

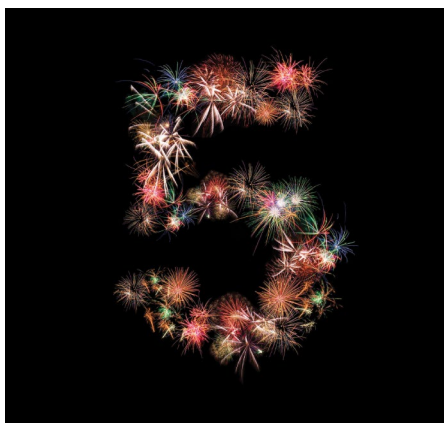
Is it five already?



We reflect on five years of *Nature Machine Intelligence* and on providing a venue for discussions in AI.

This journal launched its first issue five years ago, in January 2019. Of course, in terms of artificial intelligence (AI), five years ago seems like a different era. On the one hand, developments in deep learning were already well underway by then, making an impact in various areas. But we were only starting to see exciting results with emerging (and, at the time, relatively new) approaches such as self-supervised learning, graph neural networks, transformers, contrastive learning and generative approaches. Soon, various directions came together, combined with increases in model sizes and training datasets, which led to the development of large language and foundation models and generative AI, which are now dominating the field in terms of fundamental advances, practical achievements, as well as discussions about AI ethics and governance¹.

The fast developments in AI have had a substantial effect on science and society. An important aim for *Nature Machine Intelligence* has been to provide a platform for discussing these wide implications. We mainly consider [three article formats](#) for such discussions: Correspondences, Comments and Perspectives. Correspondences are short articles, up to 1,000 words, intended to call attention to a particular timely issue, with a narrow focus and an original, stimulating opinion. They are often written in response to a recent development or another article. For example, this issue has a [Correspondence](#) that highlights the use of large language models (LLMs) in social sciences and the rise of proprietary models such as ChatGPT in this area, where the authors raise attention to specific potential pitfalls and drawbacks.



Comments are longer, up to 2,000 words, and provide a stimulating, opinionated but balanced discussion, with the aim to substantially contribute to or start debates on new or ongoing important issues, with fresh insights or authoritative perspectives. Typical topics for Comments are in AI ethics and governance, but also, for example, on environmental impact². There is a strict maximum of 15 references for Comments, as they are not intended to comprehensively review the field.

Perspectives are closer to Reviews but are still opinionated and provide an agenda-setting, stimulating vision for a fast-moving or new topic or research direction. They should have depth and analysis, although Perspectives should not contain research data – we may offer to consider such pieces as primary research articles instead. A [Perspective](#) in this issue by Pavlović et al. discusses the need for causal modelling in machine learning in making diagnostic and prognostic predictions based on biomarkers. Both Comments and Perspectives are sent to peer reviewers.

Given that topics develop so quickly in AI, we started an annually recurring Feature article in January 2020, in which we reconnect with authors of previous Comments and Perspectives and ask them how their topic has moved on. We also ask authors what other

developments they have found exciting, worrying or surprising in the previous year. In our article ‘AI reflections in 2020’ (published January 2021)³, we added a question about how the COVID-19 pandemic had affected authors’ research. The responses clearly pointed to a major impact, as authors expressed worry and sadness among others over social isolation and missed opportunities, but also discussed how the period had encouraged rethinking of priorities and working productively in virtual mode.

This year, for an anniversary edition of this Feature ([Anniversary AI reflections](#)), we again interviewed authors of recent Comments and Perspectives, and asked them to give examples from personal experience of how AI has changed the scientific process. Strikingly, our authors highlight how AI has completely transformed various disciplines; for example, as mentioned by the first author, the area of protein design and engineering. But they also discuss how recent developments in LLMs, such as ChatGPT and generative AI, have changed whole research workflows including the scientific writing process, coding and brainstorming. Moreover, they predict that given the ongoing developments in LLMs and generative AI, the next five years will bring further substantial changes, such as with personalized models and AI agent frameworks that connect to the physical world. These changes will no doubt bring further ethical challenges, as our authors also highlight.

Before sprinting away into the next five years, we want to take a moment to thank our authors, referees, and editorial colleagues for their insightful contributions and for helping us to shape the journal’s mission. We look forward to continuing to work with you all and will see you at the next 5-year checkpoint.

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References

1. *Nat. Mach. Intell.* **5**, 1337 (2023).
2. Debus, C. et al. *Nat. Mach. Intell.* **5**, 1176–1178 (2023).
3. Jobin, A. et al. *Nat. Mach. Intell.* **3**, 2–8 (2021).