

Trump Administration Publishes Updates to National AI R&D Strategy

By Lewis-Burke Associates, LLC

The Trump Administration has released its update to the National Artificial Intelligence (AI) Research and Development Strategic Plan, a modified version of the original plan 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.

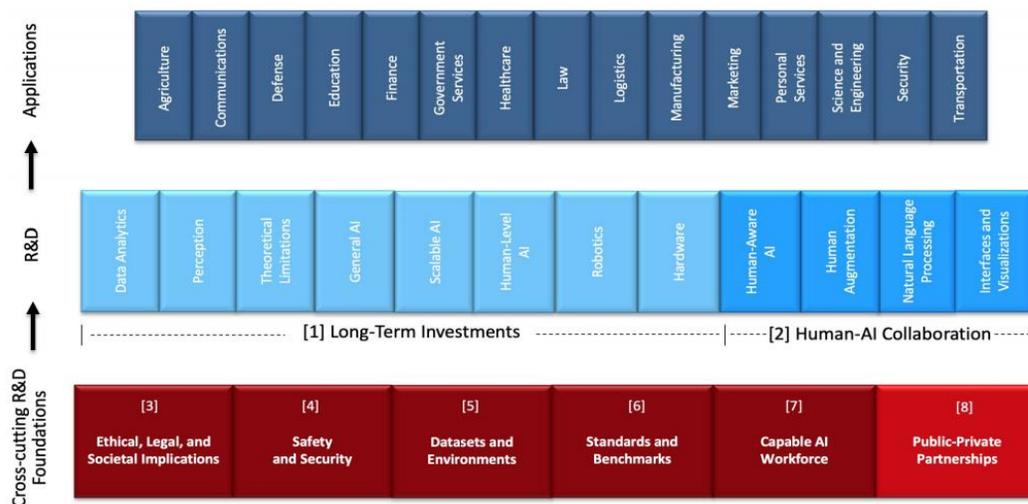
The updated strategic plan notes that much of the progress made since 2016 on the first strategy—making long-term research investments in AI research—has centered on narrowly focused AI applications, and that sustained investment in core areas relevant to AI would be required to realize general-purpose 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.

With the second strategy, developing effective methods for human-AI collaborations, the Administration is targeting specific investments relevant to the

human factors field. In particular, the strategy emphasizes seeking new algorithms for human-aware AI, developing AI techniques for human augmentation, developing techniques for visualization and human-AI interfaces, and developing more effective language processing systems.

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 strategy notes the need for multidisciplinary perspectives including computer science, social and behavioral science, ethics, psychology, and biomedical science, among others, to better understand emerging challenges.

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*

Sources and Additional Information:

- The National Artificial Intelligence Research and Development Strategic Plan: 2019 Update is available [here](#).