

Computing Research for Environmental and Societal Sustainability

Committee

Deborah L. Estrin

Chair

Deborah L. Estrin, NAE, is a Professor of Computer Science at UCLA and is Director of the NSF-funded Center for Embedded Networked Sensing (CENS). Professor Estrin received her Ph.D. (1985) in Computer Science from the Massachusetts Institute of Technology, her M.S. (1982) from M.I.T. and her B.S. (1980) from U.C. Berkeley. Before joining UCLA she was a member of the University of Southern California Computer Science Department from 1986 through the middle of 2000. She is also a member of the Computer Networks. In 1987, Professor Estrin received the National Science Foundation, Presidential Young Investigator Award for her research in network interconnection and security. During the subsequent 10 years much of her research focused on the design of network and routing protocols for very large, global, networks, such as: scalable multicast routing and transport protocols, self-configuring protocol mechanisms for scalability and robustness, and tools and methods for designing and studying large scale networks. Since the late 90's Professor Estrin has been collaborating with her colleagues and students to develop protocols and systems architectures needed to realize rapidly-deployable and robustly operating networks of many hundreds of physically-embedded devices, e.g., sensor networks. She is particularly interested in the application of spatially and temporally dense embedded sensors to environmental monitoring. Dr. Estrin has been a co-PI on many NSF and DARPA funded projects. She chaired a 1997-98 ISAT study on sensor networks and the 2001 NRC study on Networked Embedded Computing which produced the report Embedded Everywhere. Professor Estrin serves on the Advisory Committees for the NSF Computer and Information Science and Engineering (CISE) and Environmental Research and Education (ERE) Directorates. Professor Estrin was recently selected to join the Computer Science and Telecommunications Board (CSTB) of The National Academies. Professor Estrin is a fellow of the ACM, AAAS and the IEEE. She has served on numerous panels for the NSF, National Academy of Sciences/NRC, and DARPA. She has also served as an editor for the ACM/IEEE Transactions on Networks, and as a program committee member for many networking related conferences, including Sigcomm and Infocom. She is General Co-Chair for the first ACM Conference on Embedded Networked Sensor Systems, Sensys 2003. She is also an Associate Editor for the new ACM Transactions on Sensor Networks and a member of the National Academies Computer Science and Telecommunications Board(CSTB) from 2004 to the present.

Alan Borning

Member

Alan Borning is a professor in the Department of Computer Science and Engineering, an adjunct professor in the Information School, and a member of the Interdisciplinary PhD Program in Urban Design and Planning, all at the University of Washington. He received a BA degree from Reed College in mathematics 1971, and a PhD from Stanford University in Computer Science in 1979. His current research interests are in human computer interaction and designing for human values; he has also worked extensively in object-oriented programming languages and in constraint-based languages and systems. One specific research project over the past 10 years has been on UrbanSim, a system for constructing integrated land use, transportation, and environmental models of urban regions to help inform decisions regarding major transportation improvements, land use changes, and other policies, particularly as they impact sustainability. Other current research projects include computer systems to support public engagement and participation in interacting with government, and tools to help improve public transit usability and satisfaction. Awards include a Fulbright Senior Scholar Award for lecturing and research in Australia, and being named a Fellow of the Association for Computing Machinery.

David E. Culler

Member

David Culler (NAE), a professor of Computer Science at the University of California, Berkeley, received his B.A. from UC Berkeley, 1980, and a M.S. and Ph.D. from MIT, 1985 and 1989 respectively. He joined the EECS faculty in 1989 and is the founding Director of Intel Research, UC Berkeley. He is a member of the National Academy of Engineering, an ACM Fellow, and was selected in Scientific American Top 50 Researchers and Technology Review 10 Technologies that Will Change the World. He was awarded the NSF Presidential Young Investigator and the Presidential Faculty Fellowship. His research addresses networks of small, embedded wireless devices, planetary-scale internet services, parallel computer architecture, parallel programming languages, and high performance communication. This includes TinyOS, Berkeley Motes, PlanetLab, Networks of Workstations (NOW), Internet services, Active Messages, Split-C, and the Threaded Abstract Machine (TAM).

Thomas G. Dietterich

Member

Thomas Dietterich, professor in the School of Electrical Engineering and Computer Science at Oregon State University, focuses on research in interdisciplinary research at the boundary of computer science, ecology, and sustainability policy. He is PI (with Carla Gomes of Cornell) of an 5-year NSF Expedition in Computational Sustainability. He is part of the leadership team for OSU's Ecosystem Informatics programs including the Ecosystem Informatics IGERT and the NSF Summer Institute in Ecoinformatics. Dr. Dietterich (AB Oberlin College 1977; MS University of Illinois 1979; PhD Stanford University 1984) is Professor and Director of Intelligent Systems in the School of Electrical Engineering and Computer Science at Oregon State University, where he joined the faculty in 1985. In 1987, he was named a Presidential Young Investigator for the NSF. In 1990, he published, with Dr. Jude Shavlik, the book entitled Readings in Machine Learning, and he also served as the Technical Program Co-Chair of the National Conference on Artificial Intelligence (AAAI-90). From 1992-1998 he held the position of Executive Editor of the journal Machine Learning. The Association for the Advancement of Artificial Intelligence named him a Fellow in 1994, and the Association for Computing Machinery did the same in 2003. In 2000, he co-founded a new, free electronic journal: The Journal of Machine Learning Research and he is currently a member of the Editorial Board. He served as Technical Program Chair of the Neural Information Processing Systems (NIPS) conference in 2000 and General Chair in 2001. He is Past-President of the International Machine Learning Society, a member of the IMLS Board, and he also serves on the Advisory Board of the NIPS Foundation.

