ANINDYA BHADRA

CONTACT INFORMATION	Department of Statistics Purdue University 250 N. University St. West Lafayette, IN 47907-2066.	*Phone:* (765) 496-9551 *Fax:* (765) 494-0558 *E-mail:* bhadra@purdue.edu *Web:* http://www.stat.purdue.edu/~bhadra

RESEARCH INTERESTS

Bayesian methods for high-dimensional and complex data; computational statistics; applications of statistics in the life sciences (genomics, infectious disease epidemiology and nutrition).

ACADEMIC EMPLOYMENT

- Professor of Statistics, Purdue University, August 2023 – present.
- Associate Professor of Statistics, Purdue University, August 2018 – August 2023.
- Assistant Professor of Statistics, Purdue University, August 2012 – August 2018.

EDUCATION & TRAINING

- Postdoctoral Fellow, Statistics, Texas A&M University, September 2010 – July 2012.
- Ph.D., Statistics, University of Michigan, Ann Arbor, August 2010.
- M. A., Statistics, University of Michigan, Ann Arbor, April 2007.
- Bachelor of Technology (Honors), Electronics and Electrical Communications Engineering, Indian Institute of Technology, Kharagpur, May 2004.

AWARDS AND HONORS

- Graduate Student Mentoring Award, Purdue University, 2024.
- University Faculty Scholar, Purdue University, 2023.
- Young Statistical Scientist Award, International Indian Statistical Association (IISA), 2021.
- Research Fellow, Statistical and Applied Mathematical Sciences Institute (SAMSI), Fall 2019.
- Excellence in Research/Seed for Success Award, Purdue University, 2017.
- Outstanding Assistant Professor Undergraduate Teaching Award, Purdue University Department of Statistics, 2016.
- Elected Member, International Statistical Institute, 2015.
- New Researcher Fellow, Statistical and Applied Mathematical Sciences Institute (SAMSI), Fall 2014.

EDITORIAL ACTIVITIES

- Associate Editor, Journal of the American Statistical Association, Theory & Methods, 2020 – 2023.
- Associate Editor, Journal of Computational and Graphical Statistics, 2021 – present.
- Associate Editor, Statistical Analysis and Data Mining, 2021 – present.
- Associate Editor, Sankhya A, 2018 – present.

EXTERNAL
GRANTS

- "SES-2448704: Likelihood-based Inference for Exponential Family Graphical Models," National Science Foundation (NSF), 2025–2028. Role: Co-PI.

- "DMS-2014371: Developments in Gaussian processes and beyond: applications in geostatistics and deep learning," National Science Foundation (NSF), 2020–2023. Role: PI.

- "DMS-1613063: Bayesian global-local shrinkage in high dimensions," National Science Foundation (NSF), 2016–2019. Role: PI.

- "R01CA215834: Development of a total nutrient index," National Cancer Institute (NCI), 2017–2021. Role: Co-I.

- "R21CA224764: Temporal dietary and physical activity patterns related to health outcomes," National Cancer Institute (NCI), 2018–2020. Role: Co-I.

PUBLICATIONS

Selected Preprints:
∗ equal contribution
^{g} graduate student collaborator
^{p} postdoctoral collaborator

1. Chen, Y.^{g}, **Bhadra, A.** and Chakraborty, A. (2025+). Likelihood Based Inference in Fully and Partially Observed Exponential Family Graphical Models with Intractable Normalizing Constants. *(submitted).* [arXiv:2404.17763]

2. Sagar, K.^{g}, Ni, Y., Baladandayuthapani, V. and **Bhadra, A.** (2025+). Bayesian Covariate-Dependent Quantile Directed Acyclic Graphical Models for Individualized Inference. *(submitted).* [arXiv:2210.08096] **(winner of a IISA 2022 Best Poster Award for K. Sagar)**

Methodological Publications:

1. Fang, X.^{p} and **Bhadra, A.** (2025). Posterior Concentration for Gaussian Process Priors under Rescaled and Hierarchical Matérn and Confluent Hypergeometric Covariance Functions. *Electronic Journal of Statistics* **19**, 3333–3369.

