

# Center for Energy-Efficient Ultra-Dense Computing

## ERC Leadership Team



**TREVOR MUDGE** received the PhD degree in Computer Science from the Univ. of Illinois, Urbana, in 1977 and joined the faculty at the Univ. of Michigan. He was named the first Bredt Family Professor of Electrical Engineering and Computer Science after concluding a 10-year term as the Director of the Advanced Computer Architecture Laboratory that consisted of 10 faculty and approximately 70 graduate students. He is author of over 400 papers on computer architecture, programming languages, VLSI design, and computer vision, and has chaired over 40 theses in these areas. His research interests include computer architecture, computer-aided design, and compilers. He also runs Idiot Savants, a chip design consultancy. He is a Fellow of IEEE, a member of ACM, IET, and the British Computer Society.



**Trevor Mudge**

Bredt Family Professor of Engineering, University of Michigan  
E<sup>2</sup>UDC Director

---



**MARIOS PAPAEFTHYMIU** received his BS in Electrical Engineering from the California Institute of Technology, 1988, and his MS and PhD degrees from the Massachusetts Institute of Technology, 1990 and 1993, respectively. From 1993-1996 he was a Professor at Yale University and from 1996 to the present he has been a member of the faculty at the University of Michigan, where he is a full Professor. Professor Papaefthymiou's research focus is upon architectures and design methodologies for energy-efficient high-performance computers with an emphasis on energy harvesting.



**Marios Papaefthymiou**

Professor of Electrical Engineering and Computer Science, University of Michigan  
E<sup>2</sup>UDC Deputy Director

---



**MONICA BROCKMEYER** received the PhD in Computer Science and Engineering, 1999; the MS in Computer Science and Engineering, 1995; and the BS in Statistics and Mathematics, 1986, all from the University of Michigan. She is an Associate Prof. in the Dept. of Computer Science at Wayne State University Her research includes distributed systems, network monitoring, fault tolerance, cloud computing, and formal methods. She conducts research in CS Education, with an interest in diversity, motivation and stereotype threat, impact of cognitive theory on CS learning, K-12 learning environments, and computational thinking. She has been funded by several grants from NSF, including an NSF CAREER award.



**Monica Brockmeyer**

Associate Professor of Computer Science, Wayne State University  
E<sup>2</sup>UDC Associate Director

---



**CHAITALI CHAKRABARTI** received her B. Tech. in electronics and electrical communication engineering from the Indian Institute of Technology, Kharagpur, India, and her MS and PhD degrees in electrical engineering from the University of Maryland, College Park. She has been a professor of electrical engineering at Arizona State University since 1990. Her research interests are in the areas of low-power embedded systems design and algorithm-architecture co-design of signal processing, image processing, and communication systems.

**Chaitali Chakrabarti**

Professor of Electrical, Computer and Energy Engineering, Arizona State University  
E<sup>2</sup>UDC Associate Director and Testbed Co-Lead: Hand-Held Ultrasound (T1)



**KENNETH GOODSON** received the PhD from the Massachusetts Institute of Technology in 1993 and has co-authored more than 120 archival journal articles, 24 patents, 2 books, and 8 book chapters. He received the Allan Kraus Thermal Management Medal from the ASME, the ONR Young Investigator Award, and the NSF Career Award. He received the Outstanding Reviewer Award from the ASME Journal of Heat Transfer. His group studies thermal phenomena in electronic nanostructures, energy conversion devices, and microfluidic heat exchangers. He is a founder and former CTO of Cooligy, which builds microcoolers for computers and was acquired in 2005 by Emerson.

**Kenneth Goodson**

Professor of Mechanical Engineering, Stanford University  
E<sup>2</sup>UDC Associate Director and Thrust Lead: Thermal Management (R3)



**MARK BREHOB** earned the BSE in Computer Engineering from Rose-Hulman Institute of Technology and the MS and PhD in Computer Science from Michigan State University. He has been a lecturer at the University of Michigan since 2000. He has taught a variety of classes including theory, software, hardware and DSP courses as well as two different introductory classes for Freshmen. He has won numerous teaching awards including the student-selected "EECS Professor of the Year" award four times and has served as the head advisor for Computer Engineering for most of the last eight years.

**Mark Brehob**

Senior Lecturer in Electrical Engineering and Computer Science, University of Michigan  
E<sup>2</sup>UDC Education Director



# Center for Energy-Efficient Ultra-Dense Computing

## ERC Participants



**J. BRIAN FOWLKES** is Professor of Radiology and Biomedical Engineering and Director of the Ultrasound Research Laboratory and the Basic Radiological Sciences Division of the Dept. of Radiology. His research activities include contrast agents for tissue perfusion, acoustic droplet vaporization in cancer therapy and phase aberration correction, histotripsy and volume flow estimation using 3D ultrasound. Dr. Fowlkes is a fellow of the American Institute of Ultrasound in Medicine, received the AIUM Presidential Recognition Award and the Joseph H. Holmes Pioneer Award for Basic Science. Dr. Fowlkes is also a fellow of the American Institute of Medical and Biomedical Engineering.

### J. Brian Fowlkes

Professor of Radiology and Biomedical Engineering, University of Michigan  
E<sup>2</sup>UDC Testbed Co-Lead: Hand-Held Ultrasound (T1)



**EDWIN OLSON** received his BS in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology, 2000; his ME in Electrical Engineering and Computer Science, 2001; and PhD in Computer Science and Engineering, 2008, both at the Massachusetts Institute of Technology. He joined the faculty of the University of Michigan in 2008 and currently holds the position of Assistant Professor. His research interests include finding ways for robots to sense and understand their environment while coping with uncertainty and ambiguity.

### Edwin Olson

Assistant Professor of Computer Science and Engineering, University of Michigan  
E<sup>2</sup>UDC Testbed Lead: Automotive Computing (T2)



**THOMAS WENISCH** received the PhD in Electrical and Computer Engineering, Dec. 2007; an MS in Electrical and Computer Engineering, May 2003 from Carnegie Mellon University; and a BS in Computer Engineering, Dec. 2000 from the University of Rhode Island. Wenisch's prior research includes memory streaming for commercial server applications, store-wait-free multiprocessor memory systems, and rigorous sampling-based performance evaluation methodologies. He is a principle developer of the Flexus full-system cycle-accurate simulation infrastructure. His ongoing work focuses on data center architecture, energy-efficient server design, and multi-core memory systems. He received an NSF CAREER award in 2009 and is co-inventor on three patents.

### Thomas Wenisch

Assistant Professor of Computer Science and Engineering, University of Michigan  
E<sup>2</sup>UDC Testbed Lead: Ultra-Dense Server (T3)





**SCOTT MAHLKE** received his BS in Electrical and Computer Engineering, 1988; his MS in Electrical and Computer Engineering, 1992; and his PhD in Electrical Engineering, 1997, all from the University of Illinois, Urbana. From 1995 to 2001, he worked with the Compiler and Architecture Research Group at Hewlett-Packard Laboratories and joined the faculty of the University of Michigan in 2001, where he is currently an Associate Professor. His research interests are focused currently on compilers, computer architecture, and high-level synthesis.

**Scott Mahlke**

Associate Professor of Computer Science and Engineering, University of Michigan  
E<sup>2</sup>UDC Thrust Lead: Architecture (R1)



**DAVID BLAAUW** received the B.S. in Physics and Computer Science from Duke University, 1986 and the Ph.D. in Computer Science from the University of Illinois, Urbana, 1991. Until August 2001, he was the Manager of the High Performance Design Technology Group for Motorola in Austin, TX. Since August 2001 he has been at the University of Michigan, where he is a Professor. He has published over 300 papers and holds 30 patents. His work has focused on VLSI design with particular emphasis on ultra low power and high performance design.

**David Blaauw**

Professor of Electrical and Computer Engineering, University of Michigan  
E<sup>2</sup>UDC Thrust Lead: Low Power Circuits (R2)



**DENNIS SYLVESTER** received his BS in Electrical Engineering from the University of Michigan in 1995 and his MS and PhD in Electrical Engineering from the University of California at Berkley in 1997 and 1999, respectively. He started his professional career at Synopsys, Inc. from 1999 - 2000 and has been a professor at the University of Michigan from 2000 to the present, where he currently holds the rank of Associate Professor. His research interests include low-power design and EDA, variability-aware design methodologies, and interconnect modeling and analysis.

**Dennis Sylvester**

Associate Professor of Electrical and Computer Engineering, University of Michigan  
E<sup>2</sup>UDC Thrust Lead: Memory Devices (R4)



**DAVID WENTZLOFF** received the BSE degree in Electrical Engineering from the University of Michigan, 1999; and the MS and PhD degrees from the Massachusetts Institute of Technology, 2002 and 2007, respectively. In the summer of 2004, he worked in the Portland Technology Development group at Intel in Hillsboro, OR. Since August, 2007 he has been with the Univ. of Michigan, where he is an Assistant Professor of Electrical Engineering and Computer Science. His research currently focuses on integrated circuit design for adaptable wireless communication systems for both high-performance and energy constrained applications.

