

Frontiers of Statistics in Science and Engineering: 2035 and Beyond

Committee

Katherine B. Ensor

Chair

Katherine Bennett Ensor is the Noah G. Harding professor of statistics in the George R. Brown School of Engineering at Rice University where she also serves as director of the Center for Computational Finance and Economic Systems (CoFES). Currently, professor Ensor also oversees the development of the Kinder Institute Urban Data Platform, a resource for the greater Houston area. She is an expert in many areas of modern statistics, and develops innovative statistical techniques to answer important questions in science, engineering, and business with a focus on the environment, energy, and finance. Her research interests, include: methods for dependent data including time series/spatial and spatial-temporal; unique applications of Bayesian hierarchical modeling and approximate Bayesian computation; and stochastic process modeling and information integration. Professor Ensor is a fellow of the American Statistical Association, American Association for the Advancement of Science, and has been recognized for her leadership, scholarship, and mentoring. She serves as vice president of the American Statistical Association and as a member of the National Academies Committee on Applied and Theoretical Statistics. She has B.S.E. and M.S. degrees in mathematics from Arkansas State University, and a Ph.D. in statistics from Texas A&M University.

Rina F. Barber

Member

Rina Foygel Barber is the Louis Block Professor of Statistics at the University of Chicago, where she has been faculty since Jan. 2014. Rina's research focuses on developing theory and methodology for statistical problems in challenging modern settings, including distribution-free inference, high-dimensional multiple testing, and sparse and low-rank estimation, as well as nonconvex optimization with applications in medical imaging. Her research has been recognized by awards including the COPSS Presidents' Award (2020), the Peter Gavin Hall IMS Early Career Prize (2020), the IMS Medallion Lecture and Award (2022), and a MacArthur Fellowship (2023). She was elected as a Fellow of the Institute of Mathematical Statistics (IMS) in 2023. Prior to joining the faculty at the University of Chicago, she was a NSF postdoctoral fellow at Stanford University advised by Emmanuel Candès, and received a PhD in Statistics at University of Chicago in 2012 advised by Mathias Drton and Nathan Srebro, a MS in Mathematics at University of Chicago in 2009, and a Sc.B. in Mathematics from Brown University in 2005.

Amy Braverman

Member

Dr. Amy Braverman is a Senior Research Scientist at the Jet Propulsion Laboratory, California Institute of Technology. She is the Technical Group Lead for Statistical Methods and Applications in the Uncertainty Quantification and Statistical Analysis Group. Her primary expertise is in statistical methods and uncertainty quantification for remote sensing data, especially for massive data sets obtained from Earth-orbiting satellites. Dr. Braverman actively collaborates with academic colleagues to engage them and their graduate students in research at the forefront of statistical problems relevant to NASA and climate and environmental sciences. She is the recipient of the NASA Exceptional Public Service Medal, the UCLA Physical Sciences Luminary Award in Statistics, the American Statistical Association's Section on the Environment Distinguished Achievement Award, and is a Fellow of the American Statistical Association. She is a member of the Society for Industrial and Applied Mathematics, currently serving as the Uncertainty Quantification Activity Group Chair, and a member of the American Geophysical Union. Dr. Braverman holds a Ph.D. in Statistics from UCLA (1999), an M.A. in Mathematics also from UCLA (1992), and a B.A. in Economics from Swarthmore College (1982). Dr. Braverman served on the Committee on Applied and Theoretical Statistics in the early 2000's.

Lorin Crawford

Member

Lorin Crawford is a Principal Researcher at Microsoft Research. He also maintains a faculty position as a Distinguished Senior Fellow of Biostatistics at the Brown University School of Public Health. The central aim of his research program is to build machine learning algorithms and statistical tools that aid in the understanding of how genetic and gene-by-environmental interactions contribute to the architecture of complex traits and disease progression. His work has landed him a place on Forbes 30 Under 30 list and recognition as a member of The Root 100 Most Influential African Americans. He also been awarded an Alfred P. Sloan Research Fellowship, a David & Lucile Packard Foundation Fellowship for Science and Engineering, and a COPSS Emerging Leader Award. Lorin is an Associate Editor at the journal Biostatistics, an Associate Editor of Reproducibility at the Journal of the American Statistical Association (JASA), and a Regional Committee member of the International Biometric Society Eastern North American Region (IBS ENAR).