2. Loría, J.^{g} and **Bhadra, A.** (2025). Deep Kernel Posterior Learning under Infinite Variance Prior Weights. *The 13th International Conference on Learning Representations (ICLR 2025).*

3. Yarger, D. and **Bhadra, A.** (2025). Multivariate Confluent Hypergeometric Covariance Functions with Simultaneous Flexibility over Smoothness and Tail Decay. *Mathematical Geosciences* **57**, 977–1001.

4. Yao, T.-H., Ni, Y., **Bhadra, A.**, Kang, J. and Baladandayuthapani, V. (2025). Robust Bayesian Graphical Regression Models for Assessing Tumor Heterogeneity in Proteomic Networks. *Biometrics* **81**, ujae160.

5. **Bhadra, A.**, Sagar, K.^{g}, Rowe, D., Banerjee, S. and Datta, J. (2024). Evidence Estimation in Gaussian Graphical Models Using a Telescoping Block Decomposition of the Precision Matrix. *Journal of Machine Learning Research* **25**(295), 1–43.

6. Chakraborty, M., Baladandayuthapani, V., **Bhadra, A.** and Ha, M. J. (2024). Bayesian Robust Learning in Chain Graph Models for Integrative Pharmacogenomics. *Annals of Applied Statistics.* **18**, 3274–3296.

7. **Bhadra, A.**, Wei, R., Keogh, R., Kipnis, V., Midthune, D., Buckman, D. W., Su, Y., Roy Chowdhury, A. and Carroll, R. J. (2024). Measurement error models with zero inflation and multiple sources of zeros, with applications to hard zeros. *Lifetime Data Analysis*, **30**, 600–623.

8. Loría, J.^{g} and **Bhadra, A.** (2024). Posterior Inference on Shallow Infinitely Wide Bayesian Neural Networks under Weights with Unbounded Variance. *Proceedings of the 40th Conference on Uncertainty in Artificial Intelligence (UAI 2024)*, **PMLR 244**, 2331–2349.

9. Sagar, K.^{g}, Datta, J., Banerjee, S. and **Bhadra, A.** (2024). Maximum a posteriori estimation in graphical models using local linear approximation. *Stat* **13**, e682.

10. **Bhadra, A.**, Datta, J., Polson, N. G., Sokolov, V. and Xu, J. (2024). Merging Two Cultures: Deep and Statistical Learning. *Wiley Interdisciplinary Reviews: Computational Statistics* **16**, e1647.

11. Loría, J.^{g} and **Bhadra, A.** (2024). SURE-tuned Bridge Regression. *Statistics and Computing* **34**, 30.

12. Sagar, K.^{g}, Banerjee, S., Datta, J. and **Bhadra, A.** (2024). Precision matrix estimation under the horseshoe-like prior–penalty dual. *Electronic Journal of Statistics* **18**, 1–46. **(Winner of a 2022 ENAR Distinguished Student Paper Award for K. Sagar.)**

13. Ma, P. and **Bhadra, A.** (2023). Beyond Matérn: On A Class of Interpretable Confluent Hypergeometric Covariance Functions. *Journal of the American Statistical Association* **118**, 2045–2058.

14. Sagar, K.^{g} and **Bhadra, A.** (2022). A Laplace Mixture Representation of the Horseshoe and Some Implications. *IEEE Signal Processing Letters* **29**, 2547–2551.

15. **Bhadra, A.** (2022). Invited discussion of "Bayesian Graphical Models for Modern Biological Applications," by Ni, Baladandayuthapani, Vannucci and Stingo. *Statistical Methods & Applications* **31**, 235–239.

16. Li, Y.^{g}, Datta, J., Craig, B. A. and **Bhadra, A.** (2021). Joint mean–covariance estimation via the horseshoe. *Journal of Multivariate Analysis* **183**, 104716.

17. **Bhadra, A.**, Datta, J., Polson, N. G. and Willard, B. (2021). The horseshoe-like regularization for feature subset selection. *Sankhya B (special issue in memory of Jayanta K. Ghosh)* **83**, 185–214.

18. **Bhadra, A.**, Datta, J., Polson, N. G. and Willard, B. (2020). Global-local mixtures: a unifying framework. *Sankhya A (special issue in memory of Jayanta K. Ghosh)* **82**, 426–447.

19. **Bhadra, A.**, Datta, J., Li, Y.^{g} and Polson, N. G. (2020). Horseshoe regularization for machine learning in complex and deep models **(with discussion)**. *International Statistical Review* **88**, 302–320.

