

# PUBLIC SUBMISSION

<b>Received:</b> May 28, 2025 <b>Tracking No.</b> mb8-coz5-17da <b>Comments Due:</b> May 28, 2025 <b>Submission Type:</b> Web
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**Docket:** NSF-2025-OGC-0001  
NITRD\_FRDOC\_0001

**Comment On:** NSF-2025-OGC-0001-0001  
Request for Information: Development of a 2025 National Artificial Intelligence Research and Development Strategic Plan

**Document:** NSF-2025-OGC-0001-DRAFT-0147  
Comment on FR Doc # 2025-07332

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## Submitter Information

**Organization:** Florida State University

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## General Comment

Attached are the comments provided by Florida State University

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## Attachments

FSU AI RFI 2 Final

## The Office of the Vice President for Research

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Florida State University (FSU) is honored to present our insights and recommendations in response to the Request for Information (Published Document: 2025-07332 (90 FR 17835)) concerning the vision of the 2025 National Artificial Intelligence Research and Development Strategic Plan for the United States. FSU commends the Administration's efforts to ensure America's continued global dominance and leadership in AI for human flourishing, economic success, and national security. Drawing upon its extensive expertise and pioneering research in AI and related computer/IT fields, we are committed to advancing national AI strategies that will foster innovation, economic growth, and societal benefits.

Our perspective is that of an academic institution with a robust and broad research program across many colleges, institutes, centers, and programs. More importantly, FSU has taken bold steps to become a key driver to transform the Florida Panhandle and Big Bend regions into an advanced manufacturing hub and economic engine with world-class health care facilities. Central to its mission is education and training students to become future leaders and important contributors to society.

Deep learning models, exemplified by large language models (LLMs), have advanced AI significantly. Solidifying the foundations upon which those models are built will serve to maintain our competitive edge and yield superior returns on investments in AI. Moreover, a deep understanding of the mechanisms underlying AI's at-times-astonishing advances, within a broader research and development ecosystem that fosters innovation, will better support human flourishing into the future.

Recognizing that the 2025 National Research and Development AI Strategy Plan will be historically critical, FSU is committed to applying its unique capabilities to contribute to this plan and, ultimately, to tackle these challenges. The following details specific areas that we deem important in this effort:

- A Holistic Approach to Understanding AI Models.** AI models exhibit a wide range of intelligent behaviors and affect every field and industry. Understanding these models, including at a foundational level, is critical to avoid pitfalls and unexpected failures. This, in turn, requires tight and deliberate collaborations across many disciplines within academia and industry. Research institutions, such as FSU, will be critical to discharging these important responsibilities. We believe the new AI R&D Plan should promote a holistic approach to understanding AI models and their implications through fruitful interdisciplinary collaborations. By disentangling the multi-faceted nature of AI, we can rigorously identify novel applications and facilitate more productive industry AI adoption while avoiding longer-term negative consequences.

- Transformation of AI into Engineering and Research Capabilities.** While improvements by large language and other AI models on benchmark datasets are impressive, transforming AI knowledge into engineering and research capabilities in specific domains will be invaluable to accomplish the goals of the AI R&D Plan. For example, with the support of FSU, a group of Computer Science faculty and student researchers, working with faculty and users of the Ion Cyclotron Resonance (ICR) Facility at the National High Magnetic Field Laboratory (MagLab) have developed new analysis routines that extract more comprehensive information from spectrometry data. These advancements not only enhance the accuracy and depth of molecular insights but also pave the way for leveraging AI to revolutionize data interpretation. This may lead ultimately to a large language model tailored to spectrometry applications. Such a model promises to dramatically reduce analysis time for users, streamline workflows, and effectively increase utilization of the magnets within the ICR Facility. By integrating machine learning with traditional methodologies, this initiative underscores the facility's commitment to innovation, ensuring that it remains at the forefront of scientific discovery while meeting the growing demands of a global research community. This and many such examples demonstrate the essential roles of public universities in improving engineering and research capabilities.

Encouraged by such results, we believe the new AI R&D Plan should strategically invest in community-centered initiatives to empower them to overcome the challenges they face. One fruitful area is leveraging AI to tackle extreme weather events. The average annual cost of hurricane- and tornado-related damage in the U.S. exceeds \$140 billion, posing a serious threat to economic stability and human well-being in many communities; tornadoes are estimated to have caused more than \$6 billion in damage in May 2025 alone. At the same time, decades of hurricane and tornado observations and post-disaster assessments have produced vast amounts of data. This challenge is therefore precisely the kind of complex, important, data-rich problem where AI can offer transformative solutions. There are opportunities to apply AI-driven solutions to many stages of this problem such as improved forecasting, better hurricane preparedness, more effective evacuation decisions, and accelerated recovery. And yet private sector investments in AI R&D on this matter remain limited due to uncertain commercial returns. This underscores the vital need for public investment into tackling problems as critical as these.

