

Panel on Assessment of Military Information Sciences

Committee

Charles E. Thorpe

Chair

CHUCK THORPE is a professor of computer science at Clarkson University. He served at Clarkson's Senior Vice President and Provost for a five-year term 2012 – 2017. Immediately prior to Clarkson, Dr. Thorpe served 2011-2012 in the Office of Science and Technology Policy as Assistant Director for Robotics and Advanced Manufacturing. The bulk of his career was spent with Carnegie Mellon University (CMU), where he was a Ph.D. student in computer science, and then served in the Robotics Institute as faculty and as director (2000 – 2004). In 2004, he went to Doha Qatar as the inaugural Dean of Carnegie Mellon Qatar, from 2004 – 2010. Dr. Thorpe's research area is robotics, specifically self-driving vehicles. His CMU group was a core part of Defense Advanced Research Projects Agency's (DARPA's) Autonomous Land Vehicle program, the Army Research Laboratory's series of Unmanned Ground Vehicle Demos, and the Department of Transportation's Intelligent Vehicle Highway Systems program. He is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE) and has contributed to National Academies studies through the Transportation Research Board, Naval Studies Board, and previous Army Research Laboratory (ARL) assessment studies. Dr. Thorpe has a Ph.D. in computer science from Carnegie Mellon University.

Ella M. Atkins

Member

ELLA M. ATKINS is an associate professor in the Department of Aerospace Engineering at the University of Michigan. She is also director of the Autonomous Aerospace Systems Laboratory. She previously served on the aerospace engineering faculty at University of Maryland, College Park. Dr. Atkins' research focuses on the integration of strategic and tactical planning and optimization algorithms to enable robust operation in the presence of system failures and environmental uncertainties. She has collaboratively pursued challenging autonomous flight applications for manned aircraft and unmanned aircraft systems (UAS), including the Flying Fish autonomous unmanned seaplane. Dr. Atkins also studies the optimization of and safety analysis in congested airspace, with early efforts in simultaneous non-interfering terminal area airspace planning for runway-independent aircraft and ongoing research in small UAS safety assessments for low-altitude flight operations. Comprehensive aerodynamic sensing has been explored for small flapping and fixed-wing UAS to investigate their use to improve controllability in commanded or unintentional out-of-envelope flight conditions. She has also worked on multi-vehicle coordination in ground vehicles. Her ground vehicle system architectures and algorithms include vehicle-to-cloud-to-vehicle control systems. She also collects and interprets maneuver and data optimization for high-confidence testing of future automotive cyberphysical systems. She is author of more than 100 journal and conference publications and serves as an associate editor for the AIAA Journal of Aerospace Information Systems (formerly the AIAA Journal of Computing, Information, and Communication). Dr. Atkins is past chair of the AIAA Intelligent Systems Technical Committee, an associate fellow of AIAA, and a senior member of the Institute of Electrical and Electronics Engineers (IEEE). Dr. Atkins has a Ph.D. in computer science and engineering from the University of Michigan.

Jaydev P. Desai

Member

Dr. Jaydev P. Desai is currently a Professor at Georgia Institute of Technology in the Wallace H. Coulter Department of Biomedical Engineering and holds the G.P. “Bud” Peterson and Valerie H. Peterson Faculty Professorship in Pediatric Research. He is the founding Director of Georgia Center for Medical Robotics and an Associate Director of Institute for Robotics and Intelligent Machines. His research interests (current and past) include: surgical robotics, rehabilitation and assistive robotics, swarm robotics, and manipulation and grasping. His paper was a finalist at 2018 ICRA for the “IEEE RAS Award for the Most Influential Paper from ICRA 1998” and he has made seminal contributions to swarm robotics using graph theory. His research group has received several accolades including best student paper award, best symposium paper award, cover image of IEEE TBME, and featured article in IEEE TBME. He is a recipient of the IEEE RAS Distinguished Service Award and 2022 Senior Faculty Outstanding Undergraduate Research Mentor Award at Georgia Tech. He was an invited speaker at the National Academy of Sciences “Distinctive Voices” seminar series and also invited to attend the National Academy of Engineering’s U.S. Frontiers of Engineering Symposium. He has authored over 200 publications, is the founding Editor-in-Chief of the Journal of Medical Robotics Research, and Editor-in-Chief of the Encyclopedia of Medical Robotics. He is a Fellow of IEEE, ASME, and AIMBE. He received his B. Tech from Indian Institute of Technology, Bombay, India; MA in Mathematics and MSE and Ph.D. in Mechanical Engineering and Applied Mechanics, all from the University of Pennsylvania, and was a Post-Doctoral Fellow at Harvard University.