20. **Bhadra, A.**, Datta, J., Polson, N. G. and Willard, B. (2019). Lasso meets horseshoe: a survey. *Statistical Science* **34**, 405–427.

21. **Bhadra, A.**, Datta, J., Li, Y.^{g}, Polson, N. G. and Willard, B. (2019). Prediction risk for the horseshoe regression. *Journal of Machine Learning Research* **20**(78), 1–39.

22. Li, Y.^{g}, Craig, B. A. and **Bhadra, A.** (2019). The graphical horseshoe estimator for inverse covariance matrices. *Journal of Computational and Graphical Statistics* **28**, 747–757.

23. **Bhadra, A.**, Rao, A. and Baladandayuthapani, V. (2018). Inferring network structure in non-normal and mixed discrete-continuous genomic data. *Biometrics* **74**, 185–195.

24. **Bhadra, A.** (2017). An expectation-maximization scheme for measurement error models. *Statistics and Probability Letters* **120**, 61–68.

25. **Bhadra, A.**, Datta, J., Polson, N. G. and Willard, B. (2017). The horseshoe+ estimator of ultra-sparse signals. *Bayesian Analysis* **12**, 1105–1131.

26. **Bhadra, A.**, Datta, J., Polson, N. G. and Willard, B. (2016). Default Bayesian analysis with global-local shrinkage priors. *Biometrika* **103**, 955–969.

27. **Bhadra, A.** and Carroll, R. J. (2016). Exact sampling of the unobserved covariates in Bayesian spline models for measurement error problems. *Statistics and Computing* **26**, 827–840.

28. **Bhadra. A.** and Ionides, E. L. (2016). Adaptive particle allocation in iterated sequential Monte Carlo via approximating meta-models. *Statistics and Computing* **26**, 393–407.

29. Feldman, G.^{g}, **Bhadra, A.** and Kirshner, S. (2014). Bayesian feature selection in high-dimensional regression in presence of correlated noise. *Stat* **3**, 258–272.

30. **Bhadra, A.** and Baladandayuthapani, V. (2013). Integrative sparse Bayesian analysis of multi-platform genomic data in glioblastoma. *2013 IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS 2013)*, pp. 1–4.

31. **Bhadra, A.** and Mallick, B. K. (2013). Joint high-dimensional Bayesian variable and covariance selection with an application to eQTL analysis. *Biometrics* **69**, 447–457. **(Highlights, June 2013 issue)**

32. **Bhadra, A.**, Ionides, E. L., Laneri, K., Pascual, M., Bouma, M. and Dhiman, R. C. (2011). Malaria in Northwest India: Data analysis via partially observed stochastic differential equation models driven by Lévy noise. *Journal of the American Statistical Association* **106**, 440–451. **(Featured article, JASA Applications & Case Studies, June 2011 issue)**

33. Ionides, E. L., **Bhadra, A.**, Atchadé, Y. and King, A. A. (2011). Iterated filtering. *Annals of Statistics* **39**, 1776–1802.

34. **Bhadra, A.** (2011). Invited discussion of "Riemann manifold Langevin and Hamiltonian Monte Carlo methods" by M. Girolami and B. Calderhead. *Journal of the Royal Statistical Society, Series B* **73**, 173–174.

35. Laneri, K.*, **Bhadra, A.***, Ionides, E. L., Bouma, M., Dhiman, R. C., Yadav, R. S. and Pascual, M. (2010). Forcing versus feedback: Epidemic malaria and monsoon rains in Northwest India. *PLoS Computational Biology* **6**, e1000898. **(Cover article, September 2010 issue)**

36. **Bhadra, A.** (2010). Contributed discussion of "Particle Markov chain Monte Carlo methods" by C. Andrieu, A. Doucet and R. Holenstein. *Journal of the Royal Statistical Society, Series B* **72**, 314–315.

Applied Publications:

37. Lin, L., Guo, J., Gelfand, S., **Bhadra, A.**, Delp, E., Richards, E., Hennessy, E. and Eicher-Miller, H. (2024). Temporal Dietary Pattern Cluster Membership Varies on Weekdays and Weekends but Both Link to Health. *Journal of Nutrition* **154**, 722–733.