**David Wentzloff**

Assistant Professor of Electrical and Computer Engineering, University of Michigan  
E<sup>2</sup>UDC Thrust Lead: Interconnects (R5)





**MEHDI ASHEGHI-ROUDHENI** completed his PhD in 1999 and completed postdoctoral studies in 2000 at Stanford University while conducting research in the area of nanoscale thermal engineering of microelectronic devices. He is currently a consulting associate professor at Stanford University, focusing on further development of PCRAM technology. He led a well-known and funded research program (2000-2006) at Carnegie Mellon Univ. that focused on nanoscale thermal phenomena in semiconductor and data storage devices. He was the PI in one of the first Nanotechnology Interdisciplinary Research Team (NIRT) grants awarded by NSF in 2001. He is the author of more than 110 book chapters, journal publications and fully-reviewed conference papers.



**Mehdi Asheghi-Roudheni**

Consulting Associate Professor of Mechanical Engineering, Stanford University  
E<sup>2</sup>UDC Core Faculty

---



**YU CAO** received the BS degree in physics from Peking University, 1996. He received the MA degree in biophysics and the PhD degree in electrical engineering from University of California, Berkeley, in 1999 and 2002, respectively. He is now an Associate Professor of Electrical Engineering at Arizona State University, Tempe, Arizona. His research interests include physical modeling of nanoscale technologies, design solutions for variability and reliability, and reliable integration of post-silicon technologies.



**Yu Cao**

Associate Professor of Electrical, Computer and Energy Engineering, Arizona State University  
E<sup>2</sup>UDC Core Faculty

---



**PAUL CARSON** received his BS from Colorado College in Physics, 1965; and received his MS and PhD in Physics from the University of Arizona, 1969 and 1972 respectively. From 1973 to 1981 he was a member of the faculty of the University of Colorado and from 1981 to the present he has been a member of the faculty of the University of Michigan as a full Professor. His current research interests include 3D Compounding, Monitoring Chemotherapy, and Sequential Scanning.



**Paul Carson**

Professor of Radiology and Biomedical Engineering, University of Michigan  
E<sup>2</sup>UDC Core Faculty

---



**JEFFREY FESSLER** received the BSEE from Purdue University, 1985; the MSEE from Stanford University, 1986; the MS in Statistics from Stanford University, 1989; and the PhD in electrical engineering, 1990 from Stanford University, where he was a NSF Graduate Fellow. From 1991 to 1992 he was a Dept. of Energy Alexander Hollaender Post-Doctoral Fellow in the Division of Nuclear Medicine. From 1993 to 1995 he was an Assistant Professor in Nuclear Medicine and the Bioengineering Program. He is now a Prof. in the Departments of Electrical Engineering and Computer Science, Radiology, and Biomedical Engineering. His research interests are in statistical aspects of imaging problems.



**Jeffrey Fessler**

Professor of Electrical and Computer Engineering, Radiology, and Biomedical Engineering, University of Michigan – E<sup>2</sup>UDC Core Faculty

---



**JASON FLINN** received a dual bachelors degree in 1991 from the University of Pennsylvania, a BS in Economics and a BSE in Computer Science and Engineering. He received his MS in Computer Engineering from Syracuse University, 1996; and his PhD in Computer Science from Carnegie Mellon University, 2001. He worked from 1991 to 1996 for IBM Corporation and joined the faculty of the Univ. of Michigan in 2002, where he now holds the rank of Associate Professor. His research interests include operating systems, distributed systems, file systems, mobile and pervasive computing.

**Jason Flinn**

Associate Professor of Computer Science and Engineering, University of Michigan  
E<sup>2</sup>UDC Core Faculty



**OLIVER KRIPFGANS** holds an equivalent BS and MS degree in Physics from the University of Saarland/Germany, 1991 and 1996, respectively; and a PhD degree from the University of Michigan, 2002. He joined the Univ. of Michigan faculty in the Department of Radiology in 2003. His research includes medical and physical ultrasound, as well as non-destructive testing with specific interests in the physics of drug-carrying emulsions, ultrasound contrast agent bubble dynamics, medical imaging, Doppler, time reversal acoustics, cancer therapy, and elastography. He recently developed a fully programmable and cost-effective 300-channel therapeutic ultrasound array system.

**Oliver Kripfgans**

Research Scientist in Radiology and Applied Physics, University of Michigan  
E<sup>2</sup>UDC Core Faculty



**WEI LU** received his BS in Physics from Tsinghua University, China, 1996; his MA and PhD degrees in physics from Rice University, 1999 and 2003, respectively. He worked as a postdoctoral research lecturer from 2003 - 2005 at Harvard University and has been a U-M faculty member as an Assistant Professor since 2005. Wei Lu's current research interests include nanoelectronics, solid state quantum devices, and nanoelectromechanical systems.

**Wei Lu**

Assistant Professor of Electrical and Computer Engineering, University of Michigan  
E<sup>2</sup>UDC Core Faculty



**BRIAN NOBLE** received his BS degree in Electrical Engineering and Computer Science from the University of California, Berkeley, 1991; the MS degree, 1994 and the PhD, 1998, in Computer Science from Carnegie Mellon University. His research focuses on mobile computing, distributed systems, security, and file systems. He received the National Science Foundation CAREER award in 2000, and has held fellowships from AT&T, the National Science Foundation, and the Computer Measurement Group. He joined the faculty of UM's College of Engineering in 1998. He was the Morris Wellman Faculty Development Assistant Professor from 2002-2004, and has been an Associate Professor since 2004.

**Brian Noble**

Associate Professor of Computer Science and Engineering, University of Michigan  
E<sup>2</sup>UDC Core Faculty





**KEVIN PIPE** received his BS in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology, 1999; the ME and PhD from the Massachusetts Institute of Technology, 1999 and 2004, respectively. He has been with the faculty of the University of Michigan since 2004 and is currently an Assistant Professor. His research interests include microscale heat transfer, thermoelectrical energy conversion, and organic and hybrid organic/inorganic devices.

**Kevin Pipe**

Assistant Professor of Mechanical Engineering, University of Michigan  
E<sup>2</sup>UDC Core Faculty



**NABIL SARHAN** received the PhD and MS degrees in CSE at Pennsylvania State University, and the BS degree in Electrical Engineering at Jordan University of Science and Technology. He is an Associate Prof. of Electrical and Computer Engineering and directs the Wayne State Media Research Lab. His main research areas are server and network support for multimedia applications, design of scalable multimedia servers, video streaming over the Internet and wireless networks, video-on-demand (VOD), multimedia and data networks, and automated video surveillance. Dr. Sarhan received the 2008 Outstanding Professional of the Year Award from IEEE; the WSU 2009 President's Award for Excellence in Teaching, and the 2007 CoE Excellence in Teaching Award.

**Nabil Sarhan**

Associate Professor of Electrical and Computer Engineering, Wayne State University  
E<sup>2</sup>UDC Core Faculty



**WEISONG SHI** is an Associate Professor at Wayne State University where he directs the Mobile and Internet SysTems Laboratory (MIST), investigating the trust, energy-efficiency, and reliability issues of computer systems. He has authored two books, authored over 100 publications, received research support from and consulted for a variety of governmental and industrial organizations. He is a recipient of the China National Outstanding PhD dissertation award in 2002, and the Best Paper Award of ICWE'04 and IEEE IPDPS'05. He is a recipient of the 2007 NSF CAREER award, and the 2009 WSU Career Development Chair award.

**Weisong Shi**

Associate Professor of Computer Science, Wayne State University  
E<sup>2</sup>UDC Core Faculty



**JELENA VUCKOVIC** received the PhD in Electrical Engineering from California Institute of Technology, 2002. In 2003, she joined the faculty in the Electrical Engineering Dept. and Ginzton Laboratory at Stanford University, where she is currently an Associate Professor and a Chambers Faculty Scholar. She leads the Nanoscale and Quantum Photonics research group. She is a recipient of several awards, including the Presidential Early Career Award for Scientists and Engineers (PECASE), the Office of Naval Research Young Investigator Award, and the DARPA Young Faculty Award.

**Jelena Vuckovic**

Associate Professor of Electrical Engineering, Stanford University  
E<sup>2</sup>UDC Core Faculty





**CHENG-ZHONG XU** received the BS and MS. degrees from Nanjing University, 1986 and 1989, respectively; and a PhD degree from the University of Hong Kong, 1993, all in CSE. He is a Professor of Electrical and Computer Engineering at Wayne State University and Director of the Cloud and Internet Computing Laboratory. He is also the Director of SUN's Center of Excellence in Open Source Computing and Applications. His research includes distributed, parallel, and wireless embedded computing systems, with an emphasis on resource management for system's performance, reliability, availability, power efficiency, and security. He is a recipient of the 2002 President's Award for Excellence in Teaching from WSU and the 2003 Career Development Chair Award.

