

AGENDA

Committee on Pathways to Doctoral Degrees in Computing

Meeting 10

June 9, 2023 @ 10am–2pm

Virtual

<https://vimeo.com/event/3468413>

MEETING OBJECTIVES

- Discuss computing education, educational psychology, and career development for undergraduate students in computer science
- Discuss impact of undergraduate research experiences on interest and participation in computer science graduate programs

Friday, June 9, 2023

OPEN SESSION

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| 10:00 am | Computer Science Career Development
→ Julia Lapan, University of Virginia, Director of Center for Engineering Career Development |
| 10:30 am | Momentum: Accelerating Equity in Computing and Technology
→ Linda Sax, UCLA School of Education and Information Studies, Professor of Higher Education, Founding Director of Momentum
→ Kathleen Lehman, UCLA School of Education and Information Studies, Assistant Academic Researcher, Associate Director of Momentum |
| 11:00 am | How Department Climate, Stereotypes, and Personal Identity Impact Participation in Doctoral Programs
→ Sapna Cheryan, University of Washington, Professor of Psychology |
| 11:30 am | Panel on Undergraduate Research Opportunities
→ Ayanna Howard, Ohio State University
→ Nancy Amato, University of Illinois
→ Blase Ur, University of Chicago
→ Ruthe Farmer, Last Mile Education Fund |
| 12:30 pm | Break |

CLOSED SESSION

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| 12:45 pm | Closed Session Begins |
| 2:00 pm | Adjourn Meeting |

SPEAKER BIOGRAPHIES

Julia Lapan has over two decades of experience in higher education, including 16 years in student career development. She has served in career advising and employer relations roles at Loyola College in Maryland and Johns Hopkins University, respectively. For the past eight years, Julia has served as Director of Career Development for University of Virginia's School of Engineering and Applied Science. In her current role, she leads a team of professionals to provide undergraduate and graduate engineering and computer science students with the knowledge and resources to design meaningful careers. She also collaborates with employers and corporate partners to facilitate connections with students and faculty. She holds a bachelor's degree in Psychology from College of the Holy Cross, a master's degree in Counselor Education from the University of Virginia, and an Ed.D. in Higher Education, also from UVA. Her research interests include equity in STEM and computing higher education, with an emphasis on feminist theory. Julia has published papers in Computer Science Education, Journal of Career Development, and NACE Journal, and collaborates with researchers across the U.S. to advance scholarship in the areas of equity in higher education, particularly for women and other students who are underrepresented in engineering and computing.

Linda Sax is a professor of higher education in the School of Education & Information Studies at UCLA. She is also the founding director of Momentum: Accelerating Equity in Computing and Technology at UCLA. For over three decades, Dr. Sax's research has focused on gender differences in college student development, with an emphasis on women in STEM fields. She has secured over \$10 million in extramural support from organizations including the National Science Foundation, the U.S. Department of Education, the Alfred P. Sloan Foundation, the Computing Research Association, AnitaB.org, the Kapor Center, and Pivotal Ventures. Dr. Sax previously served as national director (from 1997 to 2005) of the Cooperative Institutional Research Program (CIRP) at the Higher Education Research Institute (HERI), the nation's largest and longest-running multi-institutional study of college students. Dr. Sax is the author of more than 100 publications, including *The Gender Gap in College: Maximizing the Developmental Potential of Women and Men* (Jossey-Bass, 2008). She is the recipient of numerous awards, including the 1999 Early Career Award from the Association for the Study of Higher Education (ASHE), the 2005 AAUW Scholar-in-Residence Award, the 2015 UCLA Department of Education Distinguished Teaching Award, and the 2019 ASHE Mentoring Award.

Kathleen Lehman is an Assistant Academic Researcher in UCLA's School of Education & Information Studies and serves as Associate Director of Momentum: Accelerating Equity in Computing and Technology at UCLA. Dr. Lehman holds a B.A. in French from Miami University. Then, she started her career in higher education, earning a Master's in Higher Education and Student Affairs from The Ohio State University and taking on several roles in student affairs working with living-learning programs for STEM students first at The Ohio State University and later at the University of North Carolina, Charlotte. After watching women and minoritized students struggle to find support in these programs, ultimately leading many to switch to non-STEM majors, Dr. Lehman moved into research, where she would be better positioned to impact best practices and institutional change in support of groups historically excluded from STEM fields. While working with Dr. Sax to launch BRAID Research, Dr. Lehman earned her PhD from UCLA in 2017, after which she began working for Momentum full-time. Her research interests center on the experiences of women and minoritized students in STEM fields (particularly computer science), with an emphasis on creating additional pathways into STEM/computing majors and fields. Dr. Lehman serves as co-Principal Investigator for several Momentum

projects, including the NSF-funded broadening participation literature database, as well as the team's work with the Center for Inclusive Computing.

Sapna Cheryan is a professor of psychology at the University of Washington. Her research investigates the role of stereotypes and biases in causing and perpetuating racial and gender inequities. She has published numerous articles on these topics in journals such as PNAS, Psychological Science, Journal of Personality and Social Psychology, and Psychological Review. Her work has been cited widely in media outlets, including in the New York Times, NPR, and Washington Post. In 2009, Dr. Cheryan received the National Science Foundation CAREER Award. In 2012–2013, she was a visiting scholar at the Russell Sage Foundation in New York City, and in 2016–2017, was a Lenore Annenberg and Wallis Annenberg Fellow in Communication at the Center for Advanced Study in the Behavioral Sciences at Stanford University.

