

Telecommunications Research and Engineering at the Department of Commerce's Boulder Laboratories

Committee

Douglas Sicker

Chair

Douglas C. Sicker is currently the Department Head and professor of Engineering and Public Policy with a joint appointment in the School of Computer Science at Carnegie Mellon University. Dr. Sicker also serves as the Executive Director of the Broadband Internet Technical Advisory Group (BITAG) and the Chief Strategist of CMMB Vision. Previously, Doug was the DBC Endowed Professor in the Department of Computer Science at the University of Colorado at Boulder with a joint appointment in, and director of, the Interdisciplinary Telecommunications Program. Dr. Sicker recently served as the Chief Technology Officer and Senior Advisor for Spectrum at the National Telecommunications and Information Administration (NTIA). Doug also served as the Chief Technology Officer of the Federal Communications Commission (FCC) and prior to this he served as a senior advisor on the FCC National Broadband Plan. Earlier he was Director of Global Architecture at Level 3 Communications, Inc. In the late 1990s, Dr. Sicker served as Chief of the Network Technology Division at the Federal Communications Commission (FCC). Doug received his PhD in telecommunications from the University of Pittsburgh.

Jennifer T. Bernhard

Member

Jennifer Bernhard is currently a professor in the Department of Electrical and Computer Engineering at the University of Illinois, Urbana-Champaign. Her research addresses applications-oriented electromagnetic problems with an emphasis on theoretical analysis and experimental investigation. Her research group focuses on two areas: Electromagnetics for Wireless Communication and Reconfigurable Active and Passive Antennas. Electromagnetics for Wireless Communication: This work centers on cutting-edge technology development and design techniques that will enable high data-rate wireless communication and wireless parallel computation. Dr. Bernhard's research group investigates the effects of packaging on antenna performance and uses these results to develop design-oriented models for internal antennas, embedded antennas, and diversity schemes. The research also creates synthesis approaches for internal portable antenna systems that produce desired performance while reducing user exposure and battery usage. Reconfigurable Active and Passive Antennas: Dr. Bernhard's research implements reconfigurability in antenna structures to provide flexibility in operating frequency, bandwidth, and radiation pattern performance. Reconfigurability is accomplished using MEMS (microelectromechanical system) or traditional microwave switches, ferroelectric materials, or mechanical actuation of antenna components. The new multi-function antennas developed in this research will reduce dramatically the number and size of large array-based antenna systems, improve system efficiency, and decrease system cost and weight. The research group is supported by a specialized fabrication facility, a new anechoic chamber (the Illinois Wireless Wind Tunnel), Agilent vector network analyzers, and opportunities for collaborations with the UIUC Center for Computational Electromagnetics. Dr. Bernhard received her Ph.D. in electrical engineering from Duke University.

Elsa M. Garmire

Member

Elsa Garmire (NAE) is the Sydney E. Junkins Professor of Engineering at Dartmouth College. She was president of the Optical Society of America in 1993. Professor Garmire received her BA at Harvard and her Ph.D. at M.I.T., both in physics. After postdoctoral work at Caltech, she spent 20 years at the University of Southern California, where she was eventually named William Hogue Professor of Electrical Engineering and director of the Center for Laser Studies. She came to Dartmouth in 1995, where she served 2 years as dean of Thayer School of Engineering. Author of over 250 journal papers and holder of nine patents, she has been on the editorial board of five technical journals. She is a member of the National Academy of Engineering and the American Academy of Arts and Sciences, and a fellow of the Institute of Electrical and Electronic Engineers, the American Physical Society, and the Optical Society of America; she has served on the boards of three other professional societies. In 1994 she received the Society of Women Engineers Achievement Award. She has been a Fulbright senior lecturer and a visiting faculty member in Japan, Australia, Germany, and China. She has been chair of the NSF Advisory Committee on Engineering Technology and served on the NSF Advisory Committee on Engineering and the Air Force Science Advisory Board. Professor Garmire was elected to the National Academy of Engineering in 1989 for contributions to nonlinear optics and optoelectronics and for leadership in education. Professor Garmire was a 2007 Jefferson Fellow in the State Department attached to the Office of International Communications and Information Policy and was technical advisor to the US Ambassador at the World Radio Conference in 2007.

