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

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Biographical Sketches

Chair

PRABHAT HAJELA is provost and professor of Mechanical and Aerospace Engineering at the Rensselaer Polytechnic Institute. His research interests include analysis and design optimization of multidisciplinary systems; system reliability; emergent computing paradigms for design; artificial intelligence; and machine learning in multidisciplinary analysis and design. Before joining Rensselaer, he worked as a research fellow at the University of California, Los Angeles for a year, and was on the faculty at the University of Florida for seven years. He has conducted research at NASA's Langley and Glenn Research Centers, and the Eglin Air Force Armament Laboratory. In 2003, Dr. Hajela served as a Congressional fellow responsible for science and technology policy in the office of US Senator Conrad Burns (R-MT). He worked on several legislative issues related to aerospace and telecommunications policy, including the anti-SPAM legislation that was signed into law in December 2003. Dr. Hajela is a fellow of the American Institute of Aeronautics and Astronautics (AIAA), a fellow of the Aeronautical Society of India (AeSI), and a fellow of the American Society of Mechanical Engineers (ASME). Dr. Hajela has held many editorial assignments including editor of Evolutionary Optimization, associate editor of the AIAA Journal, and is on the editorial board of six other international journals. He has published over 270 papers and articles in the areas of structural and multidisciplinary optimization, and is an author or co-author of 4 books in these areas. In 2004, he was the recipient of AIAA's Biennial Multidisciplinary Design Optimization Award. Dr. Hajela holds a Ph.D. in aeronautics and astronautics from Stanford University.

Members

JOHN M.M. ANDERSON is a professor in in the Department of Electrical Engineering and Computer Science at Howard University in Washington, DC. Dr. Anderson's general research interests lie in the areas of signal and image processing. Currently, the problem of reconstructing images for ground penetrating radar receives his greatest attention. After completing his doctoral studies, Dr. Anderson joined the Department of Electrical and Computer Engineering at the University of Florida in 1992 and was later promoted to the rank of Associate Professor. Dr. Anderson is an NSF CAREER Award recipient. Additionally, he has served as an associate editor for the IEEE Signal Processing Letters (2001-2004). He received the Sc.B. degree from Brown University in Providence, RI, the M.S.E.E. degree from the Georgia Institute of Technology in Atlanta, GA, and the Ph.D. degree from the University of Virginia in Charlottesville, VA. All of his degrees are in electrical engineering.

DAVID W. AUCSMITH is currently principal at Aucsmith Consulting, LLC and Chief Scientist for root9B, LLC. He is also at the University of Washington where he is Senior Principal Research Scientist at the Applied Physics Laboratory and Affiliate Professor of Computer Science and Engineering. He previously served as the senior director of Microsoft's Institute for Advanced Technology in Governments. There, he was responsible for technical relationships with agencies of the United States and other governments, as well as on select special projects. Before joining Microsoft in August 2002, Mr. Aucsmith was the chief security architect for Intel Corporation from 1994 to 2002. He has worked in a variety of security technology areas including secure computer systems, secure communications systems, random number generation, cryptography, steganography, and network intrusion detection. Mr. Aucsmith is a former officer in the U.S. Navy

and has been heavily involved in computer security and cybercrime issues for more than 30 years. He has been an industry representative to numerous international, government and academic organizations including the technical advisory boards of the National Security Agency, the National Reconnaissance Office, the National Academy Advisory Board on Survivability and Lethality Analysis and the directorate advisory council for the National Security Directorate of Pacific Northwest National Labs. He is co-chair of the FBI's Information Technology Study Group, a member of the Secret Service Task Force on Computer Aided Counterfeiting, a member of the President's Task Force on National Defense and Computer Technology and a member of the Department of Defense's Global Information Grid Senior Industry Review Group. Mr. Aucsmith was also U.S. industry representative to the G8 Committee on Organized, Transnational, and Technological Crime where he participated directly in the G8 summits in Paris, Berlin and Tokyo. Mr. Aucsmith holds 33 patents for digital security and is a member of the advisory board for the College of Computing at the Georgia Institute of Technology. Mr. Aucsmith hold a Bachelor of Science degree in biochemistry from the University of Georgia, and Masters of Science degrees in physics from the Naval Postgraduate School and information and computer sciences from the Georgia Institute of Technology respectively. Additionally, he has a Certificate in Fine Arts Photography from the University of Washington. He is the author of numerous papers and currently lectures at both the Naval Postgraduate School and the Air War College.

PETER A. BELING is a professor and Interim chair of the Department of Systems and Information Engineering at the University of Virginia (UVa). Dr. Beling's research interests are in the area of decision-making in complex systems, with emphasis on adaptive decision support systems and on model-based approaches to system-of-systems design and assessment. His research has found application in a variety of domains, including mission-focused cybersecurity, reconnaissance and surveillance, prognostic and diagnostic systems, and financial decision making. He directs the UVa site of the Center for Visual and Decision Informatics, a National Science Foundation Industry/University Cooperative Research Center, and the Adaptive Decision Systems Laboratory, which focuses on data analytics and decision support in cyber-physical systems. Dr. Beling is the co-founder of the Financial Decision Engineering research group at UVa, which is a focal point for research on the mathematical modeling and risk management aspects of consumer and retail credit. Dr. Beling has served as editor and reviewer for many academic journals. He was a member of the Committee on Improving the Decision Making Abilities of Small Unit Leaders (Naval Studies Board), which authored the National Research Council Report Improving Making Abilities of Small Unit Leaders (2012). Dr. Beling received his Ph.D.in operations research from the University of California at Berkeley.

KATHLEEN M. CARLEY is a professor of computer science in the Institute for Software Research, IEEE Fellow, and director of the Center for Computational Analysis of Social and Organizational Systems at Carnegie Mellon University. She joined Carnegie Mellon in 1984 as assistant professor of sociology and information systems. In 1990, she became associate professor of sociology and organizations; in 1998, professor of sociology, organizations, and information technolog; and in 2002, attained her current role as professor of computation, organization, and society. She is also the CEO of Carley Technologies, Inc., aka Netanomics. Dr. Carley's research combines cognitive science, sociology, and computer science to address complex social and organizational issues. Her most notable research contribution was the establishment of Dynamic Network Analysis (DNA) – and the associated theory and methodology for examining large high-dimensional time variant networks. Her research on DNA has resulted in tools for analyzing large-scale dynamic networks and various multi-agent simulation systems. Her group has developed tools for extracting sentiment, social and semantic networks from social media and other textual data (AutoMap), simulating epidemiological models (BioWar), simulating covert networks (DyNet), and simulating changes in beliefs and practice given information campaigns (Construct). Her ORA system is one of the premier network analysis and visualization engines supporting geo-temporal analysis of social network and meta-network data. It is used worldwide and at several of the combatant commands. Awards include: Allen Newell Award for Research Excellence, Lifetime Achievement Award from the Sociology and Computers Section of the ASA (2001), and Simmel Award for advances in the area of social networks from INSNA. She obtained the Ph.D. in sociology from Harvard University in 1984.

FREDERICK R. CHANG (NAE) is the Executive Director of the Darwin Deason Institute for Cyber Security, the Bobby B. Lyle Centennial Distinguished Chair in Cyber Security, and Professor in the Department of Computer Science and Engineering in the Lyle School of Engineering at Southern Methodist University (SMU). He is also a senior fellow in the John Goodwin Tower Center for Political Studies at SMU's Dedman College. He is the former Director of Research at the National Security Agency (NSA) and has been awarded the NSA Director's Distinguished Service Medal. He is Co-Chair of the Intelligence Community Studies Board of the National Academies of Sciences, Engineering and Medicine, and has served as a member of the Computer Science and Telecommunications Board of the National Academies. Dr. Chang received his B.A. degree from the University of California, San Diego and his M.A. and Ph.D. degrees from the University of Oregon. He has also completed the Senior Executives program at the Sloan School of Management at the Massachusetts Institute of Technology.

MARK E. DAVIS is the sole proprietor of Medavis Consulting, established in 2008 to assist in review and development of advanced sensor systems, with customers in government, industry and small business. Dr. Davis has over 48 years of experience in government and industry in developing technology and systems for radar and electronic systems. He held senior management positions at DARPA as deputy director of the Information Exploitation Office (2006-08), Technical director for Air Force Research Laboratory Space Based Radar Technology (1998-2006), and program manager in the DARPA Information Systems Office for Counter CC&D technologies (1995-1998). Dr. Davis also had senior engineering and program management positions with General Electric Aerospace, and General Dynamics Missile Systems. His interests are in radar and microwave system design, phased array antennas and adaptive signal processing. Dr. Davis is a life fellow of the IEEE, a fellow of the Military Sensing Symposia, and past-chair of the IEEE Radar Systems Panel. Within the IEEE Aerospace and Electronics Systems Society, he has been a member of the Board of Governors (2008-2013) holding positions of VP of conferences (2010-2012, 2015-2017) and VP of finance (2013). Dr. Davis has served on the US Air Force Scientific Advisory Board, and as a member of the NASA review board on earth resource monitoring. In addition to these technical duties, he has published over 80 journal and conference papers on radar and microwave systems. More recently, he has authored a book Foliage Penetration Radar - Detection and Characterization of Objects under Trees published by Scitech Publishing in March 2011, and a chapter on principals of modern radar on FOPEN. He received a Ph.D. in physics from The Ohio State University, and bachelor and masters degrees in electrical engineering from Syracuse University.

GUY M. LOHMAN was Manager and Distinguished Research Staff Member (retired) of Disruptive Information Management Architectures in the Advanced Information Management Department at IBM Research Division's Almaden Research Center in San Jose, California, where he worked for over 34 years before retiring in November 2016. He most recently managed the Blink research project, which contributed BLU Acceleration to DB2 for Linux, UNIX, and Windows 10.5. From 2007 to 2010, Dr. Lohman's team invented and developed the Query Engine of the IBM Smart Analytics Optimizer for DB2 for z/OS, V1.1 and the Informix Warehouse Accelerator. Dr. Lohman was the architect of the Query Optimizer of DB2 on the Linux, UNIX, and Windows platforms, and was responsible for its development from 1992 to 1997 (versions 2 – 5), as well as the invention and prototyping of Visual Explain and efficient sampling in DB2. During that period, Dr. Lohman also managed the overall effort to incorporate into that DB2 product the Starburst compiler technology that was prototyped at the Almaden Research Center. He was a co-inventor and designer of the DB2 Index Advisor (now part of the Design Advisor), and co-founder of the DB2 Autonomic Computing project, part of IBM's company-wide Autonomic Computing Initiative. From 2004-2006, he was responsible for the design of the extensions to DB2 to optimize XQuery queries in DB2 9. Dr. Lohman was elected to the IBM Academy of Technology in 2002. He was the general chair for ACM's Symposium on Cloud Computing held in October 2013 at Santa Clara University, and the general co-chair of the 2015 IEEE International Conference on Data Engineering (ICDE), held 13-16 April 2015 in Seoul, Korea. Previously, he was the chair of the workgroup on Self-Managing Database Systems (SMDB) of the IEEE Technical Committee on Database Engineering, and on the editorial boards of the Very Large Data Bases Journal and

Distributed and Parallel Databases. His current research interests involve disruptive machine architectures for business intelligence, advanced data analytics, query optimization, self-managing database systems, information management appliances, and autonomic problem determination. Dr. Lohman holds a Ph.D. (1976) from Cornell University in operations research.

JOHN L. MANFERDELLI is Professor of the Practice and Executive Director of the Cybersecurity and Privacy Institute at Northeastern University. Immediately prior to that he was Engineering Director for Production Security Development at Google. His professional interests include cryptography and cryptographic mathematics, combinatorial mathematics, operating systems, and computer security. He is author of many papers on computer security, high performance computing, and cryptography, and has given invited talks on high performance computing, quantum computing, and computer security and signal processing and has been awarded many patents.

RANDOLPH L. MOSES is senior associate vice president for research and professor of electrical and computer engineering at The Ohio State University. His research interests are in stochastic signal processing; spectral estimation; parameter estimation; array signal processing; and applications to automatic target recognition and sensor networks. His work has been sponsored by DARPA, ONR, ARO, AFOSR, AFRL, ARL, and NSF grants, and by several industrial corporations. He is a fellow of the IEEE, and past chair of the ASEE Engineering Research Council. He has served as associate editor for IEEE Transactions on Signal Processing and IEEE Transactions on Image Processing. He has served on the faculty in the department of electrical and computer engineering at Ohio State since 1985. From 2008-2017 he was associate dean for research in the College of Engineering. He was a visiting researcher at MIT in the summers 2005 and 2003; a visiting scientist on IPA assignment at AFRL from 2002-2003; a visiting researcher in the Systems and Control Group at Uppsala University, Sweden from 1994-95; and a summer faculty research fellow at Rome Air Development Center in 1983. He has B.S. (1979), M.S. (1980), and Ph.D. (1984) degrees in electrical engineering from Virginia Polytechnic Institute and State University, and was a NATO postdoctoral fellow at Eindhoven University of Technology in 1984-85.

RADIA PERLMAN (NAE) is a fellow at EMC Corporation. She was previously an Intel Fellow and director of network and security technology in Intel Labs. In this role, she provided strategic direction for future network, security and trusted platform research. Dr. Perlman is the inventor of many fundamental technology innovations in computer networking, including the spanning tree algorithm, which is at the heart of today's Ethernet; TRILL, an emerging standard for data center interconnection that can replace today's spanning tree Ethernet; scalable and robust link state routing technology; and contributions in strong password protocols, authentication and authorization models, and denial of service protection techniques. Perlman has authored two networking textbooks and earned a Ph.D. from MIT in computer science. She holds approximately 100 patents in network security and routing technologies. Dr. Perlman has been recognized with numerous industry awards including an honorary doctorate from KTH Royal Institute of Technology in Sweden, the SIGCOMM lifetime achievement award, and the Usenix Association lifetime achievement award. She received the Ph.D. in electrical engineering and computer science from the Massachusetts Institute of Technology in 1988.

EMINA SOLJANIN is a professor at Rutgers University. Before moving to Rutgers in January 2016, she was a (distinguished) member of the technical staff for 21 years in the Mathematical Sciences Research Center of Bell Labs. She works as an information, coding, and, more recently, queueing theorist. Her interests and expertise are wide. Over the past quarter-century, she has participated in numerous research and business projects, as diverse as power system optimization, magnetic recording, color space quantization, hybrid ARQ, network coding, data and network security, and quantum information theory and networking. Dr. Soljanin served as the associate editor for Coding Techniques, for the IEEE Transactions on Information Theory, on the Information Theory Society Board of Governors, and in various roles on other journal editorial boards and conference program committees. She is a co-organizer of the DIMACS 2001-2005 Special Focus on Computational Information Theory and Coding and 2011-2015 Special Focus

on Cybersecurity. She is a 2017 outstanding alumnus of the Texas A&M School of Engineering,an IEEE Fellow, a 2016/17 Distinguished Lecturer for the IEEE Information Theory Society, and is currently serving as the vice president for the society. Dr. Soljanin received the Ph.D. in electrical engineering from Texas A&M University in 1994.

ALAN R. WAGNER currently holds a position as an assistant professor within the Aerospace department at Penn State and is a co-funded hire with the Penn State's Rock Ethics Institute. Previously Dr. Wagner was a senior research scientist at Georgia Institute of Technology's Research Institute and is a member of the Institute of Robotics and Intelligent Machines. His research interest include the development of algorithms that allow a robot to create categories of models, or stereotypes, of its interactive partners, creating robots with the capacity to recognize situations that justify the use of deception and to act deceptively, and methods for representing and reasoning about trust. Application areas for these interests range from military to healthcare. Dr. Wagner's research has won several awards including being selected for by the Air Force Young Investigator Program. His research on deception has gained significant notoriety in the media resulting in articles in the Wall Street Journal, New Scientist Magazine, the journal Science, and described as the 13th most important invention of 2010 by Time Magazine. His research has also won awards within the human-robot interaction community, such as the best paper award at RO-MAN 2007. Dr. Wagner received his Ph.D. in computer science from Georgia Institute of Technology. He also holds a master's degree in computer science from Boston University and a bachelor's degree in psychology from Northwestern University. He began his career in science as a member of the research and development team at the MIT/Broad Institute for Genome Research, creating novel robotic platforms as part of the Human Genome Project and has developed control software. He later went on to develop software for the Speedline Technologies, an industrial robotics manufacturer.

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.