

Pathways to Doctoral Degrees in Computing

Committee

Charles Isbell

Co-Chair

Charles Lee Isbell, Jr. received his B.S. in CS from the Georgia Tech and his Ph.D. in CS from MIT. After four years at AT&T Labs/Research, he returned to Georgia Tech to join the faculty of the College of Computing. Charles' research interests are varied, but he is at heart a machine learning and artificial intelligence researcher. His recent work centers on building autonomous agents who engage in life-long learning when in the presence of thousands of other intelligent agents, including humans. Being human-centric, he finds himself studying the effects of AI bias. He and his work have been featured in the popular media as well as in technical collections. Charles also pursues reform in computing education focusing on broadening participation and access. He is an elected fellow of AAAI, ACM, and the American Academy of Arts and Sciences. In 2019, he assumed the role of the John P. Imlay, Jr. Dean for the College.

Maria Klawe

Co-Chair

Maria Klawe began her tenure as Harvey Mudd College's fifth president in 2006. Prior to joining HMC, she served as dean of engineering and professor of computer science at Princeton University. Klawe joined Princeton from the University of British Columbia where she served in various roles from 1988 to 2002. Prior to UBC, Klawe spent eight years with IBM Research in California and two years at the University of Toronto. Klawe has served as a member of the boards of Microsoft Corporation and Broadcom Corporation. She currently serves on the boards of AAAS, EdReports.org (chair), Math for America, Simons-Laufer Mathematics Institute (previously MSRI), and Glowforge. Her research interests include discrete mathematics, theoretical computer science and the application of AI to health data to predict disease. She is a fellow of the American Academy of Arts & Sciences, AAAS, ACM, AMS, AWM and CIPS. Dr. Klawe received her Ph.D. (1977) and B.Sc. (1973) in mathematics from the University of Alberta.

David W. Aucsmith

Member

Mr. David Aucsmith is a senior principal research scientist - Applied Physics Lab at the University of Washington. He has worked in a variety of security technology areas including secure computer systems, secure communications systems, security architecture, random number generation, cryptography and cryptographic systems, steganography and network intrusion detection. Mr. Aucsmith is a former officer in the U.S. Navy and has written extensively on cybercrime, cyber espionage and cyber warfare. He has been a representative to numerous international, government and academic organizations including the National Academy advisory board on Survivability and Lethality Analysis and the Directorate Advisory Council for the National Security Directorate of Pacific Northwest National Labs. He is co-chairman of the FBI's Information Technology Study Group, a member of the President's Task Force on National Defense and Computer Technology and a member of the Department of Defense's Global Information Grid Senior Industry Review Group. Mr. Aucsmith was also U.S. industry representative to the G8 Committee on Organized, Transnational, and Technological Crime where he participated directly in the G8 summits in Paris, Berlin and Tokyo.

M. Brian Blake

Member

M. Brian Blake is President of Georgia State University, having been appointed to the position in June 2021. In this role, he oversees the State of Georgia's largest university spanning 6 campuses and a community of over 52,000 students (with over 3200 computer science majors). Georgia State is one of the most ethnically and socioeconomically diverse R1 universities in the Nation. As an academic, Dr. Blake is a professor of computer science who has authored or co-authored over 250 scholarly papers. He is most known for his contributions to the areas of interorganizational workflow web-based software engineering. Dr. Blake has served on 5 National Academies' studies or committees and on the National Science Foundation's Advisory Committee for the Computer and Information Science and Engineering (CISE) Directorate. He was Editor-in-Chief of IEEE Internet Computing and served as Vice President for Publications for the IEEE Computer Society. Dr. Blake's scholarly activities have been funded by more than \$12 million in sponsored research awards from various government and commercial organizations. Dr. Blake is an ACM Distinguished Scientist and a Fellow of the IEEE. Dr. Blake received his Ph.D. in Software Engineering from George Mason University, Master of Science of Electrical Engineering from Mercer University and Bachelor of Electrical Engineering from Georgia Institute of Technology.