Similarly, AI is emerging as a transformative force in the field of medicine, presenting unprecedented opportunities to enhance patient care, streamline clinical processes, and improve outcomes in community-centered ways. The AI R&D Plan should encourage this. Customized AI models that are fully transparent and meet state-of-the-art performance standards are becoming viable. Community-centered integrations, in particular, provide solutions to existing data privacy challenges and ethical considerations. Additionally, AI can be leveraged to educate the public and present medical and health information in a personalized way.

With strong interdisciplinary teams across multiple areas, research institutions such as FSU are uniquely positioned to tackle such challenges, building on strong programs and offering novel solutions that would have long-lasting positive impacts to our country. Together, government-led AI R&D in this area will mitigate economic loss and improve resilience. We

believe that the AI R&D Plan should encourage such demonstrable and significant advancements in manufacturing, extreme event prediction, healthcare, research, transportation, and other important areas.

- Human Flourishing.** The effectiveness and sustainability of the AI R&D Plan will be largely determined by how AI empowers people and supports human flourishing. While commercial AI models play a role in enhancing people's generic decision-making capabilities, human flourishing for all must be centered around communities. Human-AI collaborations should empower people, rather than simply automating their tasks. Similarly, AI models should enable people to fully participate in AI-enabled development and activities. We believe that the new AI R&D Plan should leverage capabilities of public universities to support human flourishing for all. As commercial AI models converge in performance and state of the art models that can run on community infrastructures emerge, community-centered solutions provide the best pathways forward.
- AI Model Security.** The annual cost of cybersecurity breaches is estimated to reach \$10.5 trillion in 2025.<sup>1</sup> With rapid adoption of AI models, the situation could be much worse. More importantly, AI models are known to have representation vulnerabilities - imperceptible changes in their inputs could cause them to behave very differently, a hallmark of traditional vulnerable programs and web pages. For example, well-crafted input could cause a web page with a cross-site scripting vulnerability<sup>2</sup> to run scripts controlled by hackers. Even with years of efforts to secure programs and web pages, new vulnerabilities are constantly identified. In comparison, AI model security has not yet been studied systematically. For example, there has been no established framework to systematically categorize vulnerabilities in AI models. As new AI models and techniques are released continuously, programs on AI model security must be established. As both defensive and offensive cybersecurity techniques are indispensable to secure programs and web pages, studies on these techniques for AI models would be critical to maintain dominance in AI.
- Workforce Development.** A workforce that knows how to best utilize AI tools to increase its productivity, and at the same time understands its fundamental limitations and weaknesses to avoid pitfalls, is absolutely critical to maintain the nation's global leadership in AI. Just as software developers must understand program vulnerabilities to develop secure programs, developers for AI-powered systems must understand AI models. Developing effective curricula to realize maximal benefits must be done at institutions that have the deep knowledge of the subject and are committed to embracing AI techniques effectively. With strong centers for academic excellence in education and research, FSU has been proactively preparing its students to succeed and become leaders in an AI economy. We believe that the new AI R&D Plan should invest in education and training programs at all levels, from K-12 to higher education and lifelong learning. Emphasizing

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<sup>1</sup> From "Top Cybersecurity Statistics for 2025," retrieved from <https://www.cobalt.io/blog/top-cybersecurity-statistics-2025> on May 26, 2025.

<sup>2</sup> Cross-site scripting is ranked number 1 in the top 25 most dangerous software weaknesses in 2024, the most recent version available; see [https://cwe.mitre.org/top25/archive/2024/2024\\_cwe\\_top25.html](https://cwe.mitre.org/top25/archive/2024/2024_cwe_top25.html).

STEM (Science, Technology, Engineering, and Mathematics) education, interdisciplinary studies, and AI-specific curricula will prepare the next generation of AI professionals.

- Strong Leadership in Public-Private Partnerships.** Meeting these complex challenges related to AI will require capable and committed leaders and leading institutions. For example, human flourishing requires enabling individuals with novel, innovative, and reliable capabilities. With its bold investments in smart manufacturing and quantum engineering, FSU is positioned to transform AI technologies into secure manufacturing capabilities and improved healthcare facilities for the Florida Panhandle and Big Bend region. Not only does FSU's research transform our community, it also contributes by developing technologies and methodologies that can be applied throughout the US, which aligns well with the goal of the National AI Action Plan. Research institutions, such as FSU, with its high intellectual capacity have positioned themselves to meet the many challenges. We believe that the AI R&D Plan should encourage and provide resources and support such research institutions to take leadership roles to realize the mission of the National AI Action Plan.

In summary, maintaining the US's position as the global leader in AI is important for national advancement, productivity, protection, and prosperity, and to ensure that AI serves human flourishing. We strongly believe that universities provide an essential engine that engages and enables the communities, drives technological innovation through leading multidisciplinary research programs and by training the next generation of AI developers and users, as well as producing advances in related fields necessary to fuel further evolution and innovation. As a public institution, Florida State University values this opportunity to provide feedback and guidance as you move forward in setting the AI R&D Plan that will enable the US to lead in this monumental opportunity to harness the power and potential of AI. We hope to contribute in a meaningful way in helping America stand firm as a global leader in this area.