Prior to joining both MSR and Brown, Lorin received his PhD from the Department of Statistical Science at Duke University where his dissertation was awarded a Leonard J. Savage Award in Applied Methodology. He received his Bachelor of Science degree in Mathematics from Clark Atlanta University.

David B. Dunson

Member

David Dunson is currently the Arts and Sciences Distinguished Professor of Statistical Science at Mathematics at Duke University. He is an internationally leading expert in Bayesian statistics and methods for modeling and analysis of complex and high-dimensional data, with an emphasis on applied-driven methodology with theoretical support. He is heavily engaged in collaborations in biodiversity and ecology research, environmental health and neurosciences. His work has been very widely cited with an H-index of 99 and he has won numerous prestigious awards, including the COPSS President's Award, the Mortimer Spiegelman Award, a gold medal from the Environmental Protection Agency, the Mitchell Prize (3 times) for the best Bayesian applications publication, and the COPSS George W Snedecor Award. He has an exceptional track record as a mentor with over 100 PhD students and over 100 postdoctoral associates.

Omar Ghattas

Member

Dr. Omar Ghattas is a Professor of Geological Sciences and Mechanical Engineering at The University of Texas at Austin. He is also the Director of the Center for Computational Geosciences and Optimization in the Oden Institute for Computational Engineering and Sciences and holds the John A. and Katherine G. Jackson Chair in Computational Geosciences. He is a member of the faculty in the Computational Science, Engineering, and Mathematics (CSEM) interdisciplinary PhD program in the Oden Institute, and holds courtesy appointments in Computer Science and Biomedical Engineering. Before moving to UT

Austin in 2005, he spent 16 years on the faculty of Carnegie Mellon University. He holds BSE (civil and environmental engineering) and MS and PhD (computational mechanics) degrees from Duke University. With collaborators, he received the ACM Gordon Bell Prize in 2003 (for Special Achievement) and again in 2015 (for Scalability), and was a finalist for the 2008, 2010, and 2012 Bell Prizes. He received the 2019 SIAM Computational Science & Engineering Best Paper Prize, and the 2019 SIAM Geosciences Career Prize. He is a Fellow of the Society for Industrial and Applied Mathematics (SIAM).

Frauke Kreuter

Member

Frauke Kreuter is director of the Joint Program in Survey Methodology (JPSM) at the University of Maryland, College Park, professor of statistics and methodology at the University of Mannheim, and head of the Statistical Methods Research Department at the Institute for Employment Research (IAB) in Nürnberg, Germany. Before joining the University of Maryland, she was a postdoc at the UCLA Statistics Department. Dr. Kreuter's research focuses on sampling and measurement errors in complex surveys. In her work at JPSM, she maintains strong ties to the federal statistical system, and serves in advisor roles for the National Center for Educational Statistics and the Bureau of Labor Statistics. She has served as a member on the Panel on Improving Federal Statistics for Policy and Social Science Research Using Multiple Data Sources and State-of-the-Art Estimation Methods at the National Academies. Dr. Kreuter is the author or co-author of several books, including *Data Analysis Using Stata* and *Practical Tools for Designing and Weighting Survey Samples*. She has an M.A. degree in sociology from the University of Mannheim, Germany, and a Ph.D. in survey methodology from the University of Konstanz.