Carla E. Brodley

Member

Carla E. Brodley is the Dean of Inclusive Computing and the Founding Executive Director of the Center for Inclusive Computing (CIC) at Northeastern University. Previously, she served as Dean of Khoury College of Computer Sciences and as the sole dean appointed to the Northeastern University Presidential Cabinet, serving as a senior advisor to President Aoun. Prior to joining Northeastern, she was a professor of the Department of Computer Science and the Clinical and Translational Science Institute at Tufts Medical Center, and Chair of the Department of Computer Science at Tufts University. Dean Brodley's interdisciplinary machine learning research led to advances not only in computer science, but in many other areas including remote sensing, neuroscience, digital libraries, astrophysics, content-based image retrieval of medical images, computational biology, chemistry, evidence-based medicine, and predictive medicine. Some of Dr. Brodley's leadership positions include serving as program co-chair of International Conference on Machine Learning, co-chair of AAAI, and serving as associate editor of Machine Learning, the Journal of AI Research, and the Journal of Machine Learning Research. Dr. Brodley received her Ph.D. in computer science from the University of Massachusetts at Amherst.

Aaron Clauset

Member

Aaron Clauset is a professor in the Department of Computer Science and the BioFrontiers Institute at the University of Colorado, Boulder, and is External Faculty at the Santa Fe Institute. Clauset is an internationally recognized expert on network science, data science, and machine learning for complex systems. His research program is around two general themes: identifying fundamental principles of the organization and behavior of complex social and biological systems and developing approaches for using data and computation to illuminate those ideas. A major focus of this work has been on the "science of science," where he studies the shape, origins, and consequences of social and epistemic inequalities on scientific careers, productivity, the spread of ideas, and the composition of the scientific workforce. He was awarded the 2016 Erdos-Renyi Prize in Network Science, and since 2017, he has been a Deputy Editor responsible for the Social, Computing, and Interdisciplinary Sciences at Science Advances. He received a Ph.D. in Computer Science, with distinction, from the University of New Mexico, a B.S. in Physics, with honors, from Haverford College, and was an Omidyar Fellow at the prestigious Santa Fe Institute.

Marian R. Croak

Member

Marian Croak is the Vice President of Responsible AI and Human Centered Technologies at Google. She was formerly a VP for Site Reliability Engineering for Ads, Corporate Engineering and YouTube, at Google. Marian joined Google in late 2014 after retiring from AT&T as an SVP responsible for advanced research and innovation and designing and developing one of the world's largest wireless and broadband networks. She managed over 2,000 world class engineers and computer scientists. Marian holds over 200 patents mostly focused on IP technology. Marian has received numerous awards, including the 2013 and 2014 Edison Patent Awards, and was inducted into the Women in Technology International's Hall of Fame in 2013. She is a strong supporter of STEM initiatives, served on many boards including NACME and Catalyst, and personally mentors many individuals in STEM. She is currently a member of the Corporate Advisory Board for the University of Southern California's School of Engineering, and the Schwartz Reisman Institute Advisory Board. She was inducted into the National Inventors Hall of Fame, the National Academy of Engineering, and the American Academy of Arts and Sciences in 2022. Marian attended Princeton University and the University of Southern California where she received her Ph.D. in quantitative analysis and social psychology.

Ann Q. Gates

Member

Ann Quiroz Gates is Senior Advisor to the Provost for Strategic STEM Initiatives and the past Senior Vice Provost of Faculty Affairs at the University of Texas at El Paso, where she holds the AT&T Distinguished Professorship. She also served as the Chair of the Computer Science Department and Associate VP of Research and Sponsored Projects. Gates is the Executive Director of the Computing Alliance of Hispanic-Serving Institutions, one of NSF's National INCLUDES Alliances a nationally recognized network focused on the recruitment, retention, and advancement of Hispanics in computing. Gates serves on the NSF Committee on Equal Opportunities in Science and Engineering. She was a founding member of the NSF Advisory Committee for Cyberinfrastructure, served on the Board of Governors of IEEE-Computer Society, and was a member of the Naval Research Advisory Committee. Gates received the 2021 Alfredo G. de los Santos Jr. Distinguished Leadership Award, 2015 Great Minds in STEM's Education award, CRA's 2015 A. Nico Habermann Award, 2010 Anita Borg Institute Social Impact Award, and 2009 Richard A. Tapia Achievement Award for Scientific Scholarship, Civic Science, and Diversifying Computing. She was named to Hispanic Business magazine's 100 Influential Hispanics in 2006 for her work on the Affinity Research Group model. Dr. Gates received her Ph.D. in computer science from New Mexico State University.

