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Policy Update: White House Releases Updated Strategic Plan for AI R&D, Congress Develops AI Legislation

Lewis-Burke Associates LLC – June 27, 2019

This policy update provides information on the Trump Administration's priorities for artificial intelligence (AI) research and development (R&D) investments as well as recent legislation introduced or passed by Congress to advance AI. This document specifically focuses on the policies being developed or implemented that have relevance to the academic research community.

The National Artificial Intelligence Research and Development Strategic Plan: 2019 Update

On June 21, 2019, the Trump Administration released *The National Artificial Intelligence Research and Development Strategic Plan: 2019 Update*, a modified version of a similar plan originally released in 2016. The plan creates a framework for guiding federal AI R&D activities in accordance with the Administration's February 2019 executive order establishing the *American Artificial Intelligence Initiative*.

The document outlines AI R&D areas that industry is unlikely to address on its own and offers eight individual strategies for how the Federal Government can help to advance them. These strategies are:
   1.   Make long-term investments in AI research;
   2.   Develop effective methods for human-AI collaboration;
   3.   Understand and address the ethical, legal, and societal implications of AI;
   4.   Ensure the safety and security of AI systems;
   5.   Develop shared public datasets and environments for AI training and testing;
   6.   Measure and evaluate AI technologies through standards and benchmarks;
   7.   Better understand the national AI R&D workforce needs; and
   8.   Expand public-private partnerships to accelerate advances in AI.

The first seven were identified in the original 2016 plan. This update reinforces the need to continue implementing the original seven strategies and provides information on actions undertaken by federal agencies in the last three years to implement those strategies. The eighth strategy was added to reflect the significant strides made by the commercial sector in AI capabilities and to encourage the exchange of ideas and practices between businesses and the Federal Government.

While all the strategies are of likely interest to the academic community, this Lewis-Burke report highlights two in particular—fundamental research and the societal and ethical implications of AI. The updated strategic plan notes that much of the progress made since 2016 on the first strategy—making long-term research investments in AI research—has centered on narrowly focused AI applications, and that sustained investment in core areas relevant to AI would be required to realize general purpose AI. In particular, more capable, reliable, and explainable machine learning will necessitate additional research in "commonsense reasoning and problem solving, probabilistic reasoning, combinatorial optimization, knowledge representation, planning and scheduling, natural language processing, decision making, and human-machine interactions". These research areas are consistent with investments being made across federal agencies, in particular the National Science Foundation (NSF), the Department of

Energy (DOE), and the Department of Defense (DOD). The strategy also emphasizes the centrality of shared data and infrastructure to enabling such advances.

The updated strategy does not deviate significantly from the 2016 iteration on the topic of AI's impact on legal, societal, and ethical concerns. It specifically notes that the initial version was "prescient in identifying research themes in privacy, proving fairness, transparency, and accountability of AI systems by design; and designing architectures for ethical AI." The 2019 iteration, however, does argue that additional R&D is necessary for developing AI systems that utilize technical means to address ethical, legal, and societal concerns. The academic research community is uniquely suited to spur progress in this area given its ability to foster collaborations between different disciplines, such as law, the humanities, and computational science.

The figure below articulates the interplay between the strategies and AI application areas.
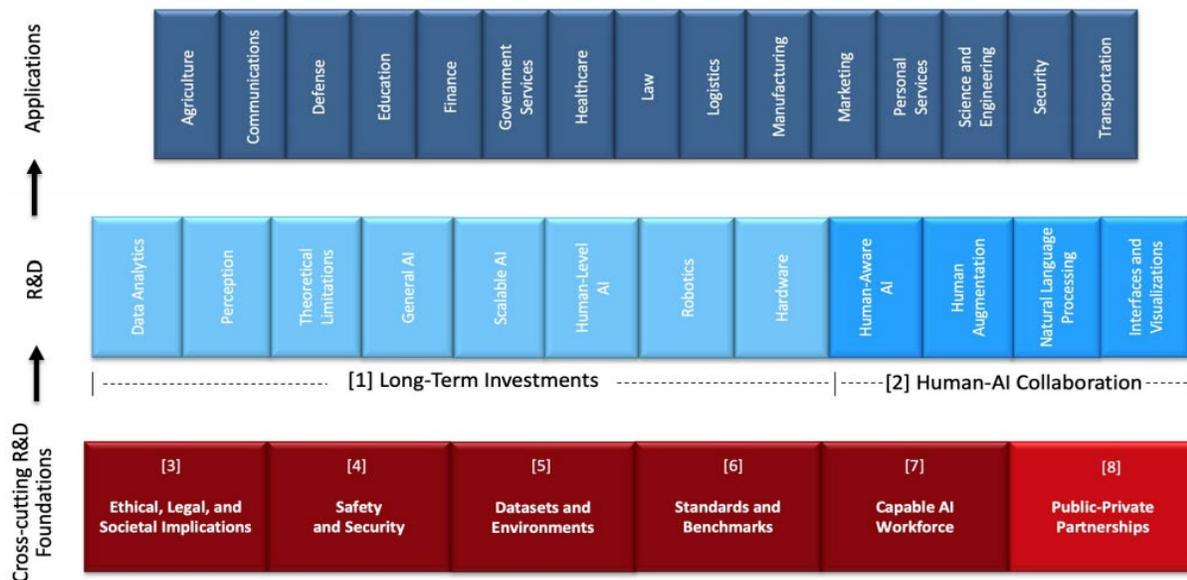
Source: *The National Artificial Intelligence Research and Development Strategic Plan: 2019 Update*

