White House Office of Science and Technology Policy (OSTP)
Docket No: OSTP-TECH-2025-0100
Request for Information: Accelerating the American Scientific Enterprise

December 26, 2025

Introduction

As academic experts in AI research and data-driven discovery, we welcome the opportunity to respond to the request for information about how the federal government can work to strengthen the American scientific enterprise. Our perspective on scientific discovery is informed by multidisciplinary work that our respective institutes perform in collaboration with industry and, in many cases, with support from the federal government. Academia has a unique vantage point on what makes scientific research successful. Its role as a hub for pursuing long-term, curiosity-driven research has produced some of the most significant technological advances in human history from the GPS to the MRI to the internet itself — the types of technologies that have made America's innovation ecosystem the envy of the world.

Yet AI presents an inflection point for our approach to scientific discovery. As private sector AI companies continue to outpace academia in acquiring the computing resources necessary for frontier AI research, we risk creating a future where commercial viability plays an outsized role in steering the development of AI and other emerging technologies. If we allow this resource asymmetry to persist, the United States could lose its opportunity to lead the development of the next groundbreaking technology.

In this response, we share our vision for how academic institutions can continue to lead the next chapter of scientific discovery that will unleash further technological advances. As AI continues to transform our world, the academic model of discovery must remain a critical factor in helping us realize new technological possibilities and make American scientific discovery itself more effective.

AI Presents an Inflection Point

We are at a unique inflection point in history where AI holds the potential to unlock unprecedented opportunities across healthcare, education, scientific discovery, and every sector of society.[1] However, realizing this transformative potential requires a fundamental reimagining

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[1] The Royal Society, "An Inflection Point for Scientific Research," September 2025, https://www.nasonline.org/wp-content/uploads/2025/11/2024-US-UK-Forum-on-Science-in-the-Age-of-AI_Formal-Summary.pdf.

of how we conduct research. New collaborative research models built on team science can leverage the breakthrough potential in academia, combined with the talent, resources, and scale of private sector research, while prioritizing scientific discovery for the public good.

Even though foundational AI research — advancements such as deep learning, ImageNet, and diffusion models — was born in academic research labs, the majority of today's frontier research into AI is taking place in the private sector. Private investment in AI in the United States hit $150.8 billion in 2024.[2] That same year, industry produced 90% of the most notable AI models, compared with 60% in 2023.[3]

The scale of private investment in AI research is impressive; however, we run the risk of focusing too much on immediately monetizable research findings and avoiding the greater research risks that enable groundbreaking discoveries. The resource asymmetry between proprietary private sector research and open-source public sector research hinders breakthroughs and holds back social and economic impact of this technology.

Academia's Enduring Power as a Driver of Scientific Research

Academia's incentive structure encourages higher-risk research. Unlike industry's profit-driven research, academic research is fueled by the pursuit of scientific knowledge. Groundbreaking AI innovation has repeatedly emerged from the curiosity-driven research of academics who have the freedom to explore ideas that are not immediately commercializable.[4] Academia must play a leading role in developing frontier AI to ensure that we can understand and safely deploy the technology.

Curiosity motivates scholars to delve into cutting-edge questions. Further, academic research initiatives pull together experts from a variety of disciplines to work collaboratively on scientific pursuits, contributing to the diversity of opinion and open-mindedness that are foundational to groundbreaking discoveries.

At the same time, we acknowledge that the traditional academic research model must be modified for the AI era. This technology moves more quickly and develops differently than past breakthrough technologies — and the resources required to unlock frontier findings require massive collective investments. In particular, we need to reenvision where research labs are

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[2] Stanford Institute for Human-Centered Artificial Intelligence, "The 2025 AI Index Report," April 8, 2025, https://hai.stanford.edu/ai-index/2025-ai-index-report/economy.

[3] Ibid.

[4] Kevin Klyman et al., "Expanding Academia's Role in Public Sector AI," Stanford Institute for Human-Centered Artificial Intelligence, December 4, 2024, https://hai.stanford.edu/policy/expanding-academias-role-in-public-sector-ai.

placed within academic institutions to enable research that is more nimble. This must be coupled with a stronger focus on collaborative research efforts, including with industry stakeholders, to allow research to have a faster feedback loop with the ever-expanding application areas for AI products.

Recommendations

We identify two areas the federal government should pay attention to when crafting policies to support the scientific enterprise.

Recommendation One: Support a new academic research model focused on team science for AI-enabled discovery.

We recommend establishing a new academic collaborative research model built on a "team science" approach[5] — scientific inquiry carried out collaboratively by interdisciplinary teams of domain scientists, computer scientists, and software engineers working side by side and supported by shared, large-scale research infrastructure. For frontier AI-enabled discovery, progress increasingly depends not only on individual investigators but also on coordinated teams with the technical depth, engineering capacity, and access to computation and data necessary to translate research ideas into scalable progress.