Susanne Hambrusch

Member

Susanne Hambrusch is a professor of Computer Science at Purdue University. She served as the Department Head of the Computer Science department from 2002-07 and 2018-19. From 2010 to 2013, she served as the Director of the Computing and Communication Foundations (CCF) Division in the CISE Directorate at NSF. Her research interests are in analysis of algorithms, computer science education, and parallel computation. Susanne is currently a board member of CRA's Education committee where she served as co-chair until 2022. She is a past CRA Board member and she served as CRA's vice chair 2015-19. Susanne played a leading role in two CS undergraduate enrollment efforts addressing the drivers of the recent surge enrollments: the NAS study on "Assessing and Responding to the Growth of Computer Science Undergraduate Enrollments" which she co-chaired and the CRA study "Generation CS: CS Undergraduate Enrollments Surge Since 2006." Currently, Susanne is a member of the CSGrad4US Fellowship Mentoring team which developed and delivers the mentoring program for recipients of NSF's CSGrad4US Graduate PhD Fellowships. She holds a Diplom Ingenieur in Computer Science from the Technical University of Vienna, Austria, and a Ph.D. in Computer Science from Penn State. She is a Fellow of the ACM.

Dave Levin

Member

Dave Levin is an Assistant Professor of Computer Science at the University of Maryland. Prior to this, he was a Researcher at Hewlett Packard Labs. His research focuses on measuring and improving the security of the Internet, with particular focus on Internet censorship, online authentication, and mismanagement of cryptographic keys. Dr. Levin is also the chair of his department's undergraduate honors program, through which he has introduced hundreds of undergraduate students to Computer Science research. Through his research lab, Breakerspace, he has advised nearly 80 undergraduate and high school students' research, many of whom have published and continued on to graduate school. Dr. Levin's work has resulted in multiple best paper awards, an IEEE Cybersecurity Award for Innovation, and his research mentorship has earned multiple awards, including an NCWIT Undergraduate Research Mentoring Award. He also serves on the National Academies Forum on Cyber Resilience. Dr. Levin earned his Ph.D. from the University of Maryland.

Sathya Narayanan

Member

Sathya Narayanan is a Professor of Computer Science at California State University Monterey Bay (CSUMB) and leads the Institute of Computing Talent Initiative (CTI) as its founding director. His work, along with a team of educators, focuses on developing, testing and refining a cohort-based bachelor's degree model, which has resulted in significant increases in retention, transfer, graduation, and internship/job placement for first-generation, low-income, underrepresented minority students. The State of CA provided \$10M funding to establish CTI to unbundle and scale the impact of this model to serve students across the state. This work won an award for innovation in higher education from the state of CA, as well as multiple National Science Foundation grants. A paper describing the model, "Upward Mobility for Underrepresented Students: A Model for a Cohort-Based Bachelor's Degree in Computer Science" won a best paper award at SIGCSE 2018 and was nominated for the SIGCSE Top Ten Symposium Papers of All Time award. Sathya received his Master's in Computer Applications from the College of Engineering, Guindy, India, in 1994, his M.S. in Computer Science from Temple University, Philadelphia, in 1998, and his Ph.D. in Computer Science from NYU-Polytechnic University, Brooklyn, NY, in 2006.

