Ruobin Gong

Address	110 Frelinghuysen Road, Hill Center 404 Piscataway, New Jersey, 08854 USA
Email	ruobin.gong@rutgers.edu
Phone	+1 (848) 445-7612
Webpage	ruobingong.github.io

Current position

2018- Assistant Professor, Department of Statistics, Rutgers University

2022- Assistant Professor (status-only), Department of Statistical Sciences, University of Toronto

Education

2018 Ph.D., Statistics, Harvard University
Advisors: *Xiao-Li Meng, Arthur P. Dempster*
Dissertation: *Low-resolution statistical modeling with belief functions*

2013 A.M., Statistics, Harvard University

2011 Hon. B.Sc., Cognitive Psychology (specialist) & Statistics (major), University of Toronto

Peer-reviewed Publications

Journal Articles

Craiu, R. V., Gong, R., and Meng, X.-L. (2023). Six statistical senses. *Annual Review of Statistics and Its Application*, 10(1). doi:10.1146/annurev-statistics-040220-015348

Gong, R. (2022b). Exact inference with approximate computation for differentially private data via perturbations. *Journal of Privacy and Confidentiality*, 12(2). doi:10.29012/jpc.797

Gong, R. (2022e). Transparent privacy is principled privacy. *Harvard Data Science Review (Special Issue 2)*. doi:10.1162/99608f92.b5d3faaa

Gong, R., Kadane, J. B., Schervish, M. J., Seidenfeld, T., and Stern, R. (2022b). Learning and total evidence with imprecise probabilities. *International Journal of Approximate Reasoning*, 151:21–32. doi:10.1016/j.ijar.2022.08.016

- This is an extended version of Gong, R., Kadane, J. B., Schervish, M. J., and Seidenfeld, T. (2021a). Total evidence and learning with imprecise probabilities. In *Proceedings of the Twelfth International Symposium on Imprecise Probability: Theories and Applications (ISIPTA'21)*, volume 147 of *Proceedings of Machine Learning Research*, pages 161–168

Gong, R. and Meng, X.-L. (2021). Judicious judgment meets unsettling updating: dilation, sure loss, and Simpson's paradox (with discussion). *Statistical Science*, 36(2):169–190

- Rejoinder, same issue, 210-214.

Jacob, P. E., Gong, R., Edlefsen, P. T., and Dempster, A. P. (2021). A Gibbs sampler for a class of random convex polytopes (with discussion). *Journal of the American Statistical Association*, 116(535):1181–1192

- Rejoinder, same issue, 1211-1214.

Gong, R., Kadane, J. B., Schervish, M. J., Seidenfeld, T., and Stern, R. B. (2021b). Deceptive credences. *Ergo*, 7. doi:10.3998/ergo.1125

Gong, R. and Xie, M. (2019). Discussion on prior-based Bayesian information criterion (PBIC) by MJ Bayarri, James O. Berger, Woncheol Jang, Surajit Ray, Luis R. Pericchi, and Ingmar Visser. *Statistical Theory and Related Fields*, 3(1):35–36

Conference Proceedings

Ju, N., Awan, J. A., Gong, R., and Rao, V. A. (2022). Data augmentation MCMC for Bayesian inference from privatized data. *Accepted at the Thirty-sixth Annual Conference on Neural Information Processing Systems (NeurIPS 2022)*

Gao, J., Gong, R., and Yu, F.-Y. (2022). Subspace differential privacy. *Proceedings of the AAAI Conference on Artificial Intelligence*, 36(4):3986–3995

Gong, R. and Meng, X.-L. (2020). Congenial differential privacy under mandated disclosure. In *Proceedings of the 2020 ACM-IMS on Foundations of Data Science Conference (FODS'20)*, pages 59–70

Gong, R. (2019). Simultaneous inference under the vacuous orientation assumption. In *Proceedings of the Eleventh International Symposium on Imprecise Probabilities: Theories and Applications (ISIPTA'19)*, volume 103 of *Proceedings of Machine Learning Research*, pages 225–234

Book Chapters

Gong, R., Kadane, J. B., Schervish, M. J., Seidenfeld, T., and Stern, R. B. (2022c). The value provided by a scientific explanation. In Augustin, T., Cozman, F. G., and Wheeler, G., editors, *Reflections on the Foundations of Probability and Statistics: Essays in Honor of Teddy Seidenfeld*. Springer

Preprints

Dharangutte, P., Gao, J., Gong, R., and Yu, F.-Y. (2022). Integer subspace differential privacy. Technical report. Submitted

Di Bello, M. and Gong, R. (2022). Informational richness and its impact on algorithmic fairness. Submitted

Caprio, M. and Gong, R. (2021). Dynamic precise and imprecise probability kinematics. *Technical report, arXiv:2110.04382*

Chen, Y., Gong, R., and Xie, M. (2020). Geometric conditions for the discrepant posterior phenomenon and connections to Simpson's paradox. *Technical report, arXiv:2001.08336*

Schervish, M. J., Seidenfeld, T., Gong, R., Stern, R. B., and Kadane, J. B. (2020). When no price is right. Submitted

