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General Comment

See attached file(s)

Attachments

NSF_2025_AI_plan_RFI_Intel_response

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

May 29, 2025

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Intel Corporation (“Intel”) is one of the world’s leading semiconductor companies and the only leading-edge logic manufacturer based in the United States. Intel has a long history of Research & Development (R&D) work across a wide array of critical technologies.

We appreciate the opportunity to provide this response to the Networking and Information Technology Research and Development (“NITRD”) National Coordination Office’s (“NCO”) Request for Information (RFI) on behalf of the Office of Science and Technology Policy (“OSTP”) regarding the development of a 2025 National AI R&D Strategic Plan. We believe the research priorities outlined in the RFI will play important roles in a comprehensive national AI R&D strategy. The areas highlighted below in this response are intended to complement and extend those priorities, with a focus on emerging challenges and opportunities that we believe warrant further attention.

Sustaining Foundational and Long-Term AI Research

A robust AI R&D ecosystem must be anchored in foundational research, requiring sustained federal investment in relevant long-term scientific work, including theoretical advances, algorithmic innovation, and interdisciplinary exploration. A cohesive pipeline from fundamental research to applied use cases is essential to enabling near-term applications which can swiftly deliver societal and economic value, while also facilitating longer-term breakthroughs which can provide sustained benefits. Achieving this vision will require strategic coordination across agencies and sectors.

Private sector efforts also play a critical role in US leadership in AI, so it is imperative to encourage sustained investment in R&D and innovation. Tax policies which support long-term R&D activity taking place in the U.S. will enable the U.S. to drive AI and maintain that leadership in the future.

We also emphasize the need to improve access to AI infrastructure, which remains a significant barrier for academic and nonprofit researchers. Expanding support for shared AI/High Performance Computing infrastructure and open-source platforms would facilitate broad

participation in AI research. Investments in AI R&D will not only empower U.S. researchers and companies to accelerate innovation but also support the pursuit of AI R&D that serves national interests, addresses critical societal challenges, and strengthens U.S. leadership in areas beyond immediate commercial viability.

AI-Driven Design and Self-Improving Systems

AI has the potential to revolutionize the design and development of complex systems. We recommend prioritizing research into autonomous systems, including self-testing, validation, and self-healing capabilities, as well as AI applied to overall system design; autonomous silicon design would be of particular interest. An example goal for AI to improve human productivity could be something like “30 in 30” in which thirty humans could design a specific type of complex product from beginning to end by 2030 using advanced AI tools. This approach could be extended to other domains such as automotive, architecture, and consumer electronics, where AI can dramatically accelerate innovation cycles.

Energy Efficient and Scalable AI Infrastructure

Maintaining leadership in AI requires investment in next-generation hardware architectures to meet the growing computational demands of AI. This includes ultra-dense 3D integration to achieve ExaFLOPS performance at under 0.1 MW, as well as novel memory technologies that combine high bandwidth and low latency with energy efficiency and cost-effectiveness. Research into advanced interconnects and protocols (e.g., achieving 0.1 pJ/bit or lower) is also critical to reducing the energy footprint of AI workloads.

Enabling Security, Privacy and Trust

As AI systems become more pervasive, ensuring their security and trustworthiness is paramount. We recommend targeted research into adversarial robustness, anti-poisoning techniques, and cyber-offense resilience. Privacy-preserving AI, including data scrubbing and anonymization, should be a core focus. Additionally, we emphasize the importance of tracking provenance and verifying the integrity of the entire AI pipeline and solution stack; for example, information theory techniques such as mutation tracking can play a key role in enhancing system transparency.

Open-source models also play an important role in AI. Facilitating a federated way to share data to build more robust models, while protecting the underlying data, can provide a competitive advantage and enable U.S. AI leadership.

Research for Advancing AI Standards

In the rapidly evolving field of artificial intelligence, international standards are a key vehicle for supporting U.S. innovation and technology leadership in contributing to the global evolution of AI. They enable global market access for industry, interoperability among products and services, global supply chains, and enhanced consumer welfare by increasing economies of scale and competition. International standards are especially important for addressing areas that benefit from consistent or harmonized global approaches such as areas related to technical interoperability, reliability, risk management, security, etc. Therefore, we recommend that the plan's approach for research in AI standards be focused on areas of contributions to advance the private sector led international standardization work (including related initiatives convened by NIST to advance AI standardization work). NIST's work on voluntary frameworks, guidance, and best practices (e.g., AI Risk Management Framework) has also been useful.

Furthermore, the need for safe and effective human-AI interaction will be increasingly important as agentic and embodied AI systems become more prevalent. Research into general and specialized Vision-Language-Action models that are both efficient and adaptable would be helpful. Standardization efforts could address the unique challenges of embodied AI, including safety, reliability, and human-centered design.

Intel Corporation welcomes the opportunity to discuss our response to this request for information.