Jennifer Rexford

Member

Jennifer Rexford is the Gordon Y.S. Wu Professor of Engineering, Professor of Computer Science, and the Provost (effective March 2023), at Princeton University. She served as the chair of the Computer Science department at Princeton from 2015 to 2022. Before joining Princeton in 2005, Jennifer worked for eight years at AT&T Labs--Research. Jennifer's research focuses on computer networking with the goal of making future networks worthy of the trust society increasingly places in them. She is co-author of the book "Web Protocols and Practice" (Addison-Wesley, 2001) and co-editor of the book "She's an Engineer? Princeton Alumnae Reflect" (Princeton University, 1993). She received the ACM Grace Murray Hopper Award for outstanding young computer professional, the ACM Athena Lecturer Award, the NCWIT Harrold and Notkin Research and Graduate Mentoring Award, the ACM SIGCOMM award for lifetime contributions, and the IEEE Internet Award. Jennifer is an ACM Fellow, an IEEE Fellow, and a member of the American Academy of Arts and Sciences, the National Academy of Engineering, and the National Academy of Sciences. Dr. Rexford received her B.S.E. degree in Electrical Engineering from Princeton University in 1991, and her Ph.D. degree in Electrical Engineering and Computer Science from the University of Michigan in 1996.

Michael Roach

Member

Michael Roach is an Associate Professor of Strategy & Entrepreneurship at the Gies College of Business at the University of Illinois at Urbana-Champaign. Prior to UIUC, he was on the faculty at Cornell University and the University of North Carolina at Chapel Hill. Michael's research investigates questions at the intersection of technology entrepreneurship and scientific labor markets, with implications for both academic scholarship and policy. The primary focus of his research examines the early career choices of STEM doctorates, especially as employees in technology startups and the impact of U.S. immigration policies on foreign-born doctorates. He also investigates the commercialization of university research discoveries through startups, with a focus on the composition of academic founding teams and the impact of university startups on regional economic development. Michael has published his research in leading management and science journals including Management Science, Research Policy, the Proceedings of the National Academy of Sciences, and Science. He was awarded the Kauffman Foundation Junior Faculty Fellowship in Entrepreneurship Research and his research has been funded by grants from the National Science Foundation. Michael received his Ph.D. in Strategy from Duke University and a Bachelor of Business Administration in Decision Sciences from Georgia State University.

Rob A. Rutenbar

Member

Rob A. Rutenbar is the Senior Vice Chancellor for Research, and Distinguished Professor of Computer Science, and Electrical & Computer Engineering, at the University of Pittsburgh. From 2010 to 2017, he was Abel Bliss Professor and Head of Computer Science at the University of Illinois at Urbana-Champaign, and before that, on the faculty in engineering at Carnegie Mellon for 25 years. His research has focused on software tools for custom chip design, methods to model the statistics of nanoscale circuits, and computer architectures for ML and AI tasks. At Illinois, he launched the successful CS+X interdisciplinary degree programs, to educate students seeking pathways into not only computing, but also the arts, humanities, social sciences, and other STEM disciplines. He received the 2001 Semiconductor Research Corporation Aristotle Award for his contributions to education, and the 2021 ACM SIGDA Pioneering Achievement Award for his work on chip design. He is an elected Fellow of the ACM, IEEE, AAAS and NAI. Dr. Rutenbar served on the prior national academies study group on "Envisioning the Data Science Discipline" in 2018, focusing on how to prepare undergraduates for a data-driven future. He received his Ph.D. in Computer Information and Control Engineering from the University of Michigan in 1984.

Kelly Shaw

Member

Kelly Shaw is a Professor of Computer Science at Williams College. Prior to moving to Williams College in 2019, she was an Assistant Professor (2004) and Associate Professor (2010) of Computer Science in the Department of Mathematics and Computer Science at the University of Richmond. Dr. Shaw's primary research interests are in computer architecture, particularly parallel architectures. She has long been involved in efforts to support and encourage participation of undergraduate students in Computer Science research and is currently co-chair of the Computing Research Association's (CRA) Committee on Education (CRA-E), including serving as a program leader for CRA's mentoring program for the NSF CSGrad4US Fellowship. Dr. Shaw is also committed to making the computing field more diverse and inclusive and has served in a variety of organizer and speaker roles for efforts to broaden participation in computing, including for the Grace Hopper Celebration of Women in Computing and for CRA's Committee on Widening Participation's workshops. Shaw is a Senior Member of the Association for Computing Machinery. She received her B.S. in Computer Science from Duke University in 1997 and her M.S. and Ph.D. in Computer Science from Stanford University in 2001 and 2005 respectively.