Other Publications

Gong, R. (2022c). In defense of an explicandum. *IMS Bulletin*, 51(7)

Gong, R., Groshen, E. L., and Vadhan, S. (2022a). Harnessing the Known Unknowns: Differential Privacy and the 2020 Census. *Harvard Data Science Review*, (Special Issue 2). doi:10.1162/99608f92.cb06b469

- HDSR Podcast, Episode 18 (Podbean/Apple/Spotify)

Gong, R. (2022a). David Kennard (director). John Cleese's wine for the confused. written by David Kennard and John Cleese. produced by Victoria Simpson. distributed by InCA Productions, 2004, 42 min. *Journal of Wine Economics*. doi:10.1017/jwe.2022.35

Gong, R. (2022d). Ruobin Gong interviews Claire McKay Bowen. *IMS Bulletin*, 51(2)

Gong, R. (2021b). Going remote and back again: Lessons learned. *IMS Bulletin*, 50(6)

Gong, R. (2021a). Back on the road. *IMS Bulletin*, 50(3)

Gong, R. (2020). Now, your information is beyond Enigmatic. *IMS Bulletin*, 49(2)

Gong, R. (2018). There's fun in thinking just one step more. *IMS Bulletin*, 47(8)

Invited Talks

2022 JSM 2022: *BFF: Innovation in Statistical Foundations*, Washington, DC
Workshop on Differential Privacy and Statistical Data Analysis, Fields Institute, Toronto, Canada [video]
SIPTA Seminar: *Imprecise probabilities in modern data science: challenges and opportunities* [video]
IMS Annual Meeting: *New directions in theory and practice of formally private synthetic data*, London, UK
Seventh Bayesian, Fiducial and Frequentist Conference: *Computation for BFF*, Toronto, Canada
Conference on Advances in Bayesian and Frequentist Statistics: *Celebration of the 80th Birthday of Professor William E. Strawderman* (discussant), Rutgers University

2021 CFE-CMStatistics 2021: *BFF: Topics in foundations of inference*, London, UK
Department of Mathematics and Statistics, University of Massachusetts Amherst
Center for Statistical Science, Tsinghua University, Beijing, China
Department of Statistics, Purdue University
PSA 2020/2021: *Current Debates on Statistical Modeling and Inference*, Baltimore, MD
Epistemic Utility for Imprecise Probability Inaugural Conference, University of Bristol, UK
Applied Statistics Workshop, Department of Government & IQSS, Harvard University
JSM: *Recent Developments in Differential Privacy* (virtual event)
ISIPTA 2021, Granada, Spain
IMS/HBS virtual workshop: *Crossing Disciplines: Studying Fairness, Bias, and Inequality in Management and Decision Sciences Research*
Boston Area Differential Privacy Seminar
BFF6.5: *Workshop on Bayesian, Fiducial, and Frequentist Statistical Inference* (virtual event)

2020 l'Ecole des sciences criminelles, Université de Lausanne
Department of Statistics, The University of Chicago
HMI Data, AI and Society Seminar, Australian National University
Department of Statistics and Actuarial Science, University of Waterloo

FODS2020: Plenary session on *Fairness, Privacy, Interpretability* (virtual event)
Statistical Data Privacy Group, Department of Statistics, Penn State University
OpenDP Community Meeting, Statistics Breakout Session Lightning Presentation (virtual event)
Signal and Information Processing Seminar Series, Rutgers University
United States Census Bureau, Suitland, MD

2019 Department of Statistical Science, University of Toronto
HDSR Symposium: *Differential Privacy for 2020 U.S. Census* (panel), Harvard University
Department of Statistics, Columbia University
JSM: *Towards Perfect and Scalable Distributional Computation*, Denver, CO
ISIPTA 2019, Ghent, Belgium
SDSS: *Recent Developments in Lower Rank Learning for Complex Data*, Seattle, WA
New England Statistics Symposium, Hartford, CT
Sixth Bayesian, Fiducial and Frequentist Workshop (panel), SAMSI, Durham, NC
Department of Mathematics and Statistics, Washington University in St. Louis
School of Statistics, University of Minnesota
Department of Statistics, University of California, Davis

2018 Department of Statistics, George Washington University
Foundations of Probability seminar, Rutgers University
Department of Mathematical Sciences, New Jersey Institute of Technology
20^{th} IMS New Researchers Conference, Simon Fraser University
ICSA Applied Statistics Symposium, New Brunswick, NJ
Fifth Bayesian, Fiducial and Frequentist Conference, University of Michigan

2017 Department of Economics, Harvard University
JSM invited poster, Baltimore, MD
61^{st} World Statistics Congress, Marrakech, Morocco
Fourth Bayesian, Fiducial and Frequentist Workshop (panel), Harvard University
The virtue of the "Not Sure". Harvard Horizons Symposium [video/profile]

Grants

2022-25 Alfred P. Sloan Foundation, G-2022-17194: *Conducting Applied Research with Privacy-Protected Data: Exploring Methods and Approaches*. PI: V. J. Hotz, **Co-PI**: R. Gong, I. Schmutte. $ 368,892

