



RESEARCH & TECHNOLOGY SUBCOMMITTEE

HEARING CHARTER

“Robots Made in America: Advancing U.S. Leadership in Manufacturing and Automation”

Tuesday, April 21, 2026

10:00 a.m.

2318 Rayburn House Office Building

Purpose

The purpose of this hearing is to examine the scope and status of robotics research in the United States. The hearing will review robotics research conducted across industry, academia, and the federal government, spanning a wide range of applications, including the energy sector, manufacturing, and industrial operations. This discussion will help inform the Committee’s consideration of future legislative actions related to automation and robotics.

Witnesses

- **Mr. Evan Beard**, Chief Executive Officer (CEO), Standard Bots
- **Mr. Jeff Burnstein**, President, A3 Association for Advancing Automation
- **Mr. Michael Robbins**, CEO, Association for Uncrewed Vehicle Systems International (AUVSI)
- **Dr. Susan Helper**, Carlton Professor of Economics at the Weatherhead School of Management, Case Western Reserve University

Overarching Questions

- What are the most important areas in U.S. robotics research?
- What robotics research is currently conducted by industry and through government-supported programs in the U.S.?
- What are the key considerations to advance U.S. leadership in robotics and automation?
- What legislative actions should Congress take to support research in robotics and automation?
- What challenges exist for innovation in robotics technologies in the U.S.?

Background

Modern robots, for applications such as industrial lines, began to be developed in the early 20th century.¹ U.S. research in robotics spans activities in academia, government, and industry. There are already many industrial robots in use in manufacturing and factory settings.² For example, articulated robots are prolific, as they have arm-like joints that make them good for handling, welding, and assembly.³ Current U.S. robotics applications extend beyond industrial manufacturing. For example, robotics is used in space exploration to help spacecraft operate in dynamic environments.⁴ Moreover, robotics can be used in healthcare to assist with surgeries and deliver more precise care in specific treatment scenarios.⁵ The robotics industry is looking to advance the field by incorporating physical artificial intelligence (AI), where AI and robotics work hand-in-hand to make smarter, more perceptive robots.⁶ Physical AI leverages cameras and sensors to support the processing of data.⁷ Humanoid robots may have more potential than ever before through the development of applied physical AI research.⁸ As a result, companies like Tesla have pivoted to their own humanoid projects, including the development of Optimus.⁹ Physical AI could be applied in the future with humanoid helpers that assist humans with tasks like lifting heavy boxes or caretaking.¹⁰ The U.S. does not have a national robotics strategy at this time, but the Chinese Communist Party (CCP) and other countries are investing heavily in their robotics industry.^{11,12}

America's AI Action Plan and Robotics

America's AI Action Plan, released by the Office of Science and Technology Policy in July 2025, notes that AI and robotics have the potential to advance industry in new ways. The AI Action Plan states that AI, robotics, and related technologies can specifically be leveraged to create novel capabilities in manufacturing and logistics applications.¹³ The AI Action Plan encourages

¹ ROBOTS: In the Beginning (2011), https://mind.ilstu.edu/curriculum/medical_robotics/robots_in_beginning.html

² Record of 4 Million Robots in Factories Worldwide. International Federation of Robotics (September 2024), <https://ifr.org/ifr-press-releases/news/record-of-4-million-robots-working-in-factories-worldwide>

³ Articulated Robots: A Guide to the Most Familiar Industrial Robot. How to Robot (December 2021), <https://howtorobot.com/expert-insight/articulated-robots>

⁴ Robotics. NASA (April 2026), <https://www.nasa.gov/robotics/>

⁵ The Future of Robotics in Healthcare. Johns Hopkins EP Online (May 2025), <https://ep.jhu.edu/news/robots-making-a-difference-in-healthcare/>

⁶ What is Physical AI?. NVIDIA (April 2026), <https://www.nvidia.com/en-us/glossary/generative-physical-ai/>

⁷ *Ibid.*

⁸ AI goes physical: Navigating the convergence of AI and robotics. Deloitte Insights (December 2025), <https://www.deloitte.com/us/en/insights/topics/technology-management/tech-trends/2026/physical-ai-humanoid-robots.html>

⁹ AI & Robotics. Tesla (April 2026), <https://www.tesla.com/AI>

¹⁰ AI goes physical: Navigating the convergence of AI and robotics. Deloitte Insights (December 2025), <https://www.deloitte.com/us/en/insights/topics/technology-management/tech-trends/2026/physical-ai-humanoid-robots.html>

¹¹ Memos to the President National Robotics Strategy. Special Competitive Studies Project (April 2026), <https://www.scsp.ai/wp-content/uploads/2025/02/Robotics-Memo.pdf>

¹² US robotics companies push for national strategy, including a central office, to compete with China. Associated Press (March 2025), <https://apnews.com/article/united-states-robotics-competition-china-tech-702796f1584fe1920e5fd86f15a99b4f>

¹³ Winning the Race America's AI Action Plan. The White House (July 2025), <https://www.whitehouse.gov/wp-content/uploads/2025/07/Americas-AI-Action-Plan.pdf>

federal investment in emerging AI and robotics technologies to foster an industrial renaissance.¹⁴ In addition, the AI Action Plan recommends that the Department of Commerce (DOC), through the National Telecommunications and Information Administration (NTIA), convene stakeholders in government and industry to determine challenges in American robotics supply chains.¹⁵ Per the AI Action Plan, the NTIA hosted the American AI Robotics Convening in March 2026.¹⁶ The event brought together one hundred participants from over 60 organizations across the AI, robotics, advanced manufacturing, finance, and digital infrastructure sectors.¹⁷

U.S. Research in Robotics

The National Science Foundation (NSF) and the National Institute of Standards and Technology (NIST) both support robotics research. The NSF invests in fundamental research in robotics at academic institutions through its Foundational Research in Robotics (FRR) program, which supports research on robotic systems with both computational capability and physical complexity.¹⁸ NIST sets standards and conducts research on many facets of robotics, including collaborative robots, dexterous grasping, manipulation, mobility, industrial autonomous vehicles, sensing, and perception.¹⁹ The Department of Defense (DoD) also has a robotics program.²⁰ The DoD emphasizes autonomous systems and robotics (AS&R) in modern warfare.²¹ AS&R technology offers enhanced decision-making and operational capabilities while reducing the risk to humans in conflict areas.²² Under the Department of Health and Human Services, the Advanced Research Projects Agency for Health (ARPA-H) is pursuing a robotic surgery program called the Autonomous Interventions and Robotics (AIR) program.²³ AIR is an effort to transform surgical care nationwide.²⁴ The goal of the program is to enable surgical interventions without direct human input.²⁵ The National Aeronautics and Space Administration (NASA) has also supported robotics efforts in the last 15 years with the creation of robots like R5 (aka Valkyrie), a robust, electric humanoid robot capable of operating in degraded or damaged human-engineered environments.²⁶ Since 2012, NASA's Robonaut project has also been

¹⁴ *Ibid.*

¹⁵ *Ibid.*

¹⁶ NTIA Convenes AI Robotics Leaders for US Leadership. National Telecommunications and Information Administration (NTIA) (March 2026), https://www.linkedin.com/posts/ntia_ntia-hosted-the-american-ai-robotics-convening-activity-7437560007329611777-n3Bc

¹⁷ *Ibid.*

¹⁸ Foundational Research in Robotics (FRR). U.S. National Science Foundation (April 2026), <https://www.nsf.gov/funding/opportunities/frr-foundational-research-robotics>

¹⁹ Robotics. NIST (April 2026), <https://www.nist.gov/robotics>

²⁰ Code Of Arms: Autonomous Systems and Robotics and the US Defense Industrial Base. Department of Defense Manufacturing Technology Program (May 2024), <https://www.dodmantech.mil/News/News-Display/Article/4060072/code-of-arms-autonomous-systems-and-robotics-and-the-us-defense-industrial-base/>

²¹ *Ibid.*

²² *Ibid.*

²³ ARPA-H launches new robotic surgery program to transform surgical care nationwide. ARPA-H (November 2025), <https://arpa-h.gov/news-and-events/arpa-h-launches-new-robotic-surgery-program-transform-surgical-care-nationwide>

²⁴ *Ibid.*

²⁵ *Ibid.*

²⁶ R5. NASA (September 2015), <https://www.nasa.gov/technology/r5/>

conducting research in robotics technology on board the International Space Station (ISS).²⁷ A Robonaut is another one of Johnson Space Center's dexterous humanoid robots.²⁸ The Department of Energy (DOE), through the Genesis Mission, has extended their AI investments to include 14 projects in robotics, automated laboratories, and autonomous control of large-scale experiments.²⁹

The Advanced Robotics for Manufacturing (ARM) Institute

Advanced Robotics for Manufacturing (ARM) is a Manufacturing Innovation Institute (MII) within the Manufacturing USA network.³⁰ ARM was established in 2017 and is funded by the Office of the Secretary of Defense.³¹ ARM brings together over 450 stakeholders in academia, government, and industry to support domestic manufacturing.³² To further strengthen domestic manufacturing and the U.S. defense industrial base, ARM works to augment factories with robotics, artificial intelligence (AI), and autonomy.³³ ARM members have access to special project funding, workforce development resources, and other coordinated scaling efforts to promote robotics and automation adoption. For example, the Robotics Manufacturing Hub in Pittsburgh, PA, is a national robotics, AI, and workforce institute where ARM members can demonstrate proofs of concept and prototype solutions without having to commit to installing the manufacturing equipment.³⁴ Because purchasing and installing a robot can cost manufacturers upwards of \$50,000, the Robotics Manufacturing Hub is meant to offset the burden of the first steps in adopting and scaling robotics.³⁵

The Robotics Supply Chain and Implications for the U.S. Workforce

The U.S. largely outsources the robotics used domestically.³⁶ With respect to the supply chain, many robots are sourced from China, Japan, and northern Europe.³⁷ Although there are concerns about robotics adoption leading to the replacement of human workers, many advocate for a robotics strategy that trains the workforce to collaborate with these technologies.³⁸ Robots are well-suited for precise, repetitive tasks that are dull, dirty, and dangerous, roles that are not typically desirable for people.³⁹ Among its recommendations, the Association for Advancing

²⁷ Robonaut. NASA (April 2026), <https://www.nasa.gov/robonaut2/>

²⁸ *Ibid.*

²⁹ Energy Department Advances Investments in AI for Science. U.S. Department of Energy (December 2025), <https://www.energy.gov/articles/energy-department-advances-investments-ai-science>

³⁰ Why the ARM Institute. ARM Institute (April 2026), <https://arminstitute.org/about/why-the-arm-institute/>

³¹ *Ibid.*

³² Membership. ARM Institute (April 2026), <https://arminstitute.org/membership/>

³³ Who We Help. ARM Institute (April 2026), <https://arminstitute.org/about/who-we-help/>

³⁴ Robotics in Manufacturing Hub. ARM Institute (April 2026), <https://arminstitute.org/robotics-manufacturing-hub/>

³⁵ Learn About Our Process & Services. ARM Institute (April 2026), <https://arminstitute.org/manufacturing-hub/process-services/>

³⁶ Memos to the President National Robotics Strategy. Special Competitive Studies Project (April 2026), <https://www.scsp.ai/wp-content/uploads/2025/02/Robotics-Memo.pdf>

³⁷ *Ibid.*

³⁸ The Future of Work: Will Robots Take Our Jobs?. Science News Today (March 2025), <https://www.sciencenewstoday.org/the-future-of-work-will-robots-take-our-jobs>

³⁹ How Robots Are Taking on the Dirty, Dangerous, and Dull Jobs. Association for Advancing Automation (October 2019), <https://www.automate.org/robotics/blogs/how-robots-are-taking-on-the-dirty-dangerous-and-dull-jobs>

Automation (A3) and other prominent automation organizations support policies that prioritize workforce investment, including education and training programs.⁴⁰

Robotics Competition with the CCP

In recent years, the CCP has pursued an aggressive robotics strategy.⁴¹ In 2025, it announced plans to invest over \$100 billion in technologies, including robotics, quantum computing, and clean energy.⁴² The CCP's 2026-2030 five-year plan designated robotics as one of the "strategic emerging industries" and introduced state mechanisms like investment risk-sharing programs to support the industry.⁴³ They have emphasized humanoid robots, with approximately 140 firms in the People's Republic of China focused on humanoid development.⁴⁴ U.S. robotics companies have been very supportive of the U.S. adoption of a national robotics strategy to secure U.S. leadership over the CCP.⁴⁵

⁴⁰ A3 Releases Vision for a U.S. National Robotics Strategy. Association for Advancing Automation (March 2025), <https://www.automate.org/robotics/news/a3-releases-vision-for-a-u-s-national-robotics-strategy>

⁴¹ Memos to the President National Robotics Strategy. Special Competitive Studies Project (April 2026), <https://www.scsp.ai/wp-content/uploads/2025/02/Robotics-Memo.pdf>

⁴² Inside China's robotics revolution. The Guardian (March 2026), <https://www.theguardian.com/technology/2026/mar/19/inside-chinas-robotics-revolution>

⁴³ Kendra Schaefer et al., Forum: Technology in China's 15th Five-Year Plan, DigiChina, Stanford Cyber Policy Center (March 2026), <https://digichina.stanford.edu/work/forum-technology-in-chinas-15th-five-year-plan/>

⁴⁴ *Ibid.*

⁴⁵ US robotics companies push for national strategy, including a central office, to compete with China. Associated Press (March 2025), <https://apnews.com/article/united-states-robotics-competition-china-tech-702796f1584fe1920e5fd86f15a99b4f>