**Cheng-Zhong Xu**

Professor of Electrical and Computer Engineering, Wayne State University  
E<sup>2</sup>UDC Core Faculty



**PARTHA CHAKRABARTI** completed his BTech in 1985 and PhD in 1988 from the Dept of Computer Science & Engineering, Indian Institute of Technology Kharagpur. He joined IIT as a faculty member in 1988 and is currently a Professor. He is also the Dean of Sponsored Research and Industrial Consultancy at IIT Kharagpur and Head of the Advanced Technology Development Centre. He received the 1985 Pres. of India Gold Medal, the 1991 INSA Young Scientist Award, the 1995 Anil K. Bose Award, the 1997 INAE Young Engineer's Award, and many others. He has been elected a Fellow of the Indian National Science Academy, New Delhi and the Indian Academy of Science, Indian National Academy of Engineering and the West Bengal Academy of Science & Technology.

**Partha Chakrabarti**

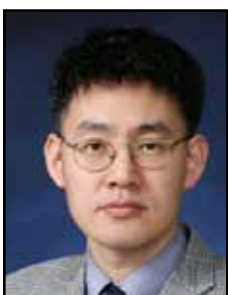
Professor of Computer Science and Engineering, Indian Institute of Technology  
E<sup>2</sup>UDC Foreign Lead PI



**STEPHEN FURBER** is the ICL Professor of Computer Engineering at the University of Manchester. He worked in hardware development at Acorn Computers Ltd, and was a principal designer of the BBC Microcomputer and the ARM 32-bit RISC microprocessor. At the University of Manchester, he established the Amulet research group. He served as Head of the Dept. of CS in Victoria University of Manchester. He is a Fellow of the Royal Society, the Royal Academy of Engineering, the British Computer Society, the Inst. of Engineering and Technology, the IEEE, and a Chartered Engineer. He was awarded a Royal Acad. of Engineering Silver Medal, 2003; a Royal Society Wolfson Research Merit Award, 2004; the IET Faraday Medal, 2007; and a CBE in the 2008 New Year Honours list.

**Stephen Furber**

ICL Professor of Computer Engineering, University of Manchester  
E<sup>2</sup>UDC Foreign Lead PI



**SUHWAN KIM** received the BS and MS degrees in Electrical Engineering and Computer Science from Korea University, Seoul, Korea, 1990 and 1992 respectively; and a Ph.D. degree in Electrical Engineering and Computer Science from the University of Michigan, 2001. From 1993 to 1999, he was with LG Electronics, Seoul, Korea. From 2001 to 2004, he was a Research Staff Member in IBM T. J. Watson Research Center. In 2004, he joined Seoul National University, Seoul, Korea, where he is currently an Associate Prof. of Electrical Engineering. His research interests encompass high-performance and low-power analog and mixed signal integrated circuits, digitally-compensated analog circuits, and high-speed I/O circuits.

**Suhwan Kim**

Associate Professor of Electrical Engineering, Seoul National University  
E<sup>2</sup>UDC Foreign Lead PI





# Center for Energy-Efficient Ultra-Dense Computing

## Council of Deans



**DAVID MUNSON** is the Robert J. Vlasic Dean of Engineering and Professor of Electrical Engineering and Computer Science in the College of Engineering at the University of Michigan. He came to Michigan from the University of Illinois at Urbana-Champaign, where he was the Robert C. MacClinchie Distinguished Professor of Electrical and Computer Engineering. In 2003, Professor Munson became Chair of the Department of Electrical Engineering and Computer Science at the University of Michigan. In 2006, he assumed the position of Dean. He is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE) and his teaching and research interests are in the general area of signal and image processing.

### David Munson

Robert J. Vlasic Dean of Engineering and Professor of Electrical Engineering and Computer Science, University of Michigan



**STEVEN KUNKEL** received his PhD at the University of Kansas in microbiology and a post-doctoral fellowship at the Univ. of Connecticut Health Center. He joined the University of Michigan Medical School faculty in 1980. He is the Endowed Professor of Pathology Research and co-director of General Pathology in the Dept. of Pathology at UM's Medical School. His areas of research have centered on assessing molecular mechanisms of lung inflammation. He has co-authored more than 500 peer reviewed manuscripts, contributed more than 60 chapters to different books in his field, is a recipient of an NIH MERIT Award, and has served on NIH peer review study. He is the present co-chair of the Board of Scientific Counselors for the NIAID-NIH.

### Steven Kunkel

Sr. Associate Dean for Research and Endowed Professor of Pathology Research, University of Michigan Medical School



**EDWARD HALL** received his BS degree in Science Engineering, 1965; and his PhD in Materials Science, 1970, both from Northwestern University. He is Associate Dean in the Ira A. Fulton Schools of Engineering (IAFSE) at Arizona State Univ. He joined ASU in 2002 and served from 2004 to 2008 as the Executive Associate Dean for Research. Prior to joining ASU, he worked for 31 years at Motorola and was involved with materials research and development. Throughout his career, he has championed external partnerships including the recent building and leading of external semiconductor modeling and simulation groups located at Los Alamos National Laboratory, Sandia National Laboratory, Russia, and China.

### Edward Hall

Associate Dean, Schools of Engineering, Arizona State University





**ROBERT THOMAS** received his BS degree in Physics from Bowdoin College; the PhD degree in Physics from Brown University. He joined the Dept. of Physics at Wayne State University in 1965, initially as a postdoctoral research associate, and subsequently as a faculty member. His research group in applied physics pioneered the field of thermal wave imaging. Over the past several years he has been a co-inventor on nine U.S. Patents on sonic-infrared imaging of cracks, cited in 2006 as one of “25 Innovations That Changed the World.” An elected member of WSU’s Academy of Scholars, and a Fellow of the American Physical Society, he is currently Dean of the College of Liberal Arts and Sciences and Prof. of Physics and Astronomy at WSU.

**Robert Thomas**

Dean, College of Liberal Arts and Sciences, Wayne State University



**MUMTAZ USMEN** is a Licensed Professional Engineer, and holds a BSCE degree from Robert College, Turkey, and a PhD degree from West Virginia University. He is Interim Dean of the College of Engineering at Wayne State University. He served as Chairman of the Civil and Environmental Engineering Department at WSU from 1989 to 2007, and Associate Dean for Research, subsequently, until he was appointed Interim Dean in August 2009. Prior to coming to WSU, he was a Professor of civil engineering at West Virginia Univ. where he established and directed a NIOSH sponsored Center for Excellence on Construction Safety. Dean Usmen specializes in construction engineering and management with a focus on site safety, quality, ethics, leadership, and organizational improvement.

**Mumtaz Usmen**

Interim Dean of Engineering, Wayne State University



**FRIEDRICH PRINZ** obtained his Ph.D. in Physics from the University of Vienna, Austria. He serves on the faculties of Mechanical Engineering and Materials Science and Engineering at Stanford University and holds the Finmeccanica Professorship in the School of Engineering. His current work focuses on scaling effects and quantum confinement phenomena for energy conversion. His research group employs Scanning Probe Microscopy, Impedance Spectroscopy, and Quantum Modeling. In his laboratory, prototype fuel cells, solar cells, and batteries serve to test new concepts and novel material structures. He is an active member of Stanford’s College of Engineering Executive Committee.

**Friedrich Prinz**

Rodney H. Adams Professor and Robert Bosch Chair of Mechanical Engineering, and Member, CoE ExCom, Stanford University



# Center for Energy-Efficient Ultra-Dense Computing

## Scientific & Diversity Advisory Boards



**DANIEL ATKINS** was founding dean of the School of Information at U-M. In 2002, he served as chair of a NSF panel for the Blue Ribbon Advisory Panel on Cyberinfrastructure. He is the recipient of several major awards: two U-M Distinguished Service Awards; the 1993 Nina W. Mathesson Award; the 1998 Computerworld Smithsonian Award; and the 2008 Paul Evan Peters Award. He is a recipient of an NSF Service Commendation, and in May 2009 he was recognized with a Univ of Illinois College of Engineering Distinguished Alumni Award for his influence on high-performance computer architecture, pioneering work in the development of schools of information, and leadership in improving the U.S. cyberinfrastructure.

### Daniel Atkins

Associate Vice President for Cyberinfrastructure, University of Michigan  
E<sup>2</sup>UDC Scientific Advisory Board



**CYNTHIA FINELLI** received her MSE and PhD degrees from the Univ. of Michigan and is Director of the Center for Research and Learning and Research at the Univ. of Michigan. She is an Associate Professor in the College of Engineering and consults with departments, administrators, faculty, and graduate students in the College of Engineering, assists faculty with their research in engineering education, offers workshops and seminars on teaching and learning, and supports college-wide initiatives in engineering education. Her current research interests include evaluating methods to improve teaching, studying faculty motivation to change classroom practices, and exploring ethical decision-making in engineering students.

