AI's energy consumption and carbon footprint	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AI worsening discrimination (in law, policing, welfare)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

(untitled)

28. Demographics

Where in the world are you based?

- Afghanistan
- Albania
- Algeria
- Andorra
- Angola
- Antigua and Barbuda
- Argentina
- Armenia
- Australia
- Austria
- Azerbaijan
- Bahamas, The
- Bahrain
- Bangladesh

Bangladesh
Barbados
Belarus
Belgium
Belize
Benin
Bermuda,
Bhutan
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
Brunei
Bulgaria
Burkina Faso
Burundi
Cambodia
Cameroon
Canada
Cape Verde
Central African Republic
Chad
Chile
China
Colombia
Comoros
Congo, Democratic Republic of the
Congo, Republic of the
Costa Rica
Cote d'Ivoire
Croatia
Cuba
Curacao
Cyprus
Czech Republic
Denmark
Djibouti
Prefer not to say
Afghanistan
Albania
Algeria
Andorra
Angola
Antigua and Barbuda
Argentina
Armenia
Australia
Austria
Azerbaijan
Bahamas, The
Bahrain
Bangladesh
Barbados
Belarus

Belarus
Belgium
Belize
Benin
Bermuda,
Bhutan
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
Brunei
Bulgaria
Burkina Faso
Burundi
Cambodia
Cameroon
Canada
Cape Verde
Central African Republic
Chad
Chile
China
Colombia
Comoros
Congo, Democratic Republic of the
Congo, Republic of the
Costa Rica
Cote d'Ivoire
Croatia
Cuba
Curacao
Cyprus
Czech Republic
Denmark
Djibouti
Dominica
Dominican Republic
East Timor (see Timor-Leste)
Ecuador
Egypt
El Salvador
Equatorial Guinea
Eritrea
Estonia
Ethiopia
Fiji
Finland
France
Gabon
Gambia, The
Georgia
Germany
Ghana
Greece

010000

Grenada
Guatemala
Guinea
Guinea-Bissau
Guyana
Haiti
Holy See
Honduras
Hong Kong
Hungary
Iceland
India
Indonesia
Iran
Iraq
Ireland
Israel
Italy
Jamaica
Japan
Jordan
Kazakhstan
Kenya
Kiribati
Kosovo
Kuwait
Kyrgyzstan
Laos
Latvia
Lebanon
Lesotho
Liberia
Libya
Liechtenstein
Lithuania
Luxembourg
Macau
Macedonia
Madagascar
Malawi
Malaysia
Maldives
Mali
Malta
Marshall Islands
Mauritania
Mauritius
Mexico
Micronesia
Moldova
Monaco
Mongolia
Montenegro

Morocco
Mozambique
Myanmar
Namibia
Nauru
Nepal
Netherlands
Netherlands Antilles
New Zealand
Nicaragua
Niger
Nigeria
North Korea
Norway
Oman
Pakistan
Palau
Palestinian Territories
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Poland
Portugal
Qatar
Romania
Russia
Rwanda
Saint Kitts and Nevis
Saint Lucia
Saint Vincent and the Grenadines
Samoa
San Marino
Sao Tome and Principe
Saudi Arabia
Senegal
Serbia
Seychelles
Sierra Leone
Singapore
Slovakia
Slovenia
Solomon Islands
Somalia
South Africa
South Korea
South Sudan
Spain
Sri Lanka
Sudan
Suriname
Swaziland

Sweden
Switzerland
Syria
Taiwan
Tajikistan
Tanzania
Thailand
Timor-Leste
Togo
Tonga
Trinidad and Tobago
Tunisia
Turkey
Turkmenistan
Tuvalu
Uganda
Ukraine
United Arab Emirates
United Kingdom
United States
Uruguay
Uzbekistan
Vanuatu
Venezuela
Vietnam
Yemen
Zambia
Zimbabwe
Prefer not to say

29. What is your gender?

- Male
- Female
- Non-binary
- Other
- Prefer not to say

30. Do you consider yourself an early-career, mid-career, or advanced-career researcher?

- Early-career
- Mid-career
- Advanced-career
- Prefer not to say

31. Which of these best describes the organization(s) you work for? (You may select multiple answers).

- Government
- For-profit company
- Non-profit company
- University
- Hospital
- Medical research institute
- Government advisory group
- Research funder
- Other - Write In
- Prefer not to say

32. Which best describes your research field?

- Agriculture, veterinary or food science
- Biological sciences
- Biomedical, clinical, or health-related sciences
- Chemical sciences
- Earth sciences
- Economics
- Engineering
- Environmental sciences and Ecology
- Computing or Information sciences
- Mathematics
- Physical sciences
- Psychology
- Social sciences
- Humanities
- Other - Write In

33. Is there anything else you would like to add about how AI affects your research?

34. Would you be willing to talk to a *Nature* reporter about your experiences in applying AI in your research?

- Yes
- No

35. Would you be willing to be on a *Nature* panel of scientists reporting your experiences in applying AI in your research?

- Yes
- No

36. Name:

37. Email
address: