ACCELERATING THE MANUFACTURING RENAISSANCE WITH PEOPLE AND ROBOTS WORKING TOGETHER

ARM (Advanced Robotics for Manufacturing), a Manufacturing USA® institute, accelerates the advancement of transformative collaborative robotic technologies and education to grow U.S. global manufacturing competitiveness.

Manufacturing USA, a public-private partnership with 14 manufacturing institutes across the nation, connects companies, academic institutes, non-profits, and local, state, and federal entities to solve industry-relevant advanced manufacturing challenges in new technology areas with the goals of enhancing industrial competitiveness and economic growth and strengthening national security.

Technology Focus Area

ARM's mission is to accelerate the use of industrial robots to drive growth in the U.S. manufacturing sector. The institute seeks growth sectors that are ripe for rapid adoption of robotics in manufacturing, with a focus on advancing these operational aims: versatile robotic systems capable of performing multiple tasks; rapid deployment and re-purposing of robots; collaborative robots; and safe, cybersecure, and cost-effective solutions.

Approach to Innovation and Collaboration

ARM brings together a national consortium of experts from manufacturing, government, robotics, research, workforce development and academia to provide access to shared capabilities and develop and deliver robotics solutions. ARM focuses on preparing the U.S. workforce to work collaboratively with robotic solutions in a safe, high-satisfaction environment, impacting everyone from students and young adults to displaced workers. This work involves:

- **Technology and education and workforce development roadmaps** to create a robust and innovative national manufacturing ecosystem
- **Regional Collaboratives** to facilitate connections and demonstrate innovative solutions
- **Industry-led applied R&D project collaborations** to make robots safe, cost effective, versatile, and collaborative
- **Education and workforce project collaborations** for apprenticeships, virtual and augmented reality simulations, and the creation of a national standard for certifying top-tier robotics curricula and credentials

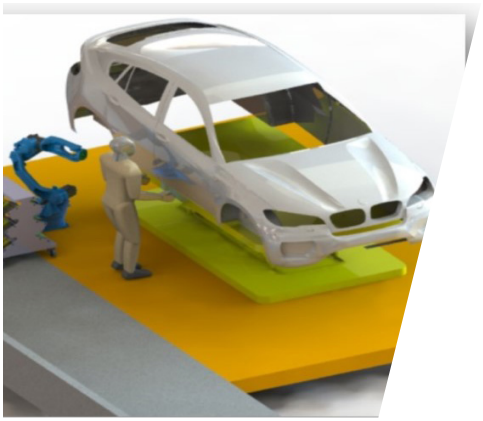
LEARN MORE + CONNECT WITH ARM

Pittsburgh, Pennsylvania
412-681-3960
Membership@arminstitute.org
arminstitute.org

COLLABORATIVE PROJECT EXAMPLES

"ARM connects our company with leading manufacturers that need automation, and with top research facilities that are creating new tools and technologies for industrial robots."

– Roger Christian, Motoman Robotics Division, Yaskawa America Inc.



SMART COMPANION ROBOT FOR AUTOMOTIVE ASSEMBLY: Clemson University is partnering with Siemens, BMW, and Yaskawa to demonstrate the viability of an intelligent mobile manipulator robotic system, the Smart Companion Robot (SCR), to assist and augment human associates in automotive final assembly, where intensive manual manipulation remains the mainstay. The SCR is intended to: 1. provide cognitive assistance by delivering the right part and tool at the right place at the right time, eliminating the risk of incorrect parts being assembled, and enhancing quality in high-mix assembly environments; and 2. provide physical assistance by helping the transport of medium-heavy parts from subassembly areas to reduce worker fatigue/repetitive injuries.

SMART MANUFACTURING AND ADVANCED ROBOTICS TRAINING: The Robotics Academy, a subsidiary of Carnegie Mellon University, is partnering with community colleges, the FIRST® robotics program, and state labor departments to create a SMART Certified Apprenticeship Program and a series of micro-certifications that will train and certify thousands of students per year. These programs will be adapted to the adult population so that unemployed, underemployed, and incumbent workers will have opportunities to obtain robotic preparation skills.

"As a New York City-based manufacturer of underwater drones, Duro UAS requires highly specialized talent to stay competitive. ARM's workforce development leadership and support have been essential to successfully navigating this challenge. By helping U.S. companies to compete and lead in advanced manufacturing and developing workforce programs that create the manufacturing talent of the future, ARM is making a tangible difference in our business and in the industry."

– Brian Wilson, President, Duro UAS

"We are going to see automation and robotics move from a caged and isolated environment to the aisle-ways and even traveling to different locations, with a continued high emphasis on collaboration with humans."

– Joel Reed, CEO, IAM Robotics