James A. Hendler

Member

JAMES HENDLER is the Director of the Future of Computing Institute and the Tetherless World Professor of Computer, Web and Cognitive Sciences at RPI and is also director of the RPI-IBM Artificial Intelligence Research Collaboration. Dr. Hendler is a data scientist with specific interests in open government and scientific data, data science for healthcare, AI and machine learning, semantic data integration and the use of data in government. One of the originators of the Semantic Web, he has authored over 450 books, technical papers, and articles in the areas of Open Data, the Semantic Web, artificial intelligence, and data policy and governance. He is also the former Chief Scientist of the Information Systems Office at the US Defense Advanced Research Projects Agency (DARPA) and was awarded a US Air Force Exceptional Civilian Service Medal in 2002. He is the first computer scientist ever to have served on the Board of Reviewing editors for Science. In 2010, Hendler was selected as an “Internet Web Expert” by the US government and helped in the development and launch of the US data.gov open data website. In 2013, he was appointed as the Open Data Advisor to New York State and in 2015 appointed a member of the US Homeland Security Science and Technology Advisory Committee. In 2016, became a member of the National Academies Board on Research Data and Information, in 2017 a member of the Director’s Advisory Committee of the National Security Directorate of PNNL, and in 2021 became chair of the ACM’s global Technology Policy Council. Hendler is a Fellow of the US National Academy of Public Administration, the AAAI, AAAS, ACM, BCS and IEEE.

Matt Johnson-Roberson

Member

MATTHEW JOHNSON-ROBERSON is director of Carnegie Mellon Robotics Institute and a professor in the School of Computer Science. Dr. Johnson-Roberson's research goal is to develop robotic systems capable of operating in complex dynamic environments. To this end, he seeks to expand and improve the perceptual capabilities of autonomous systems. He has focused on the processing and interpretation of three-dimensional data. His work has sought to push the bounds of scale and resolution in 3D reconstruction, segmentation, machine learning and robotic vision. He has founded and leads a robot optical perception laboratory, which researches 3D reconstruction, segmentation, data mining, and visualization. He has held prior postdoctoral appointments with the Centre for Autonomous Systems - CAS at KTH Royal Institute of Technology in Stockholm and the Australian Centre for Field Robotics at the University of Sydney. He is a recipient of the NSF CAREER award (2015). He received a Ph.D. from the University of Sydney in robotics.

Sven Koenig

Member

SVEN KOENIG is the Dean's Professor of Computer Science at the University of Southern California. Dr. Koenig's research focuses on intelligent systems that operate in large, nondeterministic, nonstationary or only partially known domains. The primary focus of this research centers around techniques for decision-making that enable single-situated agents (such as robots or decision-support systems) and teams of agents to act intelligently in their environments and exhibit goal-directed behavior in real-time, even if they have only incomplete knowledge of their environments, imperfect abilities to manipulate them, limited or noisy perception or insufficient reasoning speed. His research draws on areas such as artificial intelligence, decision theory, and operations research. Applications of this research include robotics and video games as well as automated warehousing, logistics, transportation, planetary exploration, and many other areas. He was formerly a program director at the National Science Foundation (NSF) from 2010 to 2012. He is a fellow of the Association for the Advancement of Artificial Intelligence (AAAI), the Association for Computing Machinery (ACM), the Institute of Electrical and Electronics Engineers (IEEE), and the American Association for the Advancement of Science (AAAS). He has edited several conference proceedings and published more than 280 papers in various areas of artificial intelligence and robotics. He is an elected member-at-large of the steering group of the AAAS Information, Computing, and Communication section, an elected member of the board of directors of the International Foundation for Autonomous Agents and Multiagent Systems (IFAAMAS), and an invited member of the Computing Community Consortium (CCC) of the Computing Research Association (CRA). He is past chair of the AAAI conference committee, past president of SoCS, and past chair of the ACM Special Interest Group on Artificial Intelligence (ACM SIGAI). He is also an associate editor of the Journal of Autonomous Agents and Multi-Agent Systems and an editor of the Communications of the ACM (Research Highlights). He was a councilor of AAAI, a member of the advisory board of the Journal of Artificial Intelligence Research (JAIR) and AI Magazine, an associate editor of the Artificial Intelligence journal, Computational Intelligence, Advances in Complex Systems and JAIR, and a member of the steering committees of ICAPS, SoCS, and SARA. He also holds M.S. degrees from the University of California at Berkeley and Carnegie Mellon University. He received his Ph.D. in computer science from Carnegie Mellon University in 1997 for his dissertation on "Goal-Directed Acting with Incomplete Information."

