



CRA's Response to the [Request for Information on the Development of an Artificial Intelligence \(AI\) Action Plan](#)

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This response is prepared by the Computing Research Association (CRA), assisted by the Computing Community Consortium (CCC) and CRA-Industry (CRA-I). CRA is an association of over 270 North American computing research organizations, both academic and industrial, and partners from six professional computing societies. The CCC's mission, a CRA subcommittee, is to enable the pursuit of innovative, high-impact computing research that aligns with pressing national and global challenges. The mission of CRA-I, another subcommittee of CRA, is to convene industry partners on computing research topics of mutual interest and connect them with CRA's academic and government constituents for mutual benefit and improved societal outcomes.

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Artificial Intelligence is rapidly improving and becoming a crucial resource for scientific research across nearly all disciplines, as well as increasingly being adopted throughout industry and the federal government. The United States clearly recognizes the vital importance of maintaining leadership in AI development to enhance global competitiveness and fortify the security of our research ecosystem, and the Computing Research Association welcomes this opportunity to provide recommendations for a national AI Action Plan.

A comprehensive national strategy must prioritize continued federal funding for fundamental academic research in AI. Academic research is often the precursor to industry success, as demonstrated in the National Research Council's so-called "[Tire Tracks](#)" chart, which depicts the evolution of American IT sectors, with university research preceding products and markets for many years. The field of AI research itself was born from academic work dating back many decades by pioneers such as Alan Turing, John McCarthy, and Geoffrey Hinton. More recent examples include the [2024 Nobel Prize in Physics](#), shared by John J. Hopfield and Geoffrey Hinton for their pioneering research in neural networks, and the [2025 Turing Award](#), (colloquially thought of as the Nobel prize in computing) given to Andrew Barto and Richard Sutton for their foundational work, dating back to the 1990s, in reinforcement learning.

Innovation in AI has historically been driven by a synergy between academic and industry research. The Tire Tracks chart shows that research in industry does not replace university research, nor does university research supplant industry efforts. Instead, the two research communities are complementary. More generally, it is critical that the national AI Action Plan recognizes that research informs and advances application, academia complements and reinforces industry's efforts, and both play key roles in innovation.

The following recommendations detail key strategies for the federal government to undertake to ensure that AI continues to strengthen the American economy, bolster our national security, and benefit all Americans.

Fund Precompetitive Research Conducted in Academia

- Industry research tends to focus on incremental or product-driven advancements, whereas academic research explores foundational innovations, which have the potential to revolutionize the technology landscape in five, ten, or more years. Additionally, academic research is able to explore a wide breadth of approaches and techniques precisely because it is not driven by profit. Foundational research involves more than simply improving existing methods for guaranteed returns, and academic research labs are best positioned to pursue those questions. It is

impossible to predict what the next AI breakthrough may be, but it is vital that it come from the US. Therefore, it is critical that the Federal government maintain a broad and diverse portfolio of investments in basic AI research.

Establishing Evaluation Frameworks for AI Model Benchmarking/Testing

- To mitigate potential risks, robust evaluation infrastructure is critical. This would include a tiered sandbox environment where AI systems undergo rigorous testing before deployment. Each tier would progressively increase the complexity of the testing, to measure the AI model's impact on individuals, specific regulations, and the economy. This multi-faceted approach would enable researchers, developers and federal officials to identify and address potential issues before widespread deployment, ensuring responsible and beneficial AI development.

Fully Fund NAIRR and FASST

- The National AI Research Resource (NAIRR) and the Frontiers in Artificial Intelligence for Science, Security, and Technology (FASST) initiatives each receive strong bipartisan support in both chambers of Congress. NAIRR is designed to provide AI resources broadly to researchers and innovators across sectors and problems in all US states. At the same time, FASST aims to support deep research efforts, specifically scientific and national security challenges relevant to the Department of Energy. Both represent important resources that enable the Federal government to accelerate innovation and insights in AI, much as the government has historically done in astronomy, physics, and other fields. These efforts complement one another, and both should be fully funded without delay.

Computing Efficiency Research

- The Lawrence Berkeley National Laboratory's (LBNL) [2024 Report on US Data Energy Use](#) describes how data center energy demands have tripled over the past decade, and are expected to double or triple again by 2028, to approximately 6.7 to 12 percent of total US electricity supply. These enormous increases in electricity demand will necessitate creating new transmission and generation networks and infrastructure. However, creating new infrastructure does not solve the root of the problem: the energy demand of AI models. The Federal government should pursue a multi-agency effort across the Department of Energy, NSF, and other relevant Federal research agencies to fund fundamental computing research and establish public-private partnerships. Doing so would enhance the overall efficiency of all AI models, directly impacting costs and enabling both US researchers and companies to better leverage innovative AI technologies. These research efforts should address energy efficiency at every step of the AI lifecycle, from improved data synthesis and utilization, to

optimized algorithms, to more energy-efficient computing techniques, to fundamentally new approaches to training and using AI models.

Ensuring Human-centered AI

- In order to ensure AI models are beneficial to all Americans and the American economy, it is critical that we harness the benefits of AI while mitigating the risks. This all must be done in ways that center human needs and interests; this is especially relevant for rural Americans who may have different needs and uses than are the focus of current AI. Opportunities for AI to advance American prosperity will not materialize if these systems behave in ways counter to personal freedom and human dignity, or if they harm individuals and communities. As directed in the first Trump administration (EO 13960), AI models and systems must be trustworthy, as well as reliable, safe, and understandable. A human-centered approach to AI is particularly important in high-stakes sectors and decisions such as healthcare and the law. Substantial research is required on the aspects of AI systems that matter for trustworthiness, including explainability, interpretability, privacy, safety, security, and much more. At the same time, clear national priorities and guidelines, along with dynamic, adaptive, intelligent governance (not mere regulations), must be developed to mitigate legal ambiguities and advance human-centered and human-supporting AI.

Education and Workforce

- AI is changing the nature of work, creating jobs in some areas and replacing jobs in others. Federal funding must be allocated towards programs to re-skill and up-skill the workforce to better prepare Americans for an AI-integrated economy. The Federal government should also continue to fund research on how best to create AI that augments, rather than replaces, human workers, such as the NSF sponsored [Future of Work at the Human-Technology Frontier](#) program.
- The Federal government can also play an important role in facilitating academic/industry partnerships to better prepare the future generation of AI researchers for the job market. The NSF's TIP Directorate is perfectly positioned to enable these partnerships and to promote relationships that provide students with research experience, as well as academic-industry research collaborations. Furthermore, expanding funding to support undergraduate research opportunities would increase the likelihood that domestic undergraduate students can gain the experience and mentorship needed to pursue advanced degrees, such as a PhD, further strengthening the pipeline to AI research careers. These processes could also be replicated in other areas of the Federal government.