Division on Engineering and Physical Sciences
Army Research Laboratory Technical Assessment Board
Panel on Assessment and Analysis at the Army Research Laboratory

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Biographical Sketches

Chair

ALAN NEEDLEMAN (NAE) is University Distinguished Professor and TEES Distinguished Research Professor in the Department of Materials Science and Engineering at Texas A&M. His research contributions include the development of a ductile fracture computational methodology, the development of cohesive surface methods for fracture analysis and creation of a framework that enables using discrete dislocation plasticity to solve general boundary value. Topics of particular interest have been the micromechanics of ductile fracture by the nucleation, growth and coalescence of microvoids, brittle-ductile transitions, material and structural instabilities, relations between microstructure and mechanical properties in heterogeneous solids, and dynamic crack growth. He is a fellow of the American Society of Mechanical Engineers, 1989; a fellow of the American Academy of Mechanics, 1995; a Member of the American Academy of Arts and Sciences, 2007; and a member of the Academy of Medicine, Engineering and Science of Texas, 2009. He received his Ph.D. in engineering from Harvard University in 1971.

Members

JULIE A. ADAMS is a professor of computer science at Oregon State University. Before coming to Oregon State, she was professor of computer science and computer engineering in the Electrical Engineering and Computer Science Department at Vanderbilt University, where she founded the Human-Machine Teaming Laboratory. Prior to joining Vanderbilt, she was an assistant professor of computer science at Rochester Institute of Technology and an adjunct professor in the Computer Science Department at the University of Rochester. Before returning to academia, she worked in human factors for Honeywell, Inc., and the Eastman Kodak Company. Dr. Adams' research interests include distributed artificial intelligence, robotics and human-machine teaming. She has published approximately 130 technical papers, was the recipient of the NSF CAREER award and her research efforts have been featured in international news outlets including National Geographic, Scientific American Podcast, Der Spiegel, and BBC on-line. She received a B.S. in computer science from Siena College and a Ph.D. in computer and information systems from the University of Pennsylvania.

J. GARY EDEN (NAE) is the Intel Alumni Endowed Chair in Electrical and Computer Engineering, the the Gilmore Family Professor in the Department of Electrical and Computer Engineering, and the director of the Laboratory for Optical Physics and Engineering at the University of Illinois. He began his career as a National Research Council postdoctoral research associate at the U.S. Naval Research Laboratory (NRL) in Washington, DC in 1976. As a research physicist in the Laser Physics Branch (Optical Sciences Division) of NRL from 1976 to 1979, he made several contributions to the area of visible and ultraviolet lasers and laser spectroscopy, including the co-discovery of the DrCl rare gas-halide excimer laser, and received a Research Publication Award (1979) for his work at NRL in which he co-discovered the proton beam pumped laser. Since joining the faculty of the University of Illinois in 1979, he has engaged in research in atomic, molecular and ultrafast laser spectroscopy, the discovery and development of visible and ultraviolet lasers, and the science and technology of microcavity plasma devices. He has served as assistant dean in the College of Engineering, associate dean of the Graduate College, associate vice-chancellor for research, as well as research professor in the Coordinated Science Laboratory, and the Micro and Nanotechnology Laboratory. Dr. Eden has authored more than

280 refereed publications and 73 awarded patents, is a member of four honorary organizations, and is a fellow of the IEEE, the Optical Society of America, the American Physical Society, the American Association for the Advancement of Science (AAAS), and the SPIE. He has served as editor-in-chief of the IEEE Journal of Quantum Electronics and is currently editor-in-chief of Progress in Quantum Electronics. In 1998, he served as president of the IEEE Lasers and Electro-Optics Society (LEOS), following earlier service as a member of the LEOS Board of Governors, and as the vice-president for technical affairs. Dr. Eden received the LEOS Distinguished Service Award, was awarded the IEEE Third Millennium Medal in 2000 and was named a LEOS Distinguished Lecturer for 2003-2005. From 1996 through 1999, he was the James F. Towey University Scholar at the University of Illinois. In 2005, he received the IEEE/LEOS Aron Dressel Award. He was awarded the C.E.K. Mees Medal of the Optical Society of America in 2007, and was the recipient of the Fulbright-Israel Distinguished Chair in the Natural Sciences and Engineering for 2007-2008. He is a co-founder of Eden Park Illumination (2007) and EP Purification (2010), and was named the recipient of the Harold E. Edgerton Award of SPIE for 2010. He has directed the dissertations of 46 individuals who received the Ph.D. degree in physics, electrical and computer engineering, or materials science and engineering. He was elected into the National Academy of Engineering, and the National Academy of Inventors, in 2014. He received the Ph.D. degree in electrical engineering from the University of Illinois, Urbana, in 1976.

LESTER A. FOSTER, III, is the chief technology officer of Electronic Warfare Associates (EWA) Government Systems, Inc., and has 26 years of system engineering and management experience for the development of advanced technologies and systems. His technical background is broad to cover vehicle platforms and electronic subsystems including radio frequency and optical sensing and communications systems. His position responsibilities include the assessment of technology both inside and outside the EWA Inc. to expand the intellectual property of EWA and to identify technologies and partners that are in line with EWA's business objectives. He performs business development to expand or bolster the technological capabilities of EWA. He leads the Small Business Innovative Research (SBIR) business process for the company and is currently the Principal Investigator on two efforts. Dr. Foster supports the proposal development processes including authoring, and red and gold team review. Dr. Foster provides consulting support to EWA customers and partner corporations. He also aids senior management with business decisions by providing input from a technical and engineering perspective. He received his Ph.D. in mechanical engineering fro the North Carolina State University in 1989.

TERRY P. LEWIS, a former executive board member on the National Academies of Sciences, Engineering, and Medicine Naval Studies Board (2011-2016), graduated from the University of Southern California with a Ph.D. in electrical engineering systems. Dr. Lewis is currently a senior associate/ technical program manager, senior for Booz Allen Hamilton in Los Angeles, CA, and a former senior program manager and off-site executive with Raytheon Company in Los Angeles, CA for almost 20 years. Previously, he held the technical position of principal systems engineer where his areas of expertise included: command, control, computers, communications cystem, intelligence, surveillance and reconnaissance (C4ISR) systems design, digitized battle-space systems design and implementation, communications and transmission security design and analysis for tactical communication systems, and network and key management system design and analysis for secure systems implementation. Dr. Lewis developed anti-tampering technologies to prevent or reduce the ability of potential aggressors from reverse engineering critical U.S. technologies. He was a Raytheon engineering scholar and fellow and received the Most Promising Engineer of the Year Award conferred at the 2002 Black Engineer of the Year Award Conference. Dr. Lewis was a member of multiple National Academies committees and workshops, such as the National Academies Committee on the Examination of the Air Force ISR Capability, Planning and Analysis Process, the previous workshop on Optimizing the Air Force Acquisition Strategy of Secure and Reliable Electronic Components: A Workshop and multiple other relevant National Academies committees.

STEVEN B. LIPNER (NAE) is the executive director of SAFECode, a non-profit organization dedicated to increasing trust in information and communications technology products and services through the advancement of effective software assurance methods. He is also an adjunct professor of computer science in the Institute for Software Research at Carnegie Mellon University. He retired in 2015 as partner director of program management at Microsoft Corporation. At Microsoft, he was responsible for the Security Development Lifecycle (SDL), including the development of software assurance requirements, processes and tools, and oversight of the application of the SDL by development teams. He was also responsible for government security evaluations of Microsoft products. Mr. Lipner has more than 40 years' experience as a researcher, development manager, and general manager in information technology security, and is named as inventor on twelve U.S. patents in the field of computer and network security. He holds both an S.B. and S.M. degree from the Massachusetts Institute of Technology, and completed the Harvard Business School's Program for Management Development. He is a member of the National Cybersecurity Hall of Fame (Class of 2015).

ERIC T. MATSON is an associate professor in the Department of Computer and Information Technology at Purdue University (West Lafayette). Dr. Matson has held positions such as visiting professor in the Department of Computer Science and Engineering at Dongguk University, Seoul, Korea; international faculty scholar, Department of Radio and Electronics Engineering, College of Electronics and Information, Kyung Hee University, Suwon, Korea; and visiting professor at UPEC (Paris 12) University in Paris, France. He co-founded the M2M Lab at Purdue University, which performs research in multiagent systems, cooperative robotics, and wireless communication. He is also the founder and director of the Center for Robotic Innovation, Commercialization, and Education (RICE) at Purdue University. Recently, he created and is currently the director of the Korean Software Square Center at Purdue University. He is also the site director of the NSF-sponsored I/UCRC Rosehub Center at Purdue with partners at UPenn, Minnesota, UNCC and Denver. Prior to his position at Purdue University, Dr. Matson was in international industrial and commercial software development as a consultant, software engineer, manager and director for 14 years. In that experience, he developed and led numerous large software engineering projects dealing with intelligent systems, applied artificial intelligence and distributed object technologies. Dr. Matson has a Ph.D. in computer science and engineering from the University of Cincinnati, M.B.A in operations management from Ohio State University, M.S.E. in software engineering from Kansas State University and a B.S. in computer science from Kansas State University.

KYRAN D. MISH is the manager of the Computational Shock Physics Group at Sandia National Laboratories in Albuquerque, New Mexico. At Sandia, Dr. Mish serves as a technical liaison between the Department of Defense computational analyst community and the Sandia engineering code groups funded under the NNSA's Advanced Simulation and Computing (ASC) initiative. Dr. Mish has four decades of experience in computational science and engineering in national laboratory, private engineering practice, and academic venues. Dr. Mish's professional experience includes his current work at Sandia, a senior management tenure at Lawrence Livermore National Laboratory as the founding director of the Center for Computational Engineering, and service on the engineering and applied mathematics faculty of the University of California, Davis and the University of Oklahoma. Dr. Mish's research interests lie at the interface of critical infrastructure and information technology, and his body of research work includes interests in subsurface mechanics, structural engineering, fluid-structure coupling, soil-structure interaction, scalable computing, and scientific visualization. He received a Ph.D. in computational mechanics from the University of California, Davis in 1987.

ALBERT A. SCIARRETTA, PE, is president of CNS Technologies, Inc. In this position, he works primarily as an independent consultant, supporting various DoD organizations in assessing the military benefits of new technologies. For more than 35 years, as a U.S. Army officer (Lieutenant Colonel, retired) and civilian contractor, he has used his operational, research and development, operations research, and human performance assessment experience to assess the military benefits of advanced technologies and develop technology investment strategies. For the past 25 years, a significant amount of this time has focused on designing and executing Army, OSD, and

DARPA wargames, experiments, and demonstrations; utilizing combinations of live-virtual-constructive simulations to represent joint through tactical urban operations. For the DoD Test and Evaluation / Science and Technology (T&E/S&T) Program, he has served more than 15 years as a subject matter expert for advanced test technologies. A recent T&E/S&T task required him to develop a “use case” for identifying counter unmanned aircraft system (CUAS) test instrumentation needs. He has served as a senior research fellow in the National Defense University (NDU) Center for Technology and National Security Policy (CTNSP), where he assessed future warfighting system capabilities. He recently developed course content for an NDU course on prototyping and experimentation (P&E). He published many CTNSP technology papers on a variety of military technology topics. In addition to command and staff positions as a U.S. Army officer, he taught engineering at the U.S. Military Academy, served as Military Assistant to the Army Materiel Command Chief Scientist, was Chief Technologist on the Armored Family of Vehicles Task Force, and supported many Army organizations as a part-time subject matter expert. Mr. Sciarretta has a B.S. degree in general engineering from the U.S. Military Academy, and dual M.S. degrees in mechanical engineering and operations research from Stanford University.

FRANK J. SERNA is the principal director of Strategic Initiatives at the Charles Stark Draper Laboratory Inc. (Draper), a role to identify new and emerging challenges for Draper capabilities in applied R&D and technology transfer. Examples include innovative solutions to the challenge of Unmanned Air Systems (UAS) in the National Air Space (NAS), highly automated vehicles in ground transportation and new ballistic missile guidance systems. Formerly, he was the director of Systems Engineering. The Systems Engineering Directorate consists of approximately two hundred engineers and fifty technicians and administrative staff. The scope of projects included the entire scope of Draper programs: guidance systems for Trident II, NASA manned space programs; missile defense; guided munitions; maritime systems, low power electronics and biomedical systems. He has over thirty years of experience in organizations involved in contract research, development, and systems integration projects for national security sponsors. Mr. Serna has served on multiple Defense Science Board task forces and studies including, Task Force on Next Generation Unmanned Undersea Systems; Study on 21st Century Military Operations in a Complex Electromagnetic Environment; Study on Technological Superiority in 2030 and; Task Force on Improvised Explosive Devices II He is Chair of the NDIA Systems Engineering Division and a Board Member of the New England Chapter of the Association for Unmanned Vehicle Systems international (AUVSI). Previously, Mr. Serna was the director of systems engineering in the Defense Enterprise Solutions Business Unit of Northrop Grumman and was director of software development in the Litton-TASC Business Unit. Finally, he was an original member of the missile defense national team for systems engineering and integration. Mr. Serna holds a bachelor of science degree in engineering and applied science from Yale University and a master’s degree in business administration from Northeastern University.

SALVATORE J. STOLFO received his PhD from Courant Institute, NYU, in 1979 and has been a Professor of Computer Science at Columbia University ever since. He served as Chair of Computer Science and Director of the NYS Center for Advanced Technology at Columbia. He recently was elevated to IEEE Fellow for his contributions in the area of machine learning applied to computer security. He has chaired numerous technical conferences and workshops and has had numerous awards including best papers, most recently the RAID Most Influential Paper and the Usenix Security Distinguished Paper, and the Popular Science Best of What’s new award. He has published several books and well over 300 papers and has been granted over 70 patents in the areas of parallel computing, online banking, machine learning and privacy and security technologies. He has been an advisor and consultant to government agencies for well over 2 decades, including DARPA, the National Academies and others. Prof. Stolfo serves as an advisor to private investment firms. Two security companies were recently spun out of his IDS lab, Allure Security Technology and Red Balloon Security.

DANIEL S. WALLACH is a professor in the Department of Computer Science and a Rice Scholar at the Baker Institute for Public Policy. His research considers a variety of different computer security topics, ranging from web browsers, servers, and networks through electronic voting

technologies and smartphones. He also serves on the Board of Directors of the USENIX Association. His honors and awards include the 2013 Microsoft SEIF Faculty Research Award, 2012 Best Paper Award (Natural Language Processing and Knowledge Engineering), 2011 National Centers of Academic Excellence in Information Assurance Research (CAE-R), 2010 Best Paper Award (Financial Cryptography), 2009 Google Research Award, and 2008 Kavli Frontiers of Science Fellow. Prior to arriving at Rice, Wallach earned his Ph.D. at Princeton University's computer science department and got his B.S. in electrical engineering and computer science at the University of California, at Berkeley.

ARLTAB Chair

JENNIE S. HWANG (NAE) is CEO of H-Technologies Group, and board trustee and distinguished adj. professor at Case Western Reserve University. Her career encompasses corporate and entrepreneurial businesses, international collaboration, research management, technology transfer and global leadership positions, as well as corporate and university governance. Among her many honors and awards are U.S. Congressional Certificates of Recognition; induction into International Hall of Fame –Women in Technology and Ohio Women Hall of Fame; named the R&D-Stars-to-Watch; Distinguished Alumni Awards; Honorary Doctoral degree; and YWCA Achievement Award. She was the CEO of International Electronic Materials Corp. and has held senior executive positions with Lockheed Martin Corp., Hanson, PLC and Sherwin-Williams Co. and co-founded entrepreneurial businesses. She is internationally recognized as a pioneer and long-standing leader in the infrastructure development of electronics miniaturization and green manufacturing. She has served as Global President of the Surface Mount Technology Association and in other global leadership positions. An international speaker and author of 475+ publications including several internationally-used books, she has lectured to tens of thousands of managers, engineers and researchers on 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. Additionally, Dr. Hwang has served as a board director for Fortune 500 NYSE-traded and private companies and various university and civic boards, and on the International Advisory Board of the Singapore Advanced Technology and Manufacturing Institute and a number of international industry boards. On serving the National Academies, she chairs the Technical Assessment Board of Army Research Laboratory, and has served as NAE Membership Search Executive (Materials Section), National Materials and Manufacturing Board, DoD R&D Globalization Board, Committee on Forecasting Future Disruptive Technologies and NAE Award Committee, among others. She also has served as a reviewer for National Academies Reports and other national/international publications. Her formal education include Harvard University Executive Program, Columbia University Business School Governance Program, and four academic degrees (Ph.D., M.A., M.S., B.S.) in Materials Science and Metallurgical 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 17 years running, to encourage and recognize outstanding women students in STEM, Further info: www.JennieHwang.com.