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General Comment

The Computing Research Association's Response to the Request for Information on the Development of a 2025 National Artificial Intelligence (AI) Research and Development (R&D) Strategic Plan

Attachments

CRAs Response

CRA's Response to the Request for Information on the Development of a 2025 National Artificial Intelligence (AI) Research and Development (R&D) Strategic Plan

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This response is prepared by the Computing Research Association (CRA), assisted by the Computing Community Consortium (CCC). 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.

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CRA is pleased to have the opportunity to submit additional comments to help inform the Development of a 2025 National AI Research and Development Strategic Plan. We would like to thank the Office of Science and Technology Policy for providing this opportunity for input. We hope our input here will be considered in addition to our original submission to the February request for information on the Development of an Artificial Intelligence (AI) Action Plan. Our previous response highlighted the importance of:

- Funding precompetitive computing research conducted in academia,
- Establishing robust evaluation frameworks for AI model benchmarking and testing,
- Fully funding initiatives like NAIRR and FASST,
- Investing in computing efficiency research to address increasing energy demands,
- Ensuring a human-centered approach to AI development that prioritizes human needs and well-being, and
- Strengthening education and workforce development to prepare Americans for an AI-integrated economy.

An effective and actionable strategic plan is critical for maintaining American leadership in AI research and development. However, it is paramount to underscore that the advancement of AI research cannot succeed in isolation. A truly effective national AI R&D strategy must recognize and actively support the symbiotic relationship between AI and a wide array of other scientific and engineering disciplines. Without sustained and significant investment across these complementary fields, including in the social, behavioral, and economic sciences, AI's potential will remain largely unrealized, and its societal impact severely limited.

AI holds incredible potential for accelerating discovery and innovation across the entire scientific research enterprise, through its ability to process massive volumes of data and draw connections between hundreds of billions of data points. AI, when effectively integrated into the United States' research ecosystem, will exponentially accelerate the rate of scientific discovery and allow scientists to dedicate more time to conducting experiments and studies. This synergy, however, hinges on a crucial understanding: AI is a powerful amplifier, not a replacement, for fundamental scientific inquiry. Its success is therefore intrinsically linked to continued, robust investment in the very disciplines that generate the data, formulate the questions, and validate the insights upon which AI thrives.

As an example, AI powered simulations are incredibly powerful tools for making future predictions and new discoveries, such as in materials discovery, simulating quantum system behavior, weather forecasting, and almost every other field of scientific research. However, these models are only as effective as the data they are trained on allow them to be, and humans still need to conduct research to gather these kinds of data. Researchers also conduct foundational research, which provides the initial understanding of what to look for and the “ground truth” against which AI models are validated, both understandings that are essential for AI models to be useful in a scientific context.

Additionally, many of AI’s most profound impacts occur at the intersections of disciplines, such as in precision health or urban planning. Discoveries in one field of research may also spur innovation in another. When foundational science research stagnates, so too does the generation of novel ideas that can springboard new discoveries for years after.

Federal agencies play a vital and irreplaceable role in cultivating this fertile ground for scientific advancement. Through sustained funding, strategic initiatives, and the fostering of collaborative environments, agencies like the National Science Foundation (NSF), National Institutes of Health (NIH), Department of Energy (DOE), and Department of Defense (DoD) underpin the vast majority of foundational research conducted in US universities and national labs. This consistent support ensures that scientists can pursue high-risk, high-reward inquiries that often lead to foundational breakthroughs essential for future technological leaps, including those in AI. Without this federal support, the pipeline of fundamental knowledge that feeds AI innovation would diminish, ultimately hindering America's ability to lead in the global AI and scientific landscape.

It is also important to consider, as incredible as the capabilities of AI are now, AI models are a rapidly evolving technology and far from being “finished.” Endless research questions exist and new questions are constantly emerging. For example, human safety, especially in the context of humans interacting with AI powered autonomous vehicles, is still a relatively unexplored area that is changing constantly as robots achieve new abilities. As robots increasingly appear alongside human drivers and pedestrians on urban streets and next to human workers in automated warehouses, the question of how to keep people safe becomes more critical.

We sincerely appreciate this opportunity to provide further insights to inform the 2025 National AI Research and Development Strategic Plan. CRA remains committed to supporting efforts that ensure American leadership in AI, and we believe that the

perspectives offered here, alongside our original submission, underscore a critical truth: AI's true potential is inextricably linked to the broader health and vitality of the entire scientific research ecosystem**.** To fully realize the transformative benefits of AI for discovery, innovation, and societal well-being, the strategic plan must champion not just AI research itself, but also the sustained and robust investment in the foundational scientific and engineering disciplines upon which AI's success ultimately depends.