To scale this team science model and generate broad societal impact, we further recommend organizing these efforts through an interdisciplinary consortium of academic, government, and industry experts working together for the public good. The consortium would share critical infrastructure including data, computation, custom-built open-access foundation models, and professional talent at a scale that only industry can deliver currently. Drawing inspiration from the success of national labs (such as Stanford's SLAC National Accelerator Laboratory) in accelerating scientific discovery, this model would establish dedicated labs where academia, government, and industry form critical partnerships to develop frontier AI research to yield public economic benefits.

The creation of the National AI Research Resource (NAIRR) is an essential first step as it provides computational resources and data to academic researchers nationwide. At the Stanford Institute for Human-Centered Artificial Intelligence, which was among the first to call for the creation of a national research cloud, we continue to support codifying and fully funding

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[5] Kara L. Hall et al., "The Science of Team Science: A Review of the Empirical Evidence and Research Gaps on Collaboration in Science," *American Psychologist* 73, no. 4 (May 2018): 532–48, https://doi.org/10.1037/amp0000319.

NAIRR.[6] However, solving the most important problems facing the world requires going beyond individual research grants to embrace team science. No single entity — whether a university, government, or company — can tackle these challenges alone. By establishing and funding distributed research centers with shared infrastructure and building public-private partnerships that accelerate the practical applications of scientific findings, the United States can position itself at the forefront of AI research and development while ensuring that breakthrough innovations serve the public good and transform democratic society.

The team science model is also a vital structure for retaining top talent in academia. AI systems are a reflection of the people who develop them. At the moment, there is a large gulf between the number of AI PhDs entering the private sector and those staying in academia. The AI team science lab model can provide incentives for top talent to stay in public interest research. This also creates a crucial feedback loop: If top AI talent is siloed in proprietary research projects, American academies' ability to train the next generation of computer scientists to then work in industry is threatened. By preserving academia in frontier research, we will also strengthen the talent pipeline, benefitting all stakeholders in AI research.

Recommendation Two: Invest in and support the open-source research ecosystem.

One of the foundational principles that has long fueled impactful and efficient scientific research in the United States is the prioritization of open-source research. Open research is core to the United States' competitive global advantage. Open research accelerates innovation, reduces duplication, and allows ideas to build on each other. In fact, the current state of the technology would not have been possible without open-source contributions.[7]

The back propagation algorithm, which revived deep learning in the 1980s, came about through a paper shared openly.[8] Reproducible benchmarks, which underpin our ability to assess research progress, could only be developed thanks to open datasets like TIMIT, TREC, MNIST, ImageNet, and Stanford Alpaca.[9] And open-source code repositories such as the Stanford CoreNLP toolkit, as well as TensorFlow, PyTorch, DSPy, and FlashAttention, continue to allow

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[6] Daniel E. Ho et al., "Building a National AI Research Resource: A Blueprint for the National Research Cloud," Stanford Institute for Human-Centered Artificial Intelligence, October 1, 2021, https://hai.stanford.edu/policy/white-paper-building-national-ai-research-resource.

[7] John Etchemendy et al., "Universities Must Reclaim AI Research for the Public Good," Stanford Institute for Human-Centered Artificial Intelligence, October 30, 2025, https://hai.stanford.edu/news/universities-must-reclaim-ai-research-for-the-public-good.

[8] *See* David E. Rumelhart et al., "Learning Representations by Back-Propagating Errors," *Nature* 323, No. 6088 (October 1986): 533–36, https://doi.org/10.1038/323533a0.

[9] John Etchemendy et al., "Universities Must Reclaim AI Research for the Public Good," *Stanford Institute for Human-Centered Artificial Intelligence*, October 30, 2025, https://hai.stanford.edu/news/universities-must-reclaim-ai-research-for-the-public-good.

researchers to augment their individual knowledge and experimentation and learn from similarly minded experts.[10]

Openness in research creates a "flywheel" effect where researchers can iterate and learn from published code, and startups can then translate advances into new discoveries and products. The real magic of innovation is unleashed when technological research can feed into a flywheel in this way.

Open research is something that academia naturally embraces and that the government can help expand. Ensuring that any funding and infrastructure for AI development includes a requirement that software and datasets be made openly available would be helpful in encouraging more open research.

Conclusion

America's academic institutions are vital to accelerating our scientific enterprise. By supporting a new model for team science and encouraging open-source research, the federal government can help academic researchers continue to lead in new breakthroughs, including in emerging technologies such as AI that are poised to fundamentally transform our society.

Sincerely,

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[10] Ibid.

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