2022-23 Alfred P. Sloan Foundation, G-2022-19314: *Workshop on the Analysis of Census Noisy Measurement Files and Differential Privacy*, **PI**: R. Gong, Co-PI: W. Su, L. Zhang. $ 49,979

2019-22 National Science Foundation, DMS-1916002 *Privacy-Preserving Bayesian Inference: Foundations and Extensions*, **PI**: R. Gong. $ 100,000

Editorial Service

Journal

2018– Associate Editor, Harvard Data Science Review
Co-Editor, Special Issue on *Differential Privacy and the Decennial Census*

2021– Contributing Column Editor, *Sound the Gong*, IMS Bulletin

2022– Associate Editor, Statistics and Public Policy

2023– Associate Editor, Journal of the American Statistical Association: Reviews

Conference

2023 Organizer, NBER Data Privacy Protection and the Conduct of Applied Research: Methods, Approaches and their Consequences, Cambridge, MA [website]
Program committee, ISIPTA 2023, Oviedo, Spain
Session organizer and chair, JSM 2023 Invited Panel, Statistical Privacy in the 21st Century: Census and Consensus, Toronto, Canada

2022 Organizer, Workshop on the Analysis of Census Noisy Measurement Files and Differential Privacy, New Brunswick, NJ [website]
Program committee, Seventh Bayes, Fiducial and Frequentist Statistics Conference (BFF7), Toronto, Canada

2021 Program committee, AIES 2021, virtual conference
Program committee and poster prize committee, ISIPTA 2021, Granada, Spain
Program committee, BELIEF 2021, Shanghai, China

2019 Program committee, ISIPTA 2019, Ghent, Belgium
Organizing committee co-chair, Sixth Bayesian, Fiducial and Frequentist Workshop (BFF6), SAMSI, Durham, NC

2018 Session organizer, ICSA Applied Statistics Symposium: Statistical Inference for Discrete and Categorial Data, New Brunswick, NJ

2017 Organizing committee, Fourth Bayesian, Fiducial and Frequentist Workshop (BFF4), Harvard University

Professional Service

2022 Moderator, Rutgers Research Ideation Forum on Machine Learning/Artificial Intelligence
2022 Faculty Mentor, Rutgers Douglass WiSE Project SUPER Summer Research Program
2022 Faculty Mentor, Rutgers DIMACS Research Experiences for Undergraduates Program
2022 Faculty Mentor, Rutgers Aresty Summer Science Research Program
2021-22 Committee, Nominations, Institute of Mathematical Statistics
2020-21 Small Group Lead, Experts Group on Data Disclosure Avoidance, NASEM Committee on National Statistics
2020-22 Faculty Panelist, Rutgers DIMACS Research Experiences for Undergraduates Program

Peer Review

Journal Bayesian Analysis ('20) · Electronic Journal of Statistics ('18) · International Journal of Approximate Reasoning ('19,'21,'22) · Journal of the American Statistical Association ('18,'20,'21,'22) · Journal of Computational and Graphical Statistics ('20) · Journal of the Royal Statistical Society, Series B ('21) · Proceedings of the National Academy of Sciences ('21) · Revstat ('19) · Statistical Science ('18,'19) · Statistica Sinica ('22) · Synthese ('21) · TEST ('20,'21)

Conference AIES 2021 · ISIPTA 2021 · BELIEF 2021 · ISIPTA 2019

Advising

Doctoral Students
- Kevin Eng (expected 2027)
- Donghyun Lee (expected 2027)

Doctoral Thesis Committee
- Yichen He (expected 2022, Advisor: Harry Crane)

Doctoral Qualifying Exam Committee
- Jiazhao Zhang (expected 2023, Advisor: Ying Hung)
- Yajie Duan (expected 2024, Advisor: Javier Cabrera)

Master's Students
- George Stefan (University of Toronto, 2022, Co-Advisor: Radu Craiu)

Master's Thesis Committee
- Adarsh Vijayaraghavan (Rutgers Business School, 2019, Advisor: Glenn Shafer)

Undergraduate Students
- Yuexin Zhang (class of 2023)
- Leah Ghazali (University of Richmond, class of 2024)
- Nami Jain (class of 2025)

Teaching

2022	Introduction to Bayesian Data Analysis (01:960:365)
2021, 22	Bayesian Analysis (16:960:568)
2020	Byrne Seminar: *Statistical Privacy in the Digital World - from Netflix to the Census*
2019, 20	Applied Time Series Analysis (16:960:565)
2018, 19, 20	Regression and Time Series (16:954:596)

Previous appointments held

2016-17	Pedagogy Fellow, Derek Bok Center for Teaching and Learning, Harvard University
2015	Research Fellow, Data Science for Social Good Fellowship, University of Chicago
2012-13	Intern, Computational Radiology Lab, Boston Children's Hospital

Awards

2018	Arthur P. Dempster Award
2017	Harvard Horizons Scholar
2016-17	Harvard GSAS Merit Fellowship
2016	David K. Pickard Teaching Fellow Award
2015-16	Derek Bok Center Certificate of Distinction in Teaching
2011	Forrin Prize in Psychology

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