### Cynthia Finelli

Director, Center for Research on Learning and Teaching, University of Michigan  
E<sup>2</sup>UDC Diversity Advisory Board



**KRISZTIAN FLAUTNER** earned his BSE, MSE, and PhD degrees from the University of Michigan, in 1996, 1998 and 2001, respectively. He is VP of research and development at ARM Ltd., which designs technology that lies at the heart of advanced digital products with more than fifteen billion processors deployed. He leads a global team which is focused on the understanding and development of technologies relevant to the proliferation of the ARM architecture. Key activities are related to high-performance computing in energy-constrained environments. He is a member of the ACM and the IEEE.

### Krisztian Flautner

Vice President of Research and Development, ARM  
E<sup>2</sup>UDC Scientific Advisory Board





**RANDALL FRANK** is CTO at Internet2. As a member of the senior leadership team, he has responsibility for advanced development activities in cloud computing, performance measurement, security, authentication, and high performance networking. He joined Internet2 in 2009 after ten years as VP for Technology Research and Development at Fidelity Investments in Boston where he led efforts in unified communications, data center consolidation, and e-mail security. Prior to his work at Fidelity, he held various senior IT leadership positions at both the University of Michigan and the University of Utah, where he was responsible for campus networking, distributed computing, and scientific computing.

**Randall Frank**  
Chief Technology Officer, Internet2  
E<sup>2</sup>UDC Scientific Advisory Board



**BRIAN GARRA** completed his residency at the University of Utah, spent time in Germany as an army radiologist and returned to Washington DC and NIH. He later joined Georgetown Univ. as Director of Ultrasound. He became Prof. & Vice Chairman of Radiology at the Univ. of Vermont and is currently chair of the FDA radiological devices panel where his clinical interests include PACS, digital signal processing, quantitative ultrasound including Doppler, and ultrasound elastography. He is currently working on applications of poroelastic imaging and ultrasound research including low power small ultrasound systems for deployment to rural areas worldwide. He is the recipient of the John & Kathryn Tampas Green & Gold Professorship Award and the American Institute of Ultrasound in Medicine Presidential Recognition Award.

**Brian Garra**  
Associate Director, Clinical Division of Imaging, Center for Devices and Radiological Health, US Food & Drug Administration – E<sup>2</sup>UDC Scientific Advisory Board



**LISA GAYNIER** received a BA in social science from Michigan State University, and an MA from Cleveland State University. She is the founder of a leadership consulting firm, Creativechange.biz. She joined CSU as Director of the nation's first and only Master's program in Diversity Management. She comes to the position with twenty years experience as a consultant and business owner. Her special areas of practice are leadership, particularly within the context of cross-cultural competence, change leadership and global competitiveness.

**Lisa Gaynier**  
Director, Diversity Management Program, Cleveland State University  
E<sup>2</sup>UDC Diversity Advisory Board



**DAVID HOLMES, III** received his Ph.D. in Biomedical Engineering/Imaging in 2002 from the Mayo Graduate School. He is currently the Director of the Biomedical Imaging Resource Core and a researcher in the Department of Physiology and Biomedical Engineering at the Mayo Clinic. His research focuses on medical imaging computing and image-guided interventions. Specifically, Dr. Holmes is interested in translating artificial intelligence and computer vision techniques into the clinical procedure room. His current projects include image-guided prostate cancer treatment, real-time cardiac ablation guidance, and the development of tools to facilitate the validation of image-guidance procedures.

**David Holmes, III**  
Director, Biomedical Imaging Resource Core and Researcher, Department of Physiology and Biomedical Engineering, Mayo Clinic – E<sup>2</sup>UDC Scientific Advisory Board





**MARY JANE IRWIN** earned her Ph.D. from the Univ. of Illinois and an Honorary Doctorate from Chalmers Univ., Sweden. She currently holds the Evan Pugh Professor and A. Robert Noll Chair in Engineering in the Dept. of Computer Science and Engineering. She is an IEEE and ACM Fellow, was inducted into NAE in 2003, and the Amer. Academy of Arts and Sciences in 2009. Her awards include DAC Marie R. Pistilli Women in EDA Award 2004, the ACM Distinguished Service Award 2005, the CRA Distinguished Service Award 2006, the Anita Borg Technical Leadership Award 2007, and the ACM Athena Lecturer Award 2010. Her research interests include computer architecture, embedded and mobile computing systems design, power and reliability aware design, and emerging technologies.



**Mary Jane Irwin**

Evan Pugh Professor and A. Robert Noll Chair in Engineering, Pennsylvania State University  
E<sup>2</sup>UDC Scientific Advisory Board

---



**MATTHEW O'DONNELL** is the Frank and Julie Jungers Dean of Engineering at the University of Washington since 2006. He received his BS and PhD degrees in physics from Notre Dame. He is a principal investigator on two NIH grants dealing with applications of ultrasound and photoacoustic imaging and holds 55 patents. He was a postdoctoral fellow in physics and medicine at Washington Univ. in St. Louis; held a research fellowship in EE at Yale Univ.; and worked in the private-sector as a research and development physicist at the GE Company in NY. In 1990, he joined the Univ. of Michigan as a professor of electrical engineering and computer science. He later chaired the UM's Biomedical Engineering Dept., 1998-2006.



**Matthew O'Donnell**

Frank and Julie Jungers Dean of Engineering, University of Washington  
E<sup>2</sup>UDC Scientific Advisory Board

---



**ROB RUTENBAR** received the PhD degree from the University of Michigan in 1984. From 1984 to 2009 he was on the faculty at Carnegie Mellon University, where he held the Jatras (E'47) Chair in Electrical and Computer Engineering. In 2010, he joined the University of Illinois at Urbana, where he is currently the Abel Bliss Professor and Head of Computer Science. He has worked on tools for custom circuit synthesis for over 25 years. He has published over 150 papers in his career, and his work has been featured in venues ranging from EE Times to Economist Magazine. He is a Fellow of the ACM and IEEE.



**Rob Rutenbar**

Chair, Computer Science Department, University of Illinois at Urbana-Champaign  
E<sup>2</sup>UDC Scientific Advisory Board

---



**ROBERT SCOTT** earned a BSE degree in Computer Engineering from the University of Michigan in 1975. He serves as Managing Director, Center for Engineering Diversity & Outreach in the College of Engineering where he is responsible for supporting the diversity and outreach strategy and programs across the college. He also serves as Director of the Information Systems Executive Forum of the Ross School of Business at UM. Before his retirement after 32 years at Proctor and Gamble, he served as Vice President, Innovation & Architecture, Global Business Services. More recently, he held the position of Vice President, IT, Global Market Development, responsible for the global IT program for retail customer systems.



**Robert Scott**

Managing Director, Center for Engineering Diversity & Outreach, University of Michigan  
E<sup>2</sup>UDC Diversity Advisory Board

---



**KAREN TONSO** is an Associate Professor of Social Foundations in the College of Education at Wayne State University and a former engineer who studies science and engineering learning settings. She received WEPAN's Betty Vetter Award for Research, the Mary Catherine Ellwein Outstanding Dissertation Award, and the Selma Greenberg Distinguished Dissertation Award from the American Educational Research Association. She is the author of a book, "On the Outskirts of Engineering," has authored 30 articles and five book chapters, co-authored "Women's Science," and is the PI of WSU's NSF-funded ADVANCE-PAID grant.

**Karen Tonso**

Associate Professor of Social Foundations, College of Education, Wayne State University  
E<sup>2</sup>UDC Diversity Advisory Board



**RICHARD UHLIG** earned his Ph.D. in Computer Science and Engineering from the University of Michigan in 1995. He is an Intel Fellow and Director of Systems Architecture at Intel Labs. He has led the definition of multiple generations of Intel Virtualization Technology (Intel(r) VT), and is currently focusing on energy-efficient computing for data centers. Prior to joining Intel in 1996, Uhlig held post-doctoral fellowships at the European national research labs of Germany, Greece, and France, where he worked on advancing simulation technology and on architectural support for modern operating system design.

**Richard Uhlig**

Director, Systems Architecture, Intel Labs  
E<sup>2</sup>UDC Scientific Advisory Board



# Center for Energy-Efficient Ultra-Dense Computing

## Industry Partners



**MARK ABEL** has an MS degree in Electrical Engineering from Stanford University and a BS degree in Electrical Engineering from Michigan. He is currently Associate GM of Services and Director of Pathfinding in Intel's Software and Services Group. His teams have won or shared Intel's highest award seven times for a wide range of innovations including creating the Pin dynamic instrumentation system, helping initiate Intel's Digital Home business, and delivering technology that has shipped in more than a billion PCs. Before joining Intel, he held positions with Xerox PARC, Bell Labs, US West and Siemens. He serves on the University of Michigan's College of Engineering and School of Information advisory boards.

