Artificial Intelligence and Justified Confidence: A Workshop

Committee

Jennie S. Hwang

Co-Chair

Dr. Jennie Hwang (NAE), Co-Chair, is CEO of H-Technologies Group and Board Trustee Emerita and adj. professor at Case Western Reserve University. Her career encompasses corporate and entrepreneurial businesses, innovative research, advanced manufacturing, intellectual property management, technology transfer and corporate and university governance (have served as board director for Fortune 500 NYSE-traded, private companies, university and civic boards). Author of seven internationally-used technology books and 650+ publications/editorials. Among her many honors/awards are Congressional Certificates of Achievement; induction into International Hall of Fame - Women in Technology; named the R&D-Stars-to-Watch; Distinguished Alumni Awards; Honorary Doctoral degree; and YWCA Achievement Award. Served as CEO of International Electronic Materials Corp. and held senior executive positions with Lockheed Martin Corp., SCM Corp. and Sherwin-Williams Co. and co-founded entrepreneurial businesses. Internationally recognized as a pioneer and long-standing leader in the interconnecting electronic materials, electronics miniaturization and advanced manufacturing, she has served as Global President of Surface Mount Technology Association and in other global leadership positions. An international speaker, she has lectured to tens of thousands of managers/engineers/researchers on emerging technologies and advanced manufacturing via professional development courses. Her speeches range from university commencement addresses to keynote at DoD Federal Women's Program to tutorials at the U.S. Patent and Trademark Office. She is also a prolific author and speaker on education, workforce, and social and business issues. Other services include International Advisory Board of Singapore Advanced Technology and Manufacturing Institute, Commerce Department's Export Council, a number of industry boards. On serving the National Academies, she is the Chair of Laboratory Assessment Board, the Chair of Army Research Laboratory Technical Assessment Board. She also chaired the Board on Army RDT&E, Systems Acquisition, and Logistics; served as Chair of NAE Membership and Chair of Peer Committee (Materials Section), National Materials and Manufacturing Board, Army Science & Technology Board, NIST Technical Assessment Board, DoD R&D Globalization Board, Committee on Forecasting Future Disruptive Technologies, Diversity Forum, and NAE Award Committee, among others. Her formal education includes Harvard University Executive Program, Columbia University Business School Governance Program, and four academic degrees (Ph.D., M.A., M.S. and B.S.) in materials science & engineering, chemistry, and liquid crystal science. The Dr. Jennie S. Hwang Award for Faculty Excellence was established at her Alma Maters. The Dr. Jennie S. Hwang YWCA Award is established in her honor, now for 20 years running, to recognize outstanding college women students in STEM. The Dr. Jennie S. Hwang Endeavor Fund, an endowment at NAE, funds programs that support high school and college students to enhance exposure to diverse and/or international perspectives in engineering education, networking, and the profession. Further: www.JennieHwang.com.

Conrad Tucker

Co-Chair

Dr. Conrad Tucker, Co-Chair, is an Arthur Hamerschlag Career Development Professor of Mechanical Engineering at Carnegie Mellon University and holds courtesy appointments in Machine Learning, Robotics, Biomedical Engineering, and CyLab Security and Privacy. His research focuses on developing Machine Learning (ML)/Artificial Intelligence (AI) methods to enhance the novelty and efficiency and engineered systems. His research also explores the challenges of bias and exploitability of AI systems and the potential impacts on people and society. Dr. Tucker has served as PI/Co-PI on federally/non-federally funded grants from the National Science Foundation, the Air Force Office of Scientific Research, the Defense Advanced Research Projects Agency, the Army Research Laboratory, the Bill and Melinda Gates Foundation, among others. In February 2016, he was invited by National Academy of Engineering (NAE) President Dr. Dan Mote, to serve as a member of the Advisory Committee for the NAE Frontiers of Engineering Education Symposium. He is currently serving as a Commissioner on the U.S. Chamber of Commerce Artificial Intelligence Commission on Competitiveness, Inclusion, and Innovation. Dr. Tucker received his Ph.D., M.S. (industrial engineering), and MBA degrees from the University of Illinois at Urbana-Champaign, and his B.S. in mechanical engineering from Rose-Hulman Institute of Technology.

Erin Kai-Ling Chiou

Member

Dr. Erin Chiou is an assistant professor of human systems engineering at Arizona State University, and directs the Automation Design Advancing People and Technology (ADAPT) Laboratory. The ADAPT lab studies human-agent teaming in complex work environments, with a focus on social factors such as trust and accountability with automation. Dr. Chiou has served as an invited expert for workshops hosted by the Office of the Director of National Intelligence, the UN Institute for Disarmament Research, and the Trusted Autonomous Systems Defence Cooperative Research Centre. She is also the co-editor of a recent volume, “Advancing Diversity, Inclusion, and Social Justice through Human Systems Engineering” published by CRC Press. Dr. Chiou has previously served as a consensus study panelist on the National Academies of Sciences, Engineering, and Medicine panel on human factors science at the Army Research Laboratory, and consensus study committee on human-systems integration research topics for the 711th Human Performance Wing of the Air Force Research Laboratory. Dr. Chiou received her Ph.D. and M.S. in industrial and systems engineering from the University of Wisconsin-Madison, and her B.S. in psychology and philosophy from the University of Illinois at Urbana Champaign.

