

**FAST FACTS****2016**

Year the federal government published its first "National AI R&D Strategic Plan."

About**\$500 million**

Amount NSF invests annually in AI research.

7

Number of NSF-led AI Institutes funded in 2020 in conjunction with agency partners.

5th

Ranking of NSF's Frontera among the 500 fastest supercomputers in the world.

2019

Year the White House announced the "American AI Initiative," which identified the need for fundamental research in AI.

3,130

Number of cybersecurity experts placed at government entities across the U.S. thanks to NSF's CyberCorps program.

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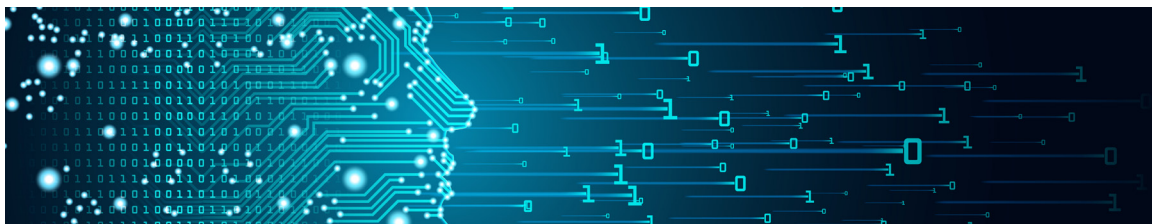
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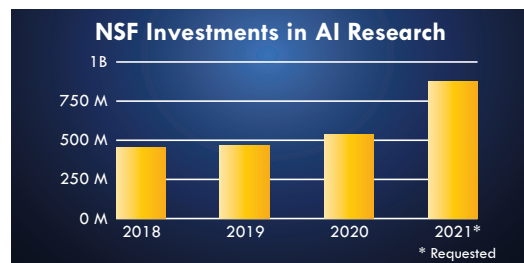
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AMERICAN LEADERSHIP IN ARTIFICIAL INTELLIGENCE

Artificial intelligence is impacting our everyday lives. It is the power behind smart household devices, personalized search results on Google, and digital assistants like Alexa and Siri. AI technologies are transforming how we optimize energy usage, deliver health care and respond to roadway congestion in real time. As an industry of the future, AI will greatly enhance business productivity, transforming the American workforce and the global economy. The [U.S. National Science Foundation](https://www.nsf.gov) is the leading federal funder of AI research to expand our understanding of AI concepts and techniques, use-inspired studies to drive AI innovations, computing resources to empower AI researchers, and training to prepare an AI-savvy workforce.

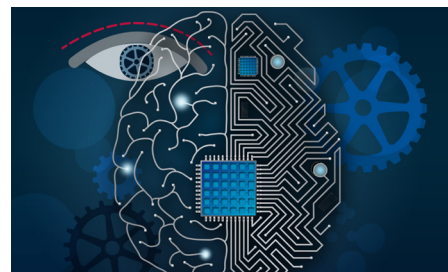
MAINTAINING THE AI EDGE

Global investments in AI research are on the rise, with China and the European Union having the largest AI investments abroad. Aligned with administration and congressional priorities, NSF's portfolio is part of a coordinated federal strategy to secure America's competitiveness in AI.

**NSF SUPPORTING THE FOUNDATIONS OF AI**

NSF has long supported transformational research that has helped form the knowledge base of AI. These investments over the last several decades helped pave the way for AI innovations in the commercial sector today.

- In the 1980s and 1990s, NSF-funded researchers developed the foundations of modern artificial neural networks, probabilistic reasoning with uncertain information, and automated machine learning. These technologies underlie all AI technology today, from the speech recognition on your smart phone to the systems used to discover patterns in medical data.

**NSF AI RESEARCH AGENDA****GIVING RISE TO TRANSFORMATIVE AI TECHNOLOGIES**

Today, NSF supports a variety of foundational research in AI spanning planning, perception, knowledge representation, reasoning, learning, natural language, computer vision, human-machine interfaces, safety and security, and fairness and transparency.

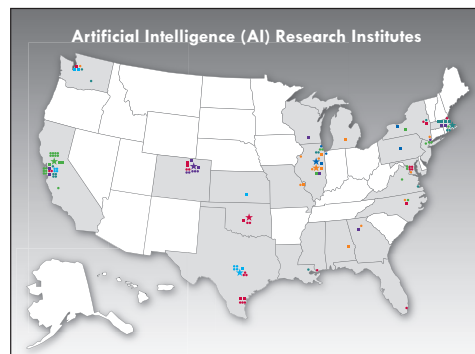


AI is also a powerful tool in the fight to protect endangered wildlife. NSF funds AI research to help rangers patrol wildlife parks and to predict where and when wildlife crimes may occur.



The agency also champions use-inspired research in areas such as materials discovery and design, environmental monitoring and prediction, infrastructure resilience, and health care. These efforts link AI innovation with the economy along with all fields of science and engineering.

- NSF [AI Institutes](#) program is funding multidisciplinary center-scale projects that serve as national nexus points for universities, federal agencies, industry and nonprofits to develop the foundational tools and workforce necessary for the next decade of AI innovation and innovators.
- [Fairness in AI in Collaboration with Amazon](#) supports computational research focused on fairness in AI, with the goal of developing trustworthy AI systems ready to tackle societal challenges.
- [NSF-Simons Research Collaborations on the Mathematical and Scientific Foundations of Deep Learning](#) supports two collaborative research projects exploring the theoretical foundation of deep learning.
- NSF partners with Intel on [Machine Learning for Wireless Networking Systems](#) to accelerate fundamental, broad-based research on machine learning techniques for future wireless systems that offer higher capacity, more security and greater efficiency. This partnership demonstrates the interplay between two industries of the future, AI and advanced wireless.
- NSF partners with the Defense Advanced Research Projects Agency to explore high-performance, energy-efficient hardware and machine learning architectures through the [Real-Time Machine Learning](#) initiative.



NURTURING THE NEXT GENERATION OF AI USERS AND INNOVATORS



- [Advanced Technical Education](#) provides offerings at community colleges and [Computing in Undergraduate Education](#) develops new approaches for handling the soaring numbers of students interested in computer science at the undergraduate level.
- [Graduate Research Fellowships Program](#) supports students pursuing research-based master's and doctoral degrees in STEM disciplines.
- [Innovative Technology Experiences for Students and Teachers](#) supports new approaches to motivate and prepare preK-12 learners for the industries of the future, including AI.

100,000 strong! Thanks to NSF's [Computer Science for All](#) program, more than three times as many Black/African American, Hispanic/Latino and women took an Advanced Placement (AP[®]) computer science exam in 2019 compared to 2016 – the largest and most diverse class ever.

EXPANDING COMPUTING RESOURCES THAT POWER AI INNOVATIONS



- The NSF [Frontera supercomputer](#) is the fastest supercomputer at any university campus in the US and fifth most powerful system in the world. Frontera is specifically equipped to accelerate AI and machine learning research.
- [CloudBank](#) enhances the research and education community's access to commercial cloud computing resources. This initiative builds on previous collaborations with Amazon Web Services, Google Cloud Platform, IBM Cloud and Microsoft Azure.



DID YOU KNOW?

NSF-funded researchers helped develop the technology that now fuels the recommender engines ("you might like this") of Netflix, Amazon and other websites.