**Mark Abel**

Associate General Manager of Services and Director of Pathfinding, Intel



**JOHN BIEL** received his BSE, MUSE, and PhD degrees from the University of Michigan. He has over 23 years of experience in materials, automotive and avionics engineering development, engineering management, project management, and technical support of business development. Most recently, he has served as the Avionics Engineering Services Leader for GE's Aviation Systems North American business. His responsibilities include materials and components, integrated logistics, technical publications and training, and data management.

**John Biel**

Director of US Engineering Services, GE Aviation Systems



**NATHAN BINKERT** received his PhD and MSE in Computer Engineering, and his BSE in Electrical Engineering from University of Michigan. He is a Senior Research Scientist at HP labs where he is a member of the Exascale Datacenter project. His current research lies in two areas: large scale data storage systems employing novel memory technologies and the design of systems that take advantage of new optical devices. His broader research interests are at the intersection of computer architecture, operating systems, and networking. He is a principal developer of the M5 architectural simulator.

**Nathan Binkert**

Senior Research Scientist, Hewlett Packard Labs





**SHEKHAR BORKAR** received the master's degree in Electrical Engineering from the University of Notre Dame, 1981; and the master and bachelor degrees in Physics from the University of Bombay in 1979. He is an Intel Fellow and the Director of Microprocessor Technology Lab at Intel Labs. Borkar is responsible for directing research in technologies for Intel's future microprocessors. Borkar joined Intel in 1981. He worked on the design of the 8051 family of microcontrollers, iWarp multicomputer and high-speed signaling technology for Intel supercomputers. Borkar is an adjunct member of the faculty of the Oregon Graduate Institute. He has published over 60 articles and holds 41 patents.

**Shekhar Borkar**

Intel Fellow and Director of Microprocessor Technology Lab, Intel



**BOB BRAMMER** has a bachelor's degree in mathematics from the University of Michigan and MA and PhD degrees in mathematics from the University of Maryland. Prior to Northrop, he was with NASA and worked on Apollo and Skylab. He is a Woodrow Wilson Fellow and received awards for the Apollo program and for the NASA and NOAA satellite remote-sensing programs. He is a fellow of the Society of Photo-Optical Instrumentation Engineers and the American Meteorological Society. He is a member of IEEE, MAA, SIAM, SMPTE and AGU. He has served on advisory boards for the Defense Department's Defense Science Board, National Academy of Sciences, Naval Studies Board, National Science Foundation, Univ. Corporation for Atmospheric Research and NASA.

**Bob Brammer**

Vice President for Advanced Technology, Northrop Grumman



**DOUG BURGER** earned the BS degree from Yale, 1991; the MS and PhD degrees from the University of Wisconsin-Madison, 1993 and 1998, respectively. He is Director of Cloud and Client applications in Microsoft Research, which is designing new mobile computing interfaces and new cloud computing architectures. At MSR, he also manages the Computer Architecture group. Prior to joining Microsoft in 2008, he was a Professor of Computer Sciences at the University of Texas at Austin for ten years, where he co-ran the TRIPS project, which prototyped the first operational 16-wide, out-of-order issue processor core and networked NUCA caches. He is an IEEE Fellow, an ACM Distinguished scientist, and Chair of ACM SIGARCH.

**Doug Burger**

Director, Cloud and Client Applications, Microsoft Research



**JOHN CARTER** leads the Power Aware Systems group at IBM Research, Austin, where they are developing technologies designed to dramatically reduce data center and server energy consumption as part of IBM's Smart Planet initiative. His research includes integrated IT and facilities energy management, energy-proportional high-performance storage systems, energy-aware systems software, and autonomic platform energy management. Prior to joining IBM, he was the Associate Director of the School of Computing at the University of Utah, where he studied multiprocessor computer architecture, smart memory systems, and distributed storage. He received his PhD in Computer Science from Rice University in 1993.

**John Carter**

Manager, Power Aware Systems, IBM







**NEAL CLINTHORNE** is a Research Professor of Radiology at the University of Michigan and co-founder and chairman of Xoran Technologies. While his research at Michigan focuses on development of leading edge technologies for molecular imaging, he is most passionate about bringing laboratory concepts to commercial products. The conebeam CT technology spun-off from his work at Michigan and further developed at Xoran has, so far, revolutionized dental imaging and created a new market category in CT for ENT physicians. Xoran continues to expand its footprint by developing technologies for image-guided surgery and portable 3D imaging.

**Neal Clinthorne**

Co-Founder and Chairman of the Board, Xoran Technologies; Professor of Radiology, University of Michigan



**MARK DAVIS** holds an MS in Electrical Engineering, and a BS in Computer Science and Electrical Engineering. He has seven patent filings and brings over 25 years of high performance computing system, architecture, and application experience to Smooth-Stone. Before joining Smooth-Stone, he was Senior Director for Network Analytics at AlterPoint, and Director of ASIC Development and Scaling Technologies at Newisys. Mr. Davis has also held key management, architecture, and design roles at Knowledge Discovery One, Hewlett Packard, and Convex Computer.

**Mark Davis**

Chief Technology Officer, Smooth-Stone



**MICHAEL FINNEY** earned an MA from Central Michigan University and a BA in business administration from Saginaw Valley State University. He is president and CEO of Ann Arbor SPARK, which was founded in 2005 and has become one of the premier economic development organizations in the United States. Prior to joining SPARK, Finney served as president and CEO of the Greater Rochester Enterprise, Rochester, New York. He also served as VP of emerging business sectors in the Michigan Economic Development Corporation. Finney serves on the board of directors for the State Science & Technology Institute and the Michigan Venture Capital Association.

**Michael Finney**

President & CEO, Ann Arbor SPARK



**MATTHEW FORNERO** graduated with his BS degree in Computer Engineering from the University of Michigan. After graduating, he worked briefly specializing in model-based controls before joining the A&D where he is Senior Hardware Engineer at A&D Technology. At A&D, he has focused primarily on the development of high-performance computing platforms for measurement and control systems. His work has included the design of multiple HyperTransport-based I/O boards with industry-leading performance relative to latency and bandwidth, the creation of a hybrid CPU/FPGA-based real-time compute acceleration platform targeted at controls engineers, and the development of hard real-time multi-gigabit fiber optic communication protocols.

**Matthew Fornero**

Senior Hardware Engineer, A&D Technology, Inc.





**SATOSHI FURUKAWA** graduated with both the BS and MS degrees from Waseda University in Tokyo, in 1998 and 1999, respectively. He spent another year as a research fellow at the Advanced Computing Lab at Waseda University. He joined A&D Company in Kitamoto, Japan in 2001 and transferred in 2006 to A&D's US office to lead the development of a next generation high-performance real-time multi-processor, multi-core real-time system. He is the President of A&D Technology, which specializes in advanced automotive powertrain test and development systems.

**Satoshi Furukawa**  
President, A&D Technology, Inc.



**EDWARD KRAUSE** holds BS and MS degrees in Materials Science and Engineering from the University of Michigan and is a graduate of the Executive Education Program of U-M's School of Business Administration. He is currently the External Alliances Manager for Research and Advanced Engineering at Ford Motor Co. He is responsible for generating cutting-edge technology and competitive advantage for Ford by developing relationships and collaborative R&D projects between Ford and universities, partner companies and national labs. He leads formal Alliances with MIT, Univ. of Michigan and Northwestern as well as Ford's global University Research Program and the Ford-Boeing Strategic Alliance.

**Edward Krause**  
External Alliances Manager, Research and Advanced Engineering,  
Ford Motor Company



**GARY KRAUSE** received the BS and MS degrees in Urban Planning from Michigan State University and performed engineering based postgraduate work at Carnegie Mellon University. He is Director of Federal Initiatives and Partnerships in the New Markets Unit at the Michigan Economic Development Corporation (MEDC) and has over 35 years of experience in the private sector, regional and state governments. His current focus includes MEDC's New Markets Unit that is responsible for exploring and developing new industry clusters and technologies for action through the state's economic development policies and programs.

**Gary Krause**  
Director of Federal Initiatives and Partnerships, Michigan Economic  
Development Corporation



**JAMES KRYSL** has a BS in Electrical Engineering, an MS in Applied Mathematics and an MS in Electrical Engineering from the University of Illinois at Urbana. He worked at Bell Labs and at TRW Military Electronics and Avionics Division before joining Qualcomm in 1998. At Qualcomm, he designed the first 1XEV-DO modems for both uplink and downlink receivers and had a major role commercializing the designs for the first few generations of ASICs. He also designed and helped commercialize three generations of Base Station Modem chipsets to support 1XEV-DO. Most recently, he has been working on low-power ASICs developed to support personal area network applications as well as traditional cell phones, and is involved in ASIC development for Pico and Femto cell applications.

