

Creating an Assured Autonomous Future

The Johns Hopkins [Institute for Assured Autonomy \(IAA\)](#) in Baltimore is a national center of excellence ensuring the safe, secure, reliable, and predictable integration of artificial intelligence (AI) and autonomous systems into society. Its goals are to ensure this technology will be trusted to operate as expected, to respond safely to unexpected inputs, to withstand corruption by adversaries, and to integrate seamlessly into society.

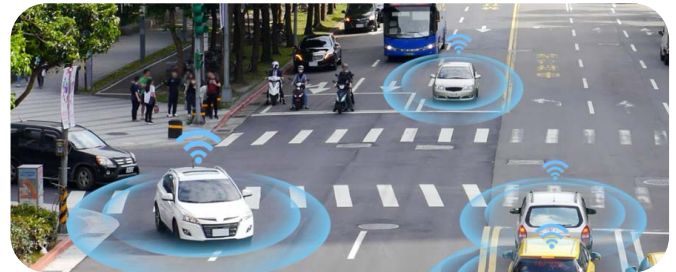
The Institute is run jointly by the Johns Hopkins Applied Physics Laboratory (APL) in Laurel, MD, and the Johns Hopkins Whiting School of Engineering (WSE) in Baltimore.

Autonomous machines and systems are becoming ubiquitous in society, comprising physical systems moving through the world and virtual systems in digital environments. The trustworthiness of future autonomous systems will depend on reliable technology, an integrated ecosystem, and principled public policy, which represent the Institute's three pillars.

IAA leverages the deep experience of Johns Hopkins University (JHU) and creates strategic collaborations with external partners to deliver breadth and depth of expertise.

As smart devices, cars, homes, offices and cities proliferate with increasing autonomy, national leaders are taking action to assure safety, build public trust and defend against cyberattacks. In 2020, JHU committed \$30 million to establish the IAA, which has since united dozens of researchers across the University, seed-funded transformative projects to lead advancements in the field, initiated partnerships with stakeholders across sectors, and convened top experts for assuring the autonomous world.

In 2021, IAA is moving into new headquarters in Baltimore's historic Stieff Silver complex, the 1.2-acre former silver factory on the National Register of Historic Places, now owned by WSE.



In 2020, IAA invested in a portfolio of 10, two-year [research projects](#) to transform the technology sector and society, spanning a range of practical applications, such as:

- Developing a policy framework for autonomous vehicles
- Developing software for safe traffic management in national airspace
- Assuring safe operations of AI-enabled systems in offices, hospitals and other social spaces
- Assuring privacy and fairness in AI technologies
- Strengthening AI systems against adversarial attacks



James Bellingham | *Executive Director*

Jim Bellingham, a pioneer in the worldwide autonomous marine robotics field who has led research expeditions from the Arctic to the Antarctic, was named Executive Director of the IAA in May, 2021. For more than 30 years, Bellingham has been a leader in the development of small, high-performance autonomous underwater vehicles (AUVs), resulting in a class of systems now widely used globally. Instrumental in innovations for ocean observing, Bellingham concurrently serves as a research professor in the Whiting School's Department of Mechanical Engineering and as a senior advisor at APL.

He joined Johns Hopkins from the Woods Hole Oceanographic Institution (WHOI) where he was founding Director of the Consortium for Marine Robotics since 2014. Bellingham previously held leadership roles at the Monterey Bay Aquarium Research Institute, the Autonomous Underwater Vehicles Laboratory at MIT Sea Grant, and Bluefin Robotics.

Bellingham serves on a number of boards including Science Robotics, American Association for the Advancement of Science, the Naval Studies Board, and National Academies of Sciences Engineering Medicine. He has served on the Naval Research Advisory Committee including as chair, and on a Secretary of the Navy Advisory Panel and several National Academies studies. His honors include election to the National Academy of Engineering (induction October 2021) and the Navy Superior Public Service Award. Bellingham has authored dozens of scholarly papers, and received a B.S., M.S., and Ph.D., in physics from MIT.



Anton Dahbura | *Director*

Tony Dahbura concurrently serves as a director of IAA and executive director of the Johns Hopkins Information Security Institute. He is an associate research scientist in the JHU Department of Computer Science, where he chaired its Advisory Board from 1998 until 2012, while serving on the Johns Hopkins Whiting School of Engineering National Advisory Council. He received the Johns Hopkins Heritage Award in 2004 for his service to the university. From 2000 to 2002, he served as chair of the JHU Engineering Alumni. He received a BS in electrical engineering, an MS in electrical engineering, and a PhD in electrical engineering and computer science from JHU.



Cara E. LaPointe | *Director*

Cara LaPointe is a futurist who focuses on the intersection of technology, policy, ethics, and leadership. LaPointe serves concurrently as director of IAA while managing the Assured Intelligent Systems program at APL. During more than two decades in the US Navy, LaPointe held numerous roles in areas including autonomous systems, acquisitions, ship design, naval force architecture, and unmanned vehicle technology integration. LaPointe was a senior fellow at Georgetown's Beek Center for Social Impact + Innovation, where she created the "Blockchain Ethical Design Framework." She has served as an advisor to the United Nations and the Organization for Economic Co-operation and Development. LaPointe served as

interim director of the President's Commission on White House Fellowships. A patented engineer, she holds a Doctor of Philosophy, awarded jointly by the MIT and WHOI, a Master of Science and a Naval Engineer degree from MIT, a Master of Philosophy from the University of Oxford, and a Bachelor of Science from the US Naval Academy.



David Silberberg | *Research Director*

David Silberberg, a computer scientist and engineer at APL, has led extensive research and development in the areas of leading-edge AI and machine learning algorithms, for analysis of large, complex data. He served as chief architect for the deep archive of NASA mission data and for the Hubble Space Telescope data archive. Silberberg received bachelor's and master's degrees in Computer Science from MIT and a PhD in Computer Science from the University of Maryland. He is chair of the Johns Hopkins Whiting School's Information Systems Engineering program, Engineering for Professionals.