Catherine Helen Crawford

Member

Dr. Catherine Crawford is an IBM Fellow at IBM Research. In her two plus decades of research, she has worked in areas as diverse as numerical simulation of dynamical systems, supercomputing, distributed systems embedded systems, mobile devices and network security. Her contributions in these areas are not only reflected in her extensive publication and patent portfolio but also with corporate and national awards including a reference in the United States Senate congressional record for her foundational work on hybrid systems which ultimately led to the world's first petaflop computer, Roadrunner. In her current work, she leads teams developing artificial intelligence and machine learning systems to make smart infrastructure more secure. She received her undergraduate engineering degree from MIT and her Masters and Ph.D. in engineering from Princeton University.

Marvin J. Langston

Member

Dr. Marvin (Marv) Langston, an independent consultant, has been serving the Navy NAVWAR community for the past 15 years and his 50 + year career has primarily focused on Navy Command and Control (C2), Intelligence Surveillance & Reconnaissance (ISR), and the Information Technology (IT) supporting all aspects of Naval operations. Currently Marv focuses on new technology adoption, enterprise architecture & engineering, organizational strategy, and acquisition leadership. As a senior executive service public servant, Marv served as Department of Defense deputy chief information officer, deputy assistant secretary of Navy for C4I, was the Navy's first chief information officer, and director of the Defense Advanced Research Projects Agency (DARPA) Information Systems Office (ISO) working artificial intelligence, cybersecurity, and related C2ISR research. During his 22-year Navy military career, Marv began as an enlisted nuclear power electronics technician and retired as an engineering duty officer commander where he served as an AEGIS combat systems assistant program manager, and later as special assistant to RADM Wayne Meyer helping to develop the concept of Battle Force System Engineering, an idea that led to the creation of Space and Naval Warfare Systems Command (SPAWAR) in 1985. Outside of his public service career, Marv was the chief operating officer of a small high-tech start-up, chief technology officer of a large defense business practice, and a senior staff engineer at the Johns Hopkins University Applied Physics Laboratory where he helped establish today's AEGIS Ballistic Missile Defense capability. During his career, Dr. Langston earned a Masters and Doctorate of public administration from the University of Southern California, a Master of Science in electronic engineering from the Naval Post Graduate School, and a Bachelor of Science in electronic engineering from Purdue University.

Nandi O. Leslie

Member

Dr. Nandi Leslie serves as a senior engineering fellow at Raytheon Technologies with over twenty-two years of experience as an applied mathematician. In this position, she currently also serves as a chief data scientist with research and development (R&D) interests focused on the intersectional fields of data science, machine learning (ML), stochastic processes, cybersecurity, and sensor performance. She has written over 55 publications in journals, conference proceedings, and book chapters. She leads technical programs for both U.S. government and international customers. In addition, she serves on over 5 scientific advisory boards, conference committees, and professional society committees, including as an (i) Advisory Board Member for the Howard University, Center of Excellence in Artificial Intelligence (AI) and ML (CoE-AIML); (ii) Committee Member for the National Academies of Sciences, Engineering, and Medicine Study on AI Test and Evaluation for the Air Force; (iii) Committee Member, Society of Industrial and Applied Mathematics (SIAM) Industry Committee, Education Subcommittee; and (iv) Program Committee for the SPIE Defense + Commercial Sensing (DCS) Conference, AI and ML for Multi-Domain Operations Applications. She earned a Ph.D. in applied and computational mathematics from Princeton University and a B.S. in mathematics from Howard University.

Aaron Benjamin Luttman

Member

Dr. Aaron Luttman is a senior technical advisor at Pacific Northwest National Laboratory. His primary research foci are AI Assurance, bridging the gap between laboratory AI development and operationalizing AI, and on technology development in support of the stewardship of the US nuclear weapons stockpile. After several years as a mathematics professor at Clarkson University in Potsdam, NY, Aaron joined the Department of Energy’s (DOE) nuclear security enterprise, where he led efforts to develop analytics for large-scale dynamic experiments and for nuclear nonproliferation. Aaron currently leads AI efforts in support of National Nuclear Security Administration (NNSA), Department of Defense, and other government missions, working to understand Counter-AI vulnerabilities in critical systems. He’s received numerous awards for his contributions to the NNSA’s Stockpile Stewardship program, was a featured mathematician in “101 Careers in Mathematics” published by the Mathematical Association of America, and served as a nominated participant to the DOE’s “AI@DOE” workshop to set strategic scientific directions for AI development and funding. Dr. Luttman holds a Ph.D. in mathematics from the University of Montana.

John Masato Matsumura

Member

Dr. John Matsumura is a senior engineer at RAND with extensive experience managing research in innovation and advanced technology and their policy implications. He has served in a number of leadership roles within the government, including co-chair and panel chair of various Army Science Board studies; and within RAND associate director of research for RAND's Pittsburgh office, the associate director for force development and technology within the Army's FFRDC the Arroyo Center, and the director of the Joint Warfare Simulation and Analysis Center. His current research involves artificial intelligence and autonomous robotic systems, renewable energy technologies for improving energy and logistics efficiencies, and advanced modeling and simulation (M&S) methods for analytic evaluation. In 2021, he received the meritorious civilian service medal from the U.S. Army leadership, and, prior to that he received the commanders medal for participation on the Army Science Board. He received a B.S. in aerospace engineering, a M.S. in engineering mechanics, both from the Pennsylvania State University, and a Ph.D. in engineering and public policy from Carnegie Mellon University.

Todd D. Murphey

Member

Dr. Todd Murphey is a professor of mechanical engineering at Northwestern University. His laboratory is part of the Center for Robotics and Biosystems, and his research interests include robotics, control, active learning in automation, and emergent behavior in dynamical systems. He received his Ph.D. in control and dynamical systems from the California Institute of Technology.

Nia D. Johnson

Staff Officer