Snehasis Mukhopadhyay

Member

SNEHASIS MUKHOPADHYAY is a professor in the department of computer and information science at Indiana University and a professor at Purdue University. Dr. Mukhopadhyay's research interests include intelligent systems, intelligent control, artificial neural networks, multi-agent systems, intelligent information management and data mining. He is a part of the Database, Data Mining and Machine Learning (DDML) Research Group at Indiana University. His work has focused in part on associative learning and decision-making in random environments using neural networks. He earned a B.E. in Electronics and Telecommunications Engineering, Jadavpur University, Calcutta, India, M. E. in Systems Science and Automation, Indian Institute of Science, Bangalore, India and a Ph.D. in Electrical Engineering from Yale University.

Karen A. Panetta

Member

KAREN PANETTA (NAE) is the director of the Visualization, Sensing, and Simulation Research Laboratory at Tufts University. Her research areas include the development of Artificial Intelligence (AI) systems, machine learning, and image processing algorithms to address global health, safety and protection. These include algorithms for homeland security for the detection of threat objects, biomedical diagnostic applications, simulation, and digital twins for catastrophic scenario/fault detection. She develops assistive technologies for biomedical applications such as skin, breast, prostate, kidney and oral cancer detection and creating databases for AI developers in dental, nutrition, facial recognition research for robust testing/validation and preventing bias in AI. She architects systems for search and rescue including aiding firefighting, drug enforcement and underwater security/exploration/recovery efforts. Her systems can be deployed efficiently in near real-time on robots, drones and other autonomous vehicle platforms and help humans "see objects" in degraded imagery. Dr. Panetta earned a B.S. in computer engineering from Boston University and an M.S. and Ph.D. in electrical engineering from Northeastern University.

Lynne E. Parker

Member

LYNNE E. PARKER is Associate Vice Chancellor at the University of Tennessee, Knoxville (UTK), and Director of the AI Tennessee Initiative, which is positioning the University and the state of Tennessee as a national and global leader in the data-intensive knowledge economy. Prior to this role, she led national AI policy efforts for four years (2018-2022) in the White House Office of Science and Technology Policy, serving as Deputy Chief Technology Officer of the United States, Founding Director of the National Artificial Intelligence Initiative Office, and Assistant Director for AI. She also served as co-chair of the Congressionally-directed National AI Research Resource Task Force, which aimed to democratize access to the computational and data infrastructure needed for AI research. She served for two years (2015-2016) at the National Science Foundation as Division Director for Information and Intelligent Systems. In these roles across three Administrations, she led the development of numerous landmark national AI policies bolstering research, governance, education and workforce training, international engagement, and the Federal use of AI. Dr. Parker joined the UTK faculty in 2002 and is an expert on distributed and intelligent robot systems, human-robot interaction, and AI, having published extensively in these and related areas. She previously worked for several years as a Distinguished Research and Development Staff Member and Group Leader at Oak Ridge National Laboratory. She has received numerous awards for research, teaching, and service, and is a Fellow of AAAI (Association for the Advancement of Artificial Intelligence), AAAS (American Association for the Advancement of Science), and IEEE (Institute for Electrical and Electronic Engineers); and a Distinguished Member of ACM (Association for Computing Machinery). Dr. Parker earned a Ph.D. from the Massachusetts Institute of Technology.

Ray Perrault

Member

RAY PERRAULT is Distinguished Computer Scientist at SRI International where he was Director of the Artificial Intelligence Center from 1987-2017. He had previously been Professor of Computer Science at the University of Toronto. His main research interests are in natural language processing, particularly on applications of speech act theory to discourse analysis. He was co-Principal Investigator of the CALO Project, a large, multi-institutional, DARPA-funded project whose objective was to build an intelligent office assistant that learns through interaction with its user and the world. Several technologies developed on that project, including Siri, have been transitioned to commercial and military applications. He is a Fellow of AAAI and AAAS, has been President of IJCAI and ACL, co-Editor-in-Chief of the Artificial Intelligence Journal, and received the IJCAI Donald E Walker Distinguished Service Award. He is co-chair of the Steering Committee of the AI Index Project, part of Stanford's Institute for Human-Centered Intelligence and Chair of the Board of Trustees of the International Computer Science Institute in Berkeley CA. He has a Ph.D. in Computer and Communication Sciences from the University of Michigan