Daniel M. Kammen

Member

Dan Kammen is a Professor in the Energy and Resources Group; professor of Public Policy, Goldman School of Public Policy; professor of Nuclear Engineering; and director of the Renewable and Appropriate Energy Laboratory at University of California, Berkeley. Kammen brings to the analysis of national and international energy policy an understanding of the technology as well as of the economics and the policy landscape. He sees value in greater emphasis on renewable energy sources, such as solar and wind power and biomass, not only because it is better for the environment, but also because it would improve our nation's security by lessening reliance on imported oil. Renewables also would produce more jobs than an equivalent investment in fossil fuel energy sources, according to a recent study by Kammen. He also argues that renewables are a better investment than highly touted but uncertain exotic new technologies such as hydrogen fuel. He has testified before U. S. House and Senate committees on energy and environmental issues. He has advised the New Apollo Energy Project, an initiative spearheaded by Sen. Maria Cantwell, D-Wash., and Rep. Jay Inslee, D-Wash., to replace the energy bill now languishing in Congress with a new bill emphasizing energy independence and weaning the country from a reliance on imported fossil fuels by 2010. Kammen has been a guest on National Public Radio's Science Friday and has been interviewed by CNN and numerous local television and radio stations on energy, environmental and risk policy issues, and current events. He is very comfortable in front of the camera, and recently was interviewed by Alan Alda for an upcoming Scientific American Frontiers program called Future Car, set to air in May 2004. Kammen advises the United States and Swedish Agencies for International Development, the World Bank, the American Academy of Arts and Sciences, the African Academy of Sciences and the President's Committee on Science and Technology, and is a member of the Intergovernmental Panel on Climate Change.

Jennifer Mankoff

Member

Jennifer Mankoff is an Associate Professor in the Human Computer Interaction Institute at Carnegie Mellon University where she joined the faculty in 2004. She earned her B.A. at Oberlin College and her Ph.D. in Computer Science at the Georgia Institute of Technology advised by Gregory Abowd and Scott Hudson. Her research focuses on addressing critical social problems through interactive technologies that empower people. Dr. Mankoff's work leverages mobile, desktop and social web technologies to help individuals and effect positive social change. She uses empirical methods to uncover problems, innovates new technologies and methods to address those problems, and constructs enabling tools and processes. Application areas of her work include persuasive techniques for encouraging energy saving behavior, web accessibility for the blind and mobile transcription services for the deaf. Dr. Mankoff is an active member of the ACM ASSETS, CHI, and UIST research communities, and has served on the program and conference committees at all three conferences. She helped found the sustainable-chi group (sustainable-chi@googlegroups.com). Her research has been supported by Google Inc., the Intel Corporation, Hewlett-Packard, Microsoft Corporation, and the National Science Foundation. She was awarded the Sloan Fellowship in 2007 and the IBM Faculty Fellowship in 2004 & 2006.

Roger D. Peng

Member

Roger D. Peng is an Assistant Professor of Biostatistics at the Johns Hopkins Bloomberg School of Public Health. He received his PhD in Statistics from the University of California, Los Angeles. He is a prominent researcher in the areas of air pollution and health risk assessment and statistical methods for spatial and temporal data. He is a national leader in the area of methods and standards for reproducible research, and is the new Reproducible Research editor for the journal Biostatistics. He has developed novel approaches to integrating complex national databases for assessing population health effects of environmental exposures and has developed software for efficiently distributing data over the Web for disseminating reproducible research. Dr. Peng's research is highly interdisciplinary and his work has been published in major substantive and statistical journals, including the Journal of the American Medical Association, Journal of the American Statistical Association, Journal of the Royal Statistical Society, and American Journal of Epidemiology. Dr. Peng is the author of over a dozen software packages implementing statistical methods for environmental studies, methods for reproducible research, and data distribution tools. He has also given workshops, tutorials, and short courses in statistical computing and data analysis with R.

Andreas Vogel

Member

Andreas Vogel is Vice President in the Office of the CTO at SAP Labs in Palo Alto, California, where we works on the next generation of sustainability related software solutions including carbon accounting, energy management and electrified vehicles. Before joining SAP, Andreas held various research, technology and business positions around the world, among them Chief Scientist at Borland and CTO and co-founder of Mspect where he developed monitoring solutions for mobile data networks. Andreas holds a MSc and PhD in computer science from Humboldt University, Berlin, Germany. Andreas co-authored four books on CORBA, Enterprise Java Beans and ERP published J.Wiley & Sons.