38. Lin, L., Guo, J., **Bhadra, A.**, Gelfand, S. B., Delp, E. J., Richards, E. A., Hennessy, E. and Eicher-Miller, H. A. (2023). Temporal Patterns of Diet and Physical Activity and of Diet Alone Have More Numerous Relationships with Health and Disease Status Indicators Compared to Temporal Patterns of Physical Activity Alone. *Journal of the Academy of Nutrition and Dietetics* **123**, 1729–1748.

39. Guo, J., Aqeel, M., Lin, L., Gelfand, S., Eicher-Miller, H., **Bhadra, A.**, Hennessy, E., Richards, E. and Delp, E. (2023). Joint Temporal Patterns By Integrating Diet and Physical Activity. *IEEE International Conference on Digital Health (ICDH 2023),* pp. 13–23.

40. Guo, J., Aqeel, M., Lin, L., Gelfand, S., Eicher-Miller, H., **Bhadra, A.**, Hennessy, E., Richards, E. and Delp, E. (2023). Cluster Analysis to Find Temporal Physical Activity Patterns Among US Adults. *IEEE International Conference on Healthcare Informatics (ICHI 2023),* pp. 214–224.

41. Cowan, A. E., Jun, S., Tooze, J. A., Dodd, K. W., Gahche, J. J., Eicher-Miller, H. A., Guenther, P. M., Dwyer, J. T., Potischman, N., **Bhadra, A.**, Carroll, R. J. and Bailey, R. L. (2023). A narrative review of nutrient based indexes to assess diet quality and the proposed Total Nutrient Index that reflects total dietary exposures. *Critical Reviews in Food Science and Nutrition* **63**, 1722–1732.

42. Cowan, A. E., Tooze, J. A., Gahche, J. J., Eicher-Miller, H. A., Guenther, P. M., Dwyer, J. T., Potischman, N., **Bhadra, A.**, Carroll, R. J. and Bailey, R. L. (2022). Trends in overall and micronutrient-containing dietary supplement use among U.S. adults and children, NHANES 2007-2018. *Journal of Nutrition* **152**, 2789–2801.

43. Lin, L., Guo, J., Li, Y., Gelfand, S. B., Delp, E. J., **Bhadra, A.**, Richards, E. A., Hennessy, E. and Eicher-Miller, H. A. (2022). The discovery of data-driven temporal dietary patterns and a validation of their description using energy and time cut-offs. *Nutrients (Special Issue on Dietary Surveys and Nutritional Epidemiology)* **14**, 3483.

44. Cowan, A. E., Bailey, R. L., Jun, S., Dodd, K. W., Gahche, J. J., Eicher-Miller, H. A., Guenther, P. M., Dwyer, J. T., Potischman, N., **Bhadra, A.**, Carroll, R. J. and Tooze, J. A. (2022). The Total Nutrient Index is a useful measure for assessing total micronutrient exposures among U. S. adults. *Journal of Nutrition* **152**, 863–871.

45. Lin, L., Guo, J., Aqeel, M. M., Gelfand, S. B., Delp, E. J., **Bhadra, A.**, Richards, E. A., Hennessy, E. and Eicher-Miller, H. A. (2022). Joint temporal dietary and physical activity patterns: associations with health status indicators and chronic diseases. *American Journal of Clinical Nutrition* **115**, 456–470.

46. Aqeel, M., Guo, J., Lin, L., Gelfand, S., Delp, E., **Bhadra, A.**, Richards, E. A., Hennessy, E. and Eicher-Miller, H. A. (2021). Temporal Physical Activity Patterns are Associated with Obesity in U.S. Adults. *Preventive Medicine* **148**, 106538.

47. Jun, S., Cowan, A. E., Dodd, K. W., Tooze, J. A., Gahche, J. J., Eicher-Miller, H. A., Guenther, P. M., Dwyer, J. T., Potischman, N., **Bhadra, A.**, Forman, M. R., and Bailey, R. L. (2021). Association of food insecurity with dietary intakes and nutritional biomarkers among U.S. children, National Health and Nutrition Examination Survey (NHANES) 2011–2016. *American Journal of Clinical Nutrition* **114**, 1059–1069.