Xihong Lin

Member

Xihong Lin, PhD is Professor and former Chair of Biostatistics, Coordinating Director of the Program in Quantitative Genomics at the Harvard T. H. Chan School of Public Health, and Professor of Statistics of Harvard University. Dr. Lin's research interests lie in development and application of scalable statistical and machine learning methods for analysis of massive and complex genomics, epidemiological, biobank and health data. Her research has been supported by the Outstanding Investigator Award (OIA) (R35) (2015-2029) from the National Cancer Institute (NCI). Dr. Lin is an elected member of the National Academy of Sciences and the National Academy of Medicine. She received the 2002 Mortimer Spiegelman Award from the American Public Health Association, the 2006 Presidents' Award and the 2017 FN David Award of the Committee of Presidents of Statistical Societies (COPSS), the 2022 National Institute of Statistical Sciences Jerome Sacks Award for Outstanding Cross-Disciplinary Research, and the 2022 Marvin Zelen Leadership in Statistical Science Award. She is an elected fellow of American Statistical Association, Institute of Mathematical Statistics, and International Statistical Institute. Dr. Lin is the former Chair of the COPSS (2010-2012) and a former member of the Committee of Applied and Theoretical Statistics of the National Academy of Sciences. She is a member of the NASEM study on International Talent Programs in the Changing Global Environment. She is the former Coordinating Editor of *Biometrics* and the founding co-editor of *Statistics in Biosciences*.

Brian Reich

Member

Dr. Brian J Reich is the Gertrude M. Cox Distinguished Professor of Statistics at North Carolina State University. His research interests include Bayesian methods, spatial statistics, extreme value analysis and machine learning applied to ecology, epidemiology, meteorology and climate. He has published over two hundred papers in leading statistics and subject-matter journals (including Nature and the Proceedings of the National Academy of Sciences) and the textbook entitled Bayesian Statistical Methods. He has also supervised over fifty doctoral students and postdoctoral fellows, served as Editor-in-Chief of the Journal of Agricultural, Biological and Environmental Statistics and led National Science Foundation training grants to support undergraduate through postdoctoral research. For this body of work, he was given the American Statistical Association Outstanding Statistical Application Award and the American Statistical Association's Section of Statistics and the Environment Early Investigator Award and named a Fellow of the American Statistical Association. Prior to joining the faculty at North Carolina State University, he completed his PhD in Biostatistics from the University of Minnesota and a Post-doctoral Fellowship at North Carolina State University.

Steve Sain

Member

Steve Sain is a Senior Principal Data Scientist and Senior Director at Jupiter Intelligence, where he heads the data sciences team and is responsible for operational aspects of the broader Jupiter science organization. Jupiter provides data and analytics services to better predict and manage risks from weather and sea level rise, storm intensification and changing temperatures caused by medium- to long-term climate change. Steve is an experienced data science leader and applied statistician who has long worked at the intersection of climate research, applied statistics, and machine learning, including a focus on spatial methods for large datasets, extremes, uncertainty quantification, and climate risk analytics. From 2006 to 2014, he was the head of the Geophysical Statistics Project and a scientist in the Institute for Mathematics Applied to Geosciences at the National Center for Atmospheric Research in Boulder, CO. Steve is a Fellow of the American Statistical Association (ASA) and is a past recipient of the Distinguished Achievement Award from the American Statistical Association's Section on Statistics and the Environment. Steve also serves on the steering committee for the ASA's newly formed Caucus of Industry Representatives, is a past member of the ASA's committee on climate change policy, is an affiliate faculty in the University of Colorado's Department of Applied Mathematics and is a member of the advisory board for the Institute for Mathematical and Statistical Innovation (IMSI) at the University of Chicago.