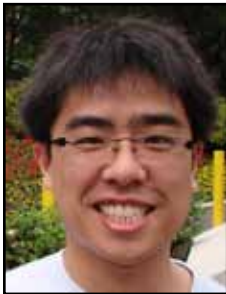
**James Krysl**  
Vice President of Technology, Qualcomm Research and Development





**DAVID LEMMERHIRT** received the BSEE from the University of Illinois, 1997; and MS/ PhD degrees in electrical engineering from the University of Michigan, in 1999 and 2005 respectively. His doctoral work focused on using MEMS technology to miniaturize microsystems integrating multiple transducers, analog circuits, microprocessors, and data-storage memory. In 2004, he joined Sonetics Ultrasound, Inc., in Ann Arbor, where he is currently a Senior R&D Engineer. His work at Sonetics involves the design and fabrication of micromachined ultrasonic transducer arrays for three-dimensional medical imaging. He holds two U.S. patents and has authored multiple publications in the fields of microsystems and solid-state electronics.

**Davide Lemmerhirt**  
R&D Engineer, Sonetics Ultrasound, Inc.



**KEVIN LIM** is a research scientist at HP Labs in the Exascale Computing Lab. He recently completed his Ph.D. in Computer Science and Engineering at the University of Michigan under advisors Trevor Mudge and Steven Reinhardt. His broader research interests include memory systems, emerging non-volatile memories, and large-scale data center and server architectures. His work on server architectures has been published in the 2009 IEEE Micro Top Picks journal, which selects the 12 highest-impact computer architecture publications of that year.

**Kevin Lim**  
Research Scientist, Hewlett Packard Labs



**EDWARD MAIER** earned a BS in Mechanical Engineering from the University of Michigan, and an MBA with concentrations in marketing and finance from the University of Chicago. He is also a licensed professional engineer. He previously spent over 21 years with Emerson Electric Co., primarily at its ENI Division in Rochester. His senior management experience includes positions as general manager, division president, executive vice president, operations and engineering, and senior vice president of sales, marketing, and engineering.

**Edward Maier**  
Vice President/General Manager for Engineering & Operations,  
Harris RF Communications



**JERRY MANSOUR, JR.** is President and co-founder Exaconnect along with Aris Silzars and Michel Victor. Prior to Exaconnect, Mansour spent 16 years in marketing and general management positions. Mansour received a BBA in 1987 from the University of Michigan.

**Jerry Mansour, Jr.**  
Chief Executive Officer, Exaconnect





**BRIAN MCEATHRON** is General Manager, General Imaging Ultrasound with General Electric health care division. He brings an experience of 24 years in marketing, sales, and customer applications. He has in-depth knowledge of the healthcare issues and disparities that exist. He has worked very closely with the top healthcare providers from around the world including clinical practitioners, healthcare executives and industry veterans. During his more than 24 years at GE, he has held positions that include Program Manager, A Six-Sigma quality leader, mergers and acquisitions manager, and engineering manager.

**Brian McEathron**

General Manager, General Imaging Ultrasound, GE Healthcare



**MIKE MILLER** holds a BA from the University of Michigan and an MBA from the University of Notre Dame. He heads Google's Ann Arbor office and its Canada Online Sales team. He works closely with community organizations and serves on the board of Business Leaders for Michigan (formerly Detroit Renaissance). Since joining Google in 2006, he has held a variety of leadership roles in online sales, serving the marketing needs of agency, technology and retail customers, and multiple sales operations teams. Prior to joining Google, he spent six years at Cisco Systems, where he provided advisory services to senior executives of Global 200 companies on technology strategies as part of Cisco's Internet Business Solutions Group.

**Mike Miller**

Head of Online Sales and Operations, Google Ann Arbor



**PHIL MOORBY** possesses more than 30 years' experience in multiple senior technical leadership roles. His combined background in mathematics and performance software makes him ideal to lead the Sigmatix technology development programs. Considered a semiconductor industry luminary, he is best known as the inventor of the Verilog Hardware Description Language, the language used to implement most of the integrated circuits developed today worldwide, for which he was bestowed the highly prestigious EDAC Kaufmann Award in 2006.

**Phil Moorby**

Chief Technology Officer, Sigmatix, Inc.



**ROBERT PATTI** received the BS degree in Electrical Engineering and Computer Science and a BS in Physics from the Rose-Hulman Institute of Technology. He is the Chief Technical Office/Vice President of Design Engineering at Tezzaron Semiconductor. He was Founder and President of the predecessor company, ASIC Designs, Inc.; Member of the Technical Staff for Tellabs, Inc.; Member of IEEE; and former Vice-Chairman of JEDEC's DDRIII/Future Memories Task Group. He is the holder of 15 US patents and numerous foreign patents in deep sub-micron semiconductor chip technologies.

**Robert Patti**

Chief Technical Office/Vice President of Design Engineering, Tezzaron





**GARY QUACKENBUSH** earned a BS from Grand Valley State Univ., 1996 and a MS degree in Educational Leadership over 28 years of experience in avionics engineering development, engineering line management, program management, and technical support of business development. He presently is the Avionics Technology Leader for GE's Aviation Systems Avionics business. His responsibilities include recommending R&D priorities and managing research budgets for the business and driving engineering execution on technology programs. He is also responsible for establishing technology plans with global research centers and industry partners, as well as leading technology roadmap development in alignment with the business strategy. He also manages the business's intellectual property portfolio.

**Gary Quackenbush**  
Aviation Technology Leader, GE Aviation Systems



**PARTHA RANGANATHAN** received his B.Tech degree from the Indian Institute of Technology, and his MS and PhD from Rice University. He is a distinguished technologist at Hewlett Packard Labs. and the principal investigator and research manager for the exascale datacenter project that seeks to design next-generation servers and datacenters and their management. Earlier, he was a primary developer of the publicly distributed Rice Simulator for ILP Multiprocessors (RSIM). His work has been featured in the Wall Street Journal, Business Week, San Francisco Chronicle, Times of India, Slashdot, Youtube, and Tom's hardware guide. He has been named one of the world's top young innovators by MIT Technology Review and is a recipient of Rice University's Outstanding Young Engineering Alumni award.

**Partha Ranganathan**  
Distinguished Technologist, Hewlett Packard Labs



**STEVEN REINHARDT** received the BS from Case Western Reserve University, 1987; the MS from Stanford University, 1988; and the PhD from the University of Wisconsin-Madison, 1996. He is a Fellow in the Research and Advanced Development Labs at Advanced Micro Devices (AMD). He has been at AMD since 2008, directing research in the areas of high-speed networking, memory hierarchy designs, and on-chip interconnects. He is also an adjunct associate professor in the University of Michigan, where he was a full-time faculty member from 1997 to 2006. Prior to joining AMD, Steve spent over two years at Reservoir Labs, Inc., managing multiple DoD and DoE SBIR projects in the areas of network security and embedded systems networking.

**Steve Reinhardt**  
Fellow, Research and Advanced Development Labs, Advanced Micro Devices



**COLLIN RICH** received his Ph.D. in Electrical Engineering from the University of Michigan, with concentration in Solid-State Electronics and Microelectromechanical Systems (MEMS). His industrial career has focused on new products using both MEMS and non-MEMS technologies. At Integrated Sensing Systems, Inc., Dr. Rich developed patented, MEMS-based, implantable pressure sensing devices. He subsequently co-founded Sonetics Ultrasound, Inc., whose focus is MEMS-based 2D transducer arrays for true 3D/4D volumetric ultrasound. Dr. Rich also co-founded Accuri Cytometers, Inc., leading development of a market-transforming, patented flow cytometer instrument that now enjoys worldwide distribution.

**Collin Rich**  
Chief Technology Officer, Sonetics Ultrasound, Inc.





**DAVID RICH** received his BSEE from Capital Institute of Technology, and the MSCS from Johns Hopkins University. He is Senior Engineer at Imperium Inc. who is responsible for the electronic design of the Acoustocam ultrasound camera, requirements definition of the semiconductor array which is the core technology of the camera, and business development. Proposals written by him have resulted in several million dollars in contracts and have led Imperium into new areas of business. In previous employment he has been involved in the design of radar countermeasures systems for the Navy and ground sensor systems for the Army.

**David Rich**  
Senior Engineer, Imperium



**MITCHELL ROHDE** holds BS and MS degrees in Electrical Engineering Systems and a MS and PhD in Biomedical Engineering, all from the University of Michigan. He has expertise in integrating complex hardware and software signal processing systems, and has designed, built, and tested diverse devices including biomedical instruments, walking and wheeled robots, hovercraft and smart card readers. He co-founded Quantum Signal to bring advanced signal processing technologies into real-world applications, and has managed over \$20M in sponsored research over the past ten years. He holds clearances with the Dept. of Defense and is a member of Sigma Xi, IEEE, NDIA, Eta Kappa Nu, and Tau Beta Pi.