Legislative Landscape

While AI legislation is not currently a priority for Congress, there is growing interest in legislation that would grow R&D investments, coordinate research efforts across the federal government, ensure U.S. leadership and economic competitiveness, and help the federal government adopt AI tools to improve business operations. The release of the updated plan comes amid a rapidly shifting AI R&D landscape. AI systems of varying complexity and capability continue to permeate aspects of scientific inquiry, national security, and the economy. These changes are occurring against the backdrop of intensifying international competition around AI supremacy, with China in particular demonstrating clear ambition to be the dominant leader in AI by mid-century if not earlier. The aforementioned changes have jumpstarted a conversation among policymakers about the need for a long-term, comprehensive initiative focused specifically on R&D. This would be a contrast to the Administration's executive order creating the *American Artificial Intelligence Initiative*, which calls for greater coordination and

investment in AI research but does not actually call for additional funding or propose specific mechanisms.

Lawmakers in both the House and Senate are exploring different legislative approaches. Representative Lipinski (D-IL) has introduced the *Growing Artificial Intelligence through Research Act* (GrAITR Act), a bill modeled around the National Quantum Initiative Act. The GrAITR Act would entrust the Office of Science and Technology Policy (OSTP) with coordinating and overseeing a national AI R&D initiative and delineate specific functions to NSF, DOE, and National Institute of Standards and Technology (NIST). A companion bill with minor modifications entitled the *Artificial Intelligence Innovation Act* (AIIA) was introduced in the Senate by Senators Portman (R-OH) and Heinrich (D-NM), both of whom co-chair the recently established Senate AI Caucus. The House Committee on Science, Space, and Technology has indicated its interest in focusing more on the societal and ethical aspects of AI, while the Senate Committee on Commerce, Science, and Transportation has not yet examined the issue in earnest.

Congress has also been proactive in its support of AI R&D in the national security space. The fiscal year (FY) 2019 *National Defense Authorization Act* (NDAA) authorized the creation of the Joint Artificial Intelligence Center (JAIC), an organization charged with fostering the development of new AI capabilities and their integration into the mission-critical functions of DOD. The FY 2019 NDAA also established an independent National Security Commission on AI to study and give recommendations on policies to advance AI R&D to meet U.S. defense and national security needs. The House FY 2020 NDAA would double the investment in AI R&D already made by JAIC, require DOD to develop an AI Education Strategy, and extend the aforementioned commission.

One other AI bill recently introduced is the *AI in Government Act of 2019*, which would endeavor to streamline government through the adoption of AI capabilities. The bill is not as research focused as the GrAITR Act or the AI sections of the NDAA mentioned above, but it would open other avenues of engagement for the academic community. The bill would create an AI Center of Excellence (CEO) that would serve as a convening authority for individuals from the public, private, and academic sectors who would be charged with assisting the Federal Government in meeting the mandate of the bill. The bill would also establish an advisory board to assist the General Services Administration in its implementation of the recommendations of the COE. At least two of the members of this board would be from institutions of higher education.

Sources and Additional Information:
- The *National Artificial Intelligence Research and Development Strategic Plan: 2019 Update* is available at https://www.whitehouse.gov/wp-content/uploads/2019/06/National-AI-Research-and-Development-Strategic-Plan-2019-Update-June-2019.pdf.
- The GrAITR Act is available at https://www.congress.gov/bill/116th-congress/house-bill/2202?q=%7B%22search%22%3A%5B%22graitr%22%5D%7D&s=1&r=1.
- The AIIA is available at https://www.congress.gov/bill/116th-congress/senate-bill/1558?q=%7B%22search%22%3A%5B%22artificial+intelligence+innovation+act%22%5D%7D&s=2&r=4.
- The full FY 2019 NDAA conference report and bill language is available at https://docs.house.gov/billsthisweek/20180723/CRPT-115hrpt863.pdf.
- The House FY 2020 NDAA report is available at https://docs.house.gov/meetings/AS/AS00/20190612/109540/BILLS-116HR2500ih.pdf.

- The *AI in Government Act of 2019* is available at https://www.congress.gov/bill/116th-congress/house-bill/2575?q=%7B%22search%22%3A%5B%22artificial+intelligence+innovation+act%22%5D%7D&s=2&r=1.