Aarti Singh

Member

Aarti Singh is Professor of Machine Learning at Carnegie Mellon University and Director of NSF AI Institute of Societal Decision Making. Her research focuses on interactive algorithms that can guide learning and decision-making, with applications to enabling social and scientific discoveries. Her work is recognized by an NSF Career Award, a US Air Force Young Investigator Award, A. Nico Habermann Faculty Chair Award, Harold A. Peterson Best Dissertation Award, and multiple paper awards. She has served on the National Academy of Sciences (NAS) committee on Applied and Theoretical Statistics, NAS Board on Mathematical Sciences and Analytics, World Economic Forum expert network, lead expert on multiple NAS and ONR/NIST study committees, General and Program Chair for the International Conference on Machine Learning (ICML) 2025 & 2020, Program Chair for Artificial Intelligence and Statistics (AISTATS) 2017 conference, and Action Editor for IEEE Transactions on Information Theory and Journal of Machine Learning Research. She received her Ph.D. degree in Electrical and Computer Engineering from the University of Wisconsin-Madison in 2008 and was a Postdoctoral Research Associate at the Program in Applied and Computational Mathematics at Princeton University from 2008-2009, before joining CMU.

Daniela M. Witten

Member

Daniela Witten is a professor of Statistics and Biostatistics at University of Washington, and the Dorothy Gilford Endowed Chair in Mathematical Statistics. She develops statistical machine learning methods for high-dimensional data, with a focus on unsupervised learning. She has received a number of awards for her research in statistical machine learning: most notably the Spiegelman Award from the American Public Health Association for a (bio)statistician under age 40, and the Presidents' Award from the Committee of Presidents of Statistical Societies for a statistician under age 41; she is also a fellow of the American Statistical Association and the Institute of Mathematical Statistics. Daniela is a co-author of the textbook "Introduction to Statistical Learning", and since 2023 serves as Joint Editor of Journal of the Royal Statistical Society, Series B. She received a BS in Mathematics and Biological Sciences in 2005, and MS and PhD degrees in Statistics in 2006 and 2010, from Stanford University.

Tian Zheng

Member

Tian Zheng is currently Professor and Department Chair of Statistics at Columbia University. In her research, she develops novel methods for exploring and understanding patterns in complex data from different application domains such as biology, psychology, climate modeling, etc. Her research has been recognized by the 2008 Outstanding Statistical Application Award from the American Statistical Association (ASA), the Mitchell Prize from ISBA, and a Google research award. She became a Fellow of the American Statistical Association in 2014, a Fellow of the Institute of Mathematical Statistics in 2022, and a Fellow of the American Association for the Advancement of Science in 2024.

Brittany Segundo

Staff Officer

Brittany Segundo is the Director of the Committee on Applied and Theoretical Statistics and a program officer with the Board on Mathematical Sciences and Analytics (BMSA) and the Board on Infrastructure and the Constructed Environment (BICE) at the National Academies of Sciences, Engineering, and Medicine. She was a Christine Mirzayan Science and Technology Policy Fellow working with BMSA in 2020 and then joined the National Academies full-time as a Program Officer in 2022. Brittany's graduate research explored mathematical models that support wildfire response and mitigation. Prior to attending graduate school at Texas A&M University, she worked as a management consultant in the biomedical device industry. She received a B.S. in Industrial and Systems Engineering from North Carolina State University.

Lance A. Waller

Vice Chair

Lance A. Waller, Ph.D. is a Professor and former Chair in the Department of Biostatistics and Bioinformatics, Rollins School of Public Health, Emory University. His research involves the development of statistical methods for geographic data including applications in environmental justice, epidemiology, disease surveillance, and disease ecology. His research appears in biostatistical, statistical, environmental health, and ecology journals and in the textbook *Applied Spatial Statistics for Public Health Data* (2004, Wiley). Dr. Waller earned his bachelor's degree in Mathematical Sciences from New Mexico State University in 1986 and his doctorate in Operations Research from Cornell University in 1991. Dr. Waller currently serves a co-chair of National Academies' Committee on Applied and Theoretical Statistics, a former member of the Board on Mathematical Sciences and Analytics, and a participant in multiple NASEM workshops and consensus studies. Dr. Waller also serves as a member of the U.S. Census Scientific Advisory Committee. Dr. Waller is a Fellow of the American Statistical Association and a Fellow of the Royal Geographical Society.