Ayanna Howard received her B.S. in Engineering from Brown University, her M.S.E.E. from the University of Southern California, and her Ph.D. in Electrical Engineering from the University of Southern California, Los Angeles in 1999. Her area of research is centered around the concept of humanized intelligence, the process of embedding human cognitive capability into the control path of autonomous systems. This work, which addresses issues of human–robot interaction, learning, and autonomous control, has resulted in over 180 peer-reviewed publications in a number of projects – from scientific rover navigation in glacier environments to assistive robots for the home. To date, her unique accomplishments have been highlighted through a number of awards and articles, including highlights in USA Today, Upscale, and TIME Magazine, as well as being named a MIT Technology Review top young innovator, recognized as NSBE Educator of the Year, and receiving the Georgia-Tech Outstanding Interdisciplinary Activities Award. In March 2021, Dr. Howard became the dean of the College of Engineering at The Ohio State University, and she is an adjunct faculty member in both the School of Electrical and Computer Engineering (ECE) and the School of Interactive Computing at Georgia Tech. From January 2018–February 2021, Dr. Howard was the chair for the School of Interactive Computing, with a joint appointment in the School of ECE. In 2005, she joined the School of ECE, where she was a member of the systems and controls technical interest group and the founder of the Human–Automation Systems (HumAnS) Laboratory. While at Georgia Tech, Dr. Howard also served a term as the associate director of Research for the Georgia Tech Institute for Robotics and Intelligent Machines, a term as chair of the multidisciplinary Robotics Ph.D. program at Georgia Tech, and as associate chair for Faculty Development in the School of ECE from 2016–17. From 1993–2005, Dr. Howard was at NASA's Jet Propulsion Laboratory, California Institute of Technology, where she led research efforts on various robotic projects utilizing vision, fuzzy logic, and neural network methodologies.

Nancy Amato is Head of the Computer Science Department and Abel Bliss Professor of Engineering at the University of Illinois at Urbana–Champaign. She received undergraduate degrees in Mathematical Sciences and Economics from Stanford, and M.S. and Ph.D. degrees in Computer Science from UC Berkeley and the University of Illinois, respectively. Before returning to her alma mater in 2019, she was Unocal Professor and Regents Professor at Texas A&M University and Senior Director of Engineering Honors Programs. Amato is known for algorithmic contributions to robotics task and motion planning, computational biology and geometry, and parallel and distributed computing. She has graduated 25 PhD students, with most going to faculty positions (12) or research positions in government or industry (9), and has worked with 30+ master's students, 100+ undergraduate researchers, and 10+ high school students. A majority of her students are from groups underrepresented in computing. Her group

has developed several groundbreaking approaches for biasing sampling that have enabled sampling-based motion planning, the dominant approach in use today in robotics, to be applied in areas where it was not feasible before. She and her students were the first to use these methods to study protein motion and folding. She is also known for her work in computational geometry, including the development of approximate convex decomposition (ACD) for partitioning polyhedra, and parallel algorithms, including novel approaches for parallel graph traversals. Amato is a Fellow of the Association for the Advancement of Artificial Intelligence (AAAI), the American Association for the Advancement of Science (AAAS), the Association for Computing Machinery (ACM), and of the Institute of Electrical and Electronics Engineers (IEEE).

Blase Ur is Neubauer Family Assistant Professor of Computer Science at the University of Chicago, where he researches security, privacy and human-computer interaction. As the UChicago SUPERgroup, he and his students use data-driven methods to help users make better security and privacy decisions, as well as to improve the usability of complex computer systems. He won three best paper awards (CHI 2017, USENIX Security 2016 and UbiComp 2014). His research has been covered in national media. He received the 2018 SIGCHI Outstanding Dissertation Award, a 2018 IEEE Cybersecurity Award for Practice, the 2016 John Karat Usable Privacy and Security Student Research Award, an NDSEG fellowship, and a Fulbright scholarship. He holds degrees from Carnegie Mellon University (Ph.D. and MS) and Harvard University (AB).

Ruthe Farmer has focused on tech inclusion since 2001. She is the founder and CEO of the Last Mile Education Fund and was chief evangelist at CSforALL. She served as senior policy advisor for tech inclusion at the White House Office of Science & Technology Policy working on President Obama's call to action for Computer Science for All, and previously led strategy and K-12 programs at the National Center for Women & Information Technology (NCWIT) for eight years. Farmer has launched and scaled multiple national programs designed to boost diversity and participation in technology fields. That includes the CSforALL Summit, JROTC-CS in partnership with the US Air Force, NCWIT's Aspirations in Computing, TECHNOLOchicas, the AspireIT outreach program, Lego Robotics for Girl Scouts, and more. She served as 2012 chair of CSEDWeek, was named a White House Champion of Change for Technology Inclusion in 2013, received the Anita Borg Institute Award for Social Impact in 2014, and the UK Alumni Award for Social Impact in 2015. She holds a BA from Lewis & Clark College and an MBA in Social Entrepreneurship from the University of Oxford.