48. Aqeel, M. M., Guo, J., Lin, L., Gelfand, S. B., Delp, E. J., **Bhadra, A.**, Richards, E. A., Hennessy, E. and Eicher-Miller, H. A. (2020). Temporal Dietary Patterns are Associated with Obesity in U.S. Adults. *Journal of Nutrition* **150**, 3259–3268.

49. Jun, S., Cowan, A. E., **Bhadra, A.**, Dodd, K. W., Dwyer, J. T., Eicher-Miller, H. A., Gahche, J., Guenther, P. M., Potischman, N., Tooze, J. A. and Bailey, R. L. (2020). Older adults with obesity have higher risks of some micronutrient inadequacies and lower overall dietary quality compared to peers with a healthy weight, National Health and Nutrition Examination Surveys (NHANES), 2011-2014. *Public Health Nutrition* **23**, 2268–2279.

50. Aqeel, M., Forster, A., Richards, E. A., Hennessy, E., McGowan, B., **Bhadra, A.**, Guo, J., Gelfand, S., Delp, E. and Eicher-Miller, H. A. (2020). The Effect of Timing of Exercise and Eating on Postprandial Response in Adults: A Systematic Review. *Nutrients (Special Issue on Meal Timing to Improve Human Health)* **12**, 221.

51. Eicher-Miller, H. A., Gelfand, S., Hwang, Y., Delp, E., **Bhadra, A.** and Guo, J. (2020). Distance metrics optimized for clustering temporal dietary patterning among U.S. adults. *Appetite* **144**, 104451.

52. Cowan, A. E., Jun, S., Tooze, J. A., Eicher-Miller, H. A., Dodd, K. W., Gahche, J. J., Guenther, P. M., Dwyer, J. T., Potischman, N., **Bhadra, A.** and Bailey, R. L. (2020). Total Usual Micronutrient Intakes Compared to the Dietary Reference Intakes among U.S. Adults by Food Security Status. *Nutrients (Special Issue on Nutrition among Vulnerable Populations)* **12**, 38.

53. Cowan, A. E., Jun, S., Tooze, J. A., Dodd, K. W., Dwyer, J. T., Eicher-Miller, H. A., Gahche, J., Guenther, P. M., Potischman, N., **Bhadra, A.**, and Bailey, R. L. (2020). Comparison of four methods to assess the prevalence of use and estimates of usual nutrient intakes from dietary supplements among U.S. adults. *Journal of Nutrition* **150**, 884–893.

54. Bailey, R. L., Dodd, K. W., Gahche, J. J., Dwyer, J. T., Cowan, A. E., Jun, S., Eicher-Miller, H. A., Guether, P. M., **Bhadra, A.**, Thomas, P. R., Potischman, N., Carroll, R. J. and Tooze, J. A. (2019). Best Practices for Dietary Supplement Assessment and Estimation of Total Usual Nutrient Intakes in Population-Level Research and Monitoring. *Journal of Nutrition* **149**, 181–197. **(Editor's Choice)**

55. Lehrer, M., **Bhadra, A.**, Aithala, S., Ravikumar, V., Zheng, Y., Dogan, B., Bonaccio, E., Burnside, E. S., Morris, E., Sutton, E., Whitman, G. J., Net, J., Brandt, K., Ganott, M., Zuley, M. and Rao, A. (2018). High-dimensional regression analysis links magnetic resonance imaging features and protein expression and signaling pathway alterations in breast invasive carcinoma. *Oncoscience* **5**, 39–48.

56. Jun, S., Cowan, A. E., Tooze, J. A., Gahche, J. J., Dwyer, J. T., Eicher-Miller, H. A., **Bhadra, A.**, Guenther, P. M., Potischman, N., Dodd, K. W. and Bailey, R. L. (2018). Dietary Supplement Use among U.S. Children by Family Income,

Food Security Level, and Nutrition Assistance Program Participation Status in 2011–2014. *Nutrients (Special Issue on Advances in Dietary Supplements)* **10**, 1212.

57. Cowan, A. E., Jun, S., Gahche, J. J., Tooze, J. A., Dwyer, J. T., Eicher-Miller, H. A., **Bhadra, A.**, Guenther, P. M., Potischman, N., Dodd, K. W. and Bailey, R. L. (2018). Dietary Supplement Use Differs by Socioeconomic and Health-Related Characteristics among U.S. Adults, NHANES 2011–2014. *Nutrients (Special Issue on Advances in Dietary Supplements)* **10**, 1114.