David J. Goodman

Member

David Goodman (NAE) is a Presidential Fellow of Polytechnic Institute of New York University (NYU-Poly) and has been a Professor Emeritus in its Department of Electrical and Computer Engineering since 2008. He was previously a Professor, Head of the department from 1999 to 2001, and Director of the Wireless Internet Center for Advanced Technology (WICAT), an industry-academic research center at Poly. His research has made fundamental contributions to digital signal processing, speech coding and wireless information networks. In 2006 and 2007, he was a Program Director in the Computer and Network Systems Division of the National Science Foundation. Prior to joining Polytechnic University in 1999, he founded and directed the Wireless Information Network Laboratory (WINLAB) at Rutgers University. He was previously a Research Associate at the Program on Information Resources Policy at Harvard University. In 1997, he chaired the National Research Council Committee studying "The Evolution of Untethered Communications." From 1967 to 1988 he was at Bell Laboratories, where his final position was Head of the Radio Research Department. Dr. Goodman is a member of the National Academy of Engineering and a foreign member of the Royal Academy of Engineering, a Fellow of the Institute of Electrical and Electronic Engineers, and a Fellow of the Institution of Engineering and Technology. In 1997, he received the ACM/SIGMOBILE Award for "Outstanding Contributions to Research on Mobility of Systems Users, Data, and Computing". In 1999, he won the RCR Gold Award for the best presentation at the Conference on Third Generation Wireless Communications. In 2003, he received the Avant Garde award from the Vehicular Technology Society of the IEEE. Three of his papers on wireless communications have been cited as Paper of the Year by IEEE journals. He is an author and frequent speaker on wireless communications. Dr. Goodman received his Ph.D. in Electrical Engineering from Imperial College, University of London.

Harlin McEwen

Member

Harlin McEwen, Chairman, Communications & Technology Committee, International Association of Chiefs of Police, has over 5 decades of experience as both an advocate for public safety telecommunications issues and as a career law enforcement officer and administrator. Chief McEwen started his career as a patrol officer in 1957 and after progressing through the ranks, served as a Chief of Police for more than 20 years, last serving as Chief in the City of Ithaca, NY, where he was instrumental in implementing modern technology and computerization and advancing training and professionalism of the force. During his years of service he served as Coordinator of the Tompkins County Mobile Radio District, as Deputy Commissioner of the New York State Division of Criminal Justice Services, and Director of the Bureau for Municipal Police, where he was responsible for overseeing the training and registration of all police officers and peace officers in New York State, as well as for the development and implementation of the New York State Law Enforcement Agency Accreditation Program. In February 1996, Chief McEwen was sworn in by FBI Director Louis Freeh as a Deputy Assistant Director of the Federal Bureau of Investigation with his office at headquarters in Washington, DC. During his tenure at the FBI, he was responsible for oversight of the development and implementation of the National Crime Information Center (NCIC) 2000 system and the Integrated Automated Fingerprint Identification System (IAFIS) and also traveled extensively throughout the United States and internationally, speaking at law enforcement and criminal justice conferences on matters relative to the FBI Criminal Justice Information Services. Chief McEwen participated as a member of the Steering Committee on the Public Safety Wireless Advisory Committee (PSWAC) and as a member of the Steering Committee of the FCC Public Safety National Coordinating Committee (NCC). He was a leader in creating the National Public Safety Telecommunications Council (NPSTC). Chief McEwen serves as Chairman of the International Association of Chiefs of Police (IACP) Communications Committee and previously served as Communications Advisor to the Major Cities Police Chiefs Association, the National Sheriffs' Association and the Major County Sheriffs' Association. He serves on numerous advisory committees and is also an advisor to the FBI, the National Institute of Justice, the Department of Homeland Security and various other organizations. Chief McEwen is a Fellow in the Radio Club of America, and was the first recipient of the RCA/NPSTC Richard DeMello Award. He is the recipient of the prestigious FBI Medal of Meritorious Achievement, the IACP Lone Star Distinguished Award and in 2006 was named as Honorary President of the IACP.

Helena Mitchell

Member

Helena Mitchell is a Regents' Researcher, the highest status bestowed by the Board of Regents, which governs the University System of Georgia. In tandem, she is Executive Director of the Center for Advanced Communications Policy at the Georgia Institute of Technology. Since 2001 she has been the Principal Investigator for the Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC) funded by the U.S. Department of Education to research, evaluate and develop innovative wireless technologies and products that promote equitable access. Her areas of expertise include broadband and wireless communications, emergency/public safety communications, spectrum management, regulatory policy, and universal service to vulnerable populations. Dr. Mitchell has held senior positions at the Federal Communications Commission (FCC), where she was Associate Chief, Strategic Communications for the Office of Engineering and Technology and earlier was chief of the Emergency Broadcast System, and the first chief of the Emergency Alert System (EAS). Helena previously headed the telecommunications development programs for the National Telecommunications and Information Administration (NTIA), of the U.S. Department of Commerce. In recognition of the success of her various innovative projects and policy initiatives, she received the prestigious U.S. Department of Commerce Silver Medal, twice. Helena has and continues to serve on a wide variety of community, industry and academic advisory councils and boards. Dr. Mitchell received her doctorate from Syracuse University in telecommunications policy (technology utilization and telecom law).

Paul Nikolich

Member

Paul Nikolich is a private consultant whom has been serving the data communications and broadband industries developing technology, standards, intellectual property and establishing new ventures as an executive consultant and angel investor since 2001. He is an IEEE Fellow and has served as Chairman of the IEEE 802 LAN/MAN Standards Committee since 2001. As 802 Chairman he provides oversight for 75 active 802 standards, and the 50 concurrent 802 activities in wired and wireless communications networking with over 800 active members and manages the relationships between IEEE 802 and global/regional standards bodies such as ISO, ITU, regulatory bodies and industry alliances. He is a member of the IEEE Computer Society Standards Activities Board and active leader in the IEEE, the IEEE Computer Society and the IEEE Standards Association. He is a partner in YAS Broadband Friends LLC and holds several patents, serves on the technology advisory boards of companies developing emerging communications technology. Mr. Nikolich has held technical leadership positions at large and small networking and technology companies beginning in 1978 (e.g., Broadband Access Systems, Racal-Datacom, Applitek, Motorola, Analogic). Paul received his M.S. in Biomedical Engineering from Polytechnic University in Brooklyn, N.Y.

Richard Reaser, Jr.

Member

Richard Reaser, Jr. is Head, Spectrum and E3 Department at Raytheon Space and Airborne Systems where he plans and coordinates SAS use of electromagnetic spectrum and Electromagnetic Environmental Effects (E3) efforts through technical and administrative processes consistent with applicable laws and regulations to meet customer product needs. He currently serves on the Commerce Spectrum Management Advisory Committee (CSMAC). Mr. Reaser joined Raytheon in August 2006. Prior to joining Raytheon, he was deputy system program director and chief engineer for the \$32 billion Navstar Global Positioning System. He served as deputy director of spectrum management in the Office of the Secretary of Defense and held spectrum positions in the White House and State Department. He was technical advisor to the US Ambassador to the World Radio Communications Conference (WRC) 2000 and was a US Spokesperson at WRC-2003. He negotiated landmark navigation and communication signal and spectrum agreements between the United States, Russian Federation, France, Japan and European Union. He also represented Defense Department interests in 2002 Ultra Wideband (UWB) and 2003 Mobile Satellite Service (MSS) Ancillary Terrestrial Component (ATC) Federal Communications Commission (FCC) rulemakings. Mr. Reaser has held a variety of engineering and management assignments in military space communication, navigation, imagery dissemination and infrared detection programs. He has Level III Defense Acquisition Workforce Improvement Act certifications in program management, system engineering and test. He retired from the Air Force after 28 years of service at the rank of Colonel. Mr. Reaser earned his bachelor's degree in engineering mechanics from the U.S Air Force Academy. He holds master's degrees in systems technology (command, control, and communications) and national resource strategy from the Naval Postgraduate School and National Defense University, respectively.

Jeffrey H. Reed

Member

Dr. Jeffrey H. Reed is the founder of Wireless@Virginia Tech, and served as its Director until 2014. He is the Founding Faculty member of the Ted and Karyn Hume Center for National Security and Technology and served as its interim Director when founded in 2010. His book, *Software Radio: A Modern Approach to Radio Design* was published by Prentice Hall and his latest textbook *Cellular Communications: A Comprehensive and Practical Guide* was published by Wiley-IEEE in 2014. He is co-founder of Cognitive Radio Technologies, a company commercializing of the cognitive radio technologies; Allied Communications, a company developing technologies for spectrum sharing; and for PFP Cybersecurity, a company specializing in security for embedded systems. In 2005, Dr. Reed became Fellow to the IEEE for contributions to software radio, communications signal processing, and for leadership in engineering education. In 2013 he was awarded the International Achievement Award by the Wireless Innovations Forum for his work in software radio. In 2012 he served on the advisory group supporting the President's Council of Advisors of Science and Technology to examine ways to transition federal spectrum to allow commercial use and improve economic activity. Dr. Reed is a member CSMAC a group that provides advice to the NTIA on spectrum issues.

Dennis Roberson

Member

Dennis Roberson has been Vice Provost and Research Professor with the Illinois Institute of Technology (IIT) since June 2003, where he established a new undergraduate business school, a wireless research center (WiNCom), IIT's corporate relations initiative, and is responsible for IIT's strategic plan and associated initiatives. Professor Roberson is also President, CEO and Member of Roberson and Associates, LLC, technology and consulting firm serving a variety of government and commercial customers since 2008. From April 1998 to April 2004, Professor Roberson was Executive Vice President and Chief Technical Officer of Motorola, Inc. From 1971 to 1998, he held senior executive positions with NCR Corporation, AT&T, Digital Equipment Corp. (now part of Hewlett Packard) and IBM. Professor Roberson is a Director of Advanced Diamond Technologies, Cleversafe, Caerus Institute and Sun Phocus Technologies, LLC. He also serves on the U.S. Federal Communication Commission's Technology Advisory Council and the U.S. Commerce Department's Commerce Spectrum Management Advisory Committee (CSMAC), the Board of Directors of FIRST Robotics, the National Advisory Council for the Boy Scouts of America and as an International Advisory Panel member for the Prime Minister of Malaysia. He holds Bachelor of Science Degrees in Physics and Electrical Engineering from Washington State University and a Master of Science in Electrical Engineering from Stanford University.