**Mitchell Rohde**  
Co-Founder and Chief Operating Officer, Quantum Signal, LLC



**MICHAEL SMITH** earned his Bachelor of Mechanical Engineering and Ph.D. from the Georgia Institute of Technology, as well as a Master's of Science in Mechanical Engineering from MIT. His research focused on modeling and control methodologies using neural networks, fuzzy logic, and adaptive control algorithms. As part of his research, Smith spent a year with Ford applying these techniques to a high-torque capacity continuously variable transmission. Smith was previously with ETAS, specializing in automotive powertrain embedded system development and test tools. In 2006, he joined A&D to help introduce their real-time systems to the U.S. market and to lead the development and engineering teams related to those systems.

**Michael Smith**  
Director of Engineering, A&D Technology, Inc.



**WILLIAM VAN KAMPEN** has a BSE in electrical engineering from the University of Michigan and 15 years of professional experience developing imaging systems for medical and remote sensing applications. He has been with Xoran Technologies since 2005 developing application-specific medical CT systems leading and contributing to NIH funded research efforts leading to the development of a portable intraoperative cone-beam CT and improvements to the low-contrast imaging capability for flat-panel-based CT.

**William van Kampen**  
Director of Business Development, Xoran Technologies





**WOLF-DIETRICH WEBER** holds a Ph.D. in electrical engineering from Stanford University. His academic research was in the area of computer architecture, particularly distributed cache coherence protocols. His work has taken him into server, chip, and on-chip network design. For the past six years, he has been working in an infrastructure group at Google, focusing on performance, power, and reliability issues of Google's server fleet.

**Wolf-Dietrich Weber**  
Distinguished Engineer, Google



# Center for Energy-Efficient Ultra-Dense Computing

## Education & Outreach Partners



**MARK BRUSH** is a graduate of the University of Michigan with an MS in Environmental Policy and Planning and a BA in Political Science. He is a Senior Producer at Michigan Radio where he is working to develop the station's online news content. He has won national awards from the Society of Environmental Journalists and the National Headliner Awards for his environmental reporting and editing. He has worked in public radio since 1998.

**Mark Brush**  
Senior Producer, Michigan Radio



**ELIZABETH CHILTON** is a certified teacher of English and Journalism and holds undergraduate degrees in English from Indiana University and Public Information and Communications degree from Albion College. She has been with the Detroit Science Center since 1998. She spent eleven years working in Development for the Univ. of Michigan, Dearborn Mosaic Youth Theater of Detroit and the Detroit Science Center. In early 2006, Elizabeth took on the responsibility of ensuring that the Science Center exhibit content is strong and meaningful to visitors. Elizabeth is trained in Logic Model Development, Strategic Planning and Visitor Evaluation.

**Elizabeth Chilton**  
Director of Exhibit Content, Detroit Science Center



**MARCUS CLARKE** received his BS degree from Purdue University, 1957; and his MBA from Michigan State University, 1984. A retired manufacturing manager from Ford Motor Company, Clarke now works as an advisor to Focus:HOPE and the Minority Engineering Program Office, College of Engineering at the University of Michigan. He has been active in engineering education functioning on engineering visiting committees at Purdue University, and advising minority engineering programs at Purdue and Michigan. He participated as a member of the Greenfield Coalition development team sponsored by NSF.

**Marcus Clarke, Jr.**  
Associate Director of Education, Focus:HOPE







**PETE FORSYTH** is the Wikimedia Foundation’s Public Outreach Officer. He works with Wikimedia’s vast network of volunteers and supporters to improve the experience of new project contributors. He began writing Wikipedia articles as a volunteer in 2006, focusing on the history of his home state of Oregon. He helped found WikiProject Oregon, a dynamic group of Wikipedians which coordinates collaborative projects and coordinates with local institutions. Prior to joining the Wikimedia Foundation’s staff in 2009, Forsyth provided communications services to non-profit, business, and politics clients, and worked for several news organizations.

**Pete Forsyth**  
Public Outreach Officer, Wikimedia Foundation



**DEDRICK MARTIN** earned a BS from Grand Valley State University, 1996 and a MS degree in Educational Leadership and Administration from the University of Houston, 1999. He was hired as Superintendent of Ypsilanti Public Schools in September 2009. He was Executive Director of Equity and Achievement in Champaign, Illinois. He has also held positions in Texas as a principal, assistant principal, and teacher. Mr. Martin is a member of the Michigan Association of School Administrators and the Michigan Association of African American Superintendents.

**Dedrick Martin**  
Superintendent, Ypsilanti Public School System



**JENNIFER MARTIN** earned the BS in Elementary Education from Wayne State University, 1995; and a M.Ed in Educational Leadership and Administration, 1999. She is currently a doctoral candidate at Walden University. She has dedicated her life to urban education and closing the achievement gap. She served in the Detroit Public and Oak Park school districts as a teacher, curriculum leader, assistant principal, and principal, prior to joining the Ypsilanti Public School District as Assistant Superintendent of Educational Quality in June 2010. Martin has been a presenter at the Blue Ribbon Schools of Excellence Conference (2005), the NCA CASI Conference (2008), and the Advanc-ED Conference (2010).

**Jennifer Martin**  
Assistant Superintendent, Ypsilanti Public School System



**AMY MCNULTY** earned an MA in Applied Anthropology from the University of South Florida, and a BA from Middlebury College in Middlebury. She specializes in qualitative data collection and analysis, formative and outcome evaluations, and group processes, especially data interpretation workshops. Amy has worked as an evaluator with FERA for more than 10 years with a variety of organizations and programs. She has specific interests in youth development, museum studies, formal and informal education, collaborations, and community development. She has lived as an exchange student in both Turkey and Costa Rica and is proficient in Spanish and some Turkish.

**Amy McNulty**  
Project Associate, Formative Evaluation Research Associates





**RICHARD RUSSELL** holds a BS in Mechanical Engineering, an MBA in Marketing, and a MA in Secondary Education with a teaching certification. He directs the incorporation of STEM (Science, Technology, Engineering and Math) content into the Science Center's exhibits, theaters, and education programs. He oversees education programming and acts as liaison to the Univ. Preparatory Science & Math charter middle school that adjoins the Science Center. Prior to joining the Science Center in 2007, Russell worked as an engineer in the automotive industry for seventeen years.

**Richard Russell**  
Director of STEM, Detroit Science Center



**REBECCA WILLIAMS** is the host and producer of The Environment Report on Michigan Radio. She has a natural science degree from the University of Michigan's School of Natural Resources & Environment, where she had close encounters with escaped boars and poison sumac. Before getting into radio, Williams snapped photos of Mongolian diatoms and published papers in scientific journals. She has won several national awards for her work, including a first place National Headliner Award at the network level for her stories on the uber-destructive emerald ash borer.

**Rebecca Williams**  
Host & Producer of The Environment Report, Michigan Radio



# Center for Energy-Efficient Ultra-Dense Computing

## University of Michigan Administration Representatives



**MARY SUE COLEMAN** has led the University of Michigan since being appointed its 13th president in 2002. She has unveiled several major initiatives that will have an impact on future generations of students, the intellectual life of the campus, and society at large. These include the interdisciplinary richness of U-M, student residential life, the economic vitality of the state and nation, and issues related to health care. She led a groundbreaking partnership between U-M and Google, which will enable the public to search U-M's seven million volume library and will open the way to universal access of recorded human knowledge. She previously was president of the University of Iowa.

**Mary Sue Coleman**  
President, University of Michigan



**MARY BETH DAMM** is the Director of the Office of Engineering Outreach and Engagement, located within the Center for Engineering Diversity and Outreach. She develops and implements K-12 partnerships with area school districts to integrate engineering into the K-12 classroom and works with faculty members to plan and implement high quality educational programming in museums, public libraries, area schools and churches and other places where kids and families gather.

**Mary Beth Damm**  
Director, Office of Engineering Outreach and Engagement, University of Michigan



**ERDOGAN GULARI** is Associate Dean for Research and Graduate Education in the College of Engineering at the University of Michigan. In this role, he provides support for CoE's research enterprises, seeking to enhance the strength and vitality of engineering research and innovation by identifying new research opportunities, developing collaborations and establishing partnerships among faculty, industry, and agencies of the state and federal governments. He is the Donald L. Katz Collegiate Professor of Chemical Engineering. He previously served as the Senior Associate Dean at CoE, and his teaching and research focuses on understanding interactions and reactions that occur at interfaces.

**Erdogan Gulari**  
Associate Dean for Research and Graduate Education, College of Engineering,  
University of Michigan





**JAMES HOLLOWAY** is the Associate Dean for Undergraduate Education in the College of Engineering at the University of Michigan. He received the BS and MS degrees in nuclear engineering from the Univ. of Illinois, the Certificate of Advanced Study in Mathematics from Cambridge University, and the PhD in Engineering Physics from the University of Virginia. His research areas of interest include neutron and photon transport theory, nuclear reactor physics and control, nonlinear dynamics, inverse problems, plasma kinetic theory, mathematical analysis of engineering problems, computational physics and engineering, and primary energy production.

**James Holloway**

Associate Dean for Undergraduate Education, College of Engineering, and Arthur F. Thurnau Professor, University of Michigan



**S. JACK HU** is Associate Dean for Academic Affairs in the College of Engineering at the University of Michigan. He is the G. Lawton and Louise G. Johnson Professor of Engineering and holds faculty appointments in the Departments of Mechanical Engineering and Industrial & Operations Engineering. Prior to his current appointment, he served as Associate Dean for Research and Graduate Education, and as the Executive Director of Interdisciplinary Professional Programs. His teaching and research interests are in advanced manufacturing, including assembly and manufacturing systems. His research has been supported by the National Science Foundation, National Institutes of Standards and Technology, and industry.

**S. Jack Hu**

Associate Dean for Academic Affairs, College of Engineering, and G. Lawton and Louise G. Johnson Professor of Engineering, University of Michigan



**FARNAM JAHANIAN** received the BS degree in mathematics from the University of Texas, San Antonio; the MS and PhD degrees in CS from the University of Texas, Austin. He joined the U-M faculty in 1993, after four years as an IBM research member at T.J. Watson. He is Prof. and Chair for Computer Science and Engineering at Michigan and co-founder of Arbor Networks, Inc. His research includes the study of scalability, dependability and security of networked systems and applications. His awards include NSF CAREER Award, UM College of Engineering Teaching Excellence Award, EECS Outstanding Faculty Achievement Award, EECS Dept. Teaching Excellence Award, IBM Faculty Development Award, IEEE Service Award, and IBM Outstanding Technical Innovation Award.

**Farnam Jahanian**

Professor and Chair, Computer Science and Engineering, University of Michigan



**THOMAS ZURBUCHEN** is Associate Dean for Entrepreneurial Programs in the College of Engineering at the University of Michigan. He is a recipient of the Presidential Early Career for Scientists and Engineers (PECASE) Award, the Young Researcher Award, and the Swiss National Science Foundation Award. His research includes data analysis finding new applications for composition data, most recently as a method to trace matter through the magnetosphere; he is author or co-author of over 150 articles in refereed journals on solar and heliospheric phenomena.

**Thomas Zurbuchen**

Associate Dean for Entrepreneurial Programs, College of Engineering, University of Michigan



# Center for Energy-Efficient Ultra-Dense Computing

## Student and Post-Doctoral Representatives



**JACQUELINE BROWN** is currently an undergraduate student at Wayne State University. She is both a Computer Science and Japanese major and she plans to attend graduate school and start a software engineering company.

**Jacqueline Brown**  
Undergraduate Student, Wayne State University



**RONALD DRESLINSKI** received his BSE degree in electrical engineering, BSE degree in computer engineering, and MSE degree in computer science and engineering, all from the University of Michigan. He is currently a PhD candidate at the University of Michigan. His research focuses on architectures for mobile devices, desktops, and warehouse scale servers that reduces energy consumption using emerging low-power circuit techniques.

**Ronald G. Dreslinski**  
Ph.D. Candidate, University of Michigan



**YUNUS EMRE** received his B.Sc. in electrical and electronics engineering from Bilkent University, Ankara, Turkey, and his MS in electrical engineering from Arizona State University. Currently, he is a PhD student at Arizona State University working on design and implementation of ultra low power signal processing systems.

**Yunus Emre**  
Ph.D. Candidate, Arizona State University





**SCOTT HANSON** is a research fellow at the University of Michigan, and a founder at Ambiq Micro. Dr. Hanson has led the development of multiple ultra-low power, low voltage processors during his time at the University of Michigan. His research interests include low voltage circuit design, variation-tolerant circuit design, and energy-efficient circuit design, and he has more than 25 publications on these topics. Dr. Hanson received his Ph.D., master's, and bachelor's degrees from the University of Michigan.

**Scott Hanson**  
Research Fellow in EECS, University of Michigan



**SANGWOOK HAN** received the BS degree in electrical engineering from Seoul National University, 2002 and the MS degree, in 2008 from the University of Michigan, where he is currently working toward the PhD degree. From 2002 to 2006, he worked on developing image processing chipsets for flat panel displays in Macro Image Technology Corporation and Samsung Electronics, South Korea. He is a recipient of the Samsung Scholarship.

**Sangwook Han**  
Ph.D. Candidate, University of Michigan



**FONG MING HOOI** received the BS degree in biomedical, electrical and computer engineering from Duke University, in 2005, and the MS in biomedical engineering in 2007 from the University of Michigan. She is currently a graduate student in the biomedical engineering department of the University of Michigan. Her research interests include speed of sound signal processing and medical ultrasound imaging. She has worked with Kai Thomenius and Rayette Fischer at GE Global Research on developing novel beamforming techniques for improved depth penetration and frame rate on 2D CMUT reconfigurable arrays.

**Fong Ming Hooi**  
Ph.D. Candidate, University of Michigan



**JERRY KAO** received the BS degree in electrical engineering from Columbia University, 2000; and the MS degree in electrical engineering and computer science from the University of Michigan, 2002. From 2002 to 2005, he was with IBM involved in the design of the CELL processor and the XBOX 360 processor. Since 2005, he has been a PhD student at the Univ. of Michigan working on high-performance and low-power circuit technologies and design methodologies.

**Jerry Kao**  
Ph.D. Candidate, University of Michigan





**SANIYA LEBLANC** earned her BS in Mechanical Engineering from Georgia Tech. As a Churchill Scholar, she received a Master of Philosophy from Cambridge Univ. where her thesis was in development of a MEMS bimorph actuator. She demonstrated a commitment to educational equity by serving in Teach for America. Saniya is pursuing a PhD in Mechanical Engineering with a minor in Materials Science supported by a National Science Foundation Graduate Research Fellowship, a Sandia National Labs Fellowship, and Stanford's Diversifying Academia, Recruiting Excellence fellowship. Her current research is in characterizing novel thermoelectric materials and simulating thermoelectrics in macro-scale systems.



**Saniya LeBlanc**

Ph.D. Candidate, Stanford University

---



**GRACE METRI** received a BS in Computer Science with a minor in Business Administration and an MS in Computer Science from Wayne State University, 2006 and 2009, respectively. Currently, she is a PhD candidate at WSU. Her research includes Cloud Computing. In particular, she is interested in auto scaling computing instances in the cloud.



**Grace Metri**

Ph.D. Candidate, Wayne State University

---



**JOSEF MILER** received his BS in mechanical engineering with a concentration in chemical engineering from MIT in 2006, and his MS in mechanical engineering from Stanford University in 2008. His research focuses on characterizing and mitigating flow instabilities in two-phase microfluidic heat exchangers. He is a recipient of the Stanford Dept. of Mechanical Engineering Graduate Teaching and Research Fellowship and the MIT Griffith Award for Outstanding Experimental Project in Mechanical Engineering.



**Josef Miler**

Ph.D. Candidate, Stanford University

---



**STEVEN PELLEY** earned his BS degree from Cornell University. He is currently a PhD student at the University of Michigan working in the research areas that include warehouse scale computing and system architectures for data-centric applications.



**Steven Pelley**

Ph.D. Candidate, University of Michigan

---



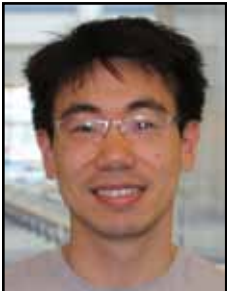
**KOREY SEWELL** received the BS degree, 2004, University of California, Riverside; the MS degree, 2007, University of Michigan; and is currently a doctoral student at Michigan with research which focuses on scalable, multithreaded computer architectures for multicore systems. His current research seeks to virtualize resources in network processor designs in an effort to globally optimize performance, power, and area. He has had the opportunity to intern for various companies such as MIPS Technologies and Intel as well as contribute extensively to the development of M5, an open-source, computer architecture simulator.

**Korey L. Sewell**  
Ph.D. Candidate, University of Michigan



**CHI-CHAO WANG** received his BS and MS degrees from the National Tsing Hua University in Taiwan, 2004 and 2006, respectively. He is currently working toward the PhD degree in electrical engineering at Arizona State University. His current research interests include predictive modeling of advanced technologies and design solutions for reliable integration.

**Chi-Chao Wang**  
Ph.D. Candidate, Arizona State University



**MARK WOH** is a PhD candidate in electrical engineering and computer science at the University of Michigan. He has a BS in electrical engineering and computer engineering from the University of Michigan. His research interests include low-power embedded systems and microarchitectural design, and architectures and algorithms for next generation wireless communication and signal processing applications.

**Mark Woh**  
Ph.D. Candidate, University of Michigan