58. Lehrer, M., **Bhadra, A.**, Ravikumar, V., Chen, J. Y., Wintermark, M., Hwang, S. N., Holder, C. A., Huang, E. P., Fevrier-Sullivan, B., Freymann, J. B. and Rao, A. (2017). Multiple-response regression analysis links magnetic resonance imaging features to de-regulated protein expression and pathway activity in lower grade glioma. *Oncoscience* **4**, 57–66.

TEACHING	• STAT 546: (PhD) Computational Statistics (Spring 2023, 2022, 2019, 2016, 2015, 2014).

• STAT 546: (PhD) Computational Statistics (Spring 2023, 2022, 2019, 2016, 2015, 2014).

• STAT 545: (PhD/MS) Introduction to Computational Statistics (Spring 2025; Fall 2023, 2020).

• STAT 503: (MS) Statistical Methods for Biology (Spring 2015, 2014, 2013; Fall 2017; 2016, 2012).

• STAT 417: (Undergraduate) Statistical Theory (Spring 2024, 2022, 2021, 2019, 2017, 2016; Fall 2024, 2022, 2015).

• STAT 355: (Undergraduate) Statistics for Data Science (Spring 2018; Fall 2018).

INVITED PRESENTATIONS

Seminars:

1. **Graphical Evidence** - International Indian Statistical Association Webinar series (virtual), October 2022.

2. **Horseshoe regularization for prediction and inverse covariance estimation** - Department of Statistics, University of Florida, Gainesville, FL, March, 2019.

3. **Default Bayes and prediction problems with global-local shrinkage priors** - Department of Bioinformatics and Biostatistics, University of Louisville, Louisville, KY, September, 2017.

4. **Default Bayes and prediction problems with global-local shrinkage priors** - Department of Applied and Computational Mathematics and Statistics, University of Notre Dame, Notre Dame, IN, February, 2017.

5. **Default Bayes and prediction problems with global-local shrinkage priors** - Department of Statistics and Probability, Michigan State University, East Lansing, MI, November, 2016.

6. **Default Bayes and prediction problems with global-local shrinkage priors** - Department of Statistics, University of Missouri, Columbia, MO, November, 2016.

7. **Default Bayes and prediction problems with global-local shrinkage priors** - Department of Biostatistics, Indiana University School of Medicine, Indianapolis, IN, November, 2016.

8. **The horseshoe+ estimator of sparse signals** - Department of Statistics, Northwestern University, Evanston, IL, January, 2015.

9. **The horseshoe+ estimator of sparse signals** - Department of Statistics, Iowa State University, Ames, IA, November, 2014.

10. **High-dimensional joint Bayesian variable and covariance selection: Applications in eQTL analysis and cancer genomics** - Department of Statistics, University of Minnesota, Minneapolis, MN, February, 2014.

11. **High-dimensional joint Bayesian variable and covariance selection: Applications in eQTL analysis and cancer genomics** - Department of Mathematics, Statistics and Computer Science, Marquette University, Milwaukee, WI, January, 2014.

12. **High-dimensional joint Bayesian variable and covariance selection: Applications in eQTL analysis and cancer genomics** - Department of Biostatistics, University of Louisville, Louisville, KY, September, 2013.

13. **Joint high-dimensional Bayesian variable and covariance selection with an application to eQTL analysis** - Division of Statistics, Northern Illinois University, DeKalb, IL, March, 2013.

14. **Joint high-dimensional Bayesian variable and covariance selection with an application to eQTL analysis** - Department of Biostatistics, The University of Texas MD Anderson Cancer Center, Houston, TX, October, 2012.

15. **Joint high-dimensional Bayesian variable and covariance selection with an application to eQTL analysis** - Department of Mathematics, Statistics and Computer Science, The University of Illinois at Chicago, Chicago, IL, September, 2012.

16. **Simulation-based maximum likelihood inference for partially observed Markov process models** - Department of Statistics, Purdue University, West Lafayette, IN, February 2012.

17. **Simulation-based maximum likelihood inference for partially observed Markov process models** - Department of Statistics, George Washington University, Washington, DC, February 2012.

18. **Simulation-based maximum likelihood inference for partially observed Markov process models** - Department of Statistics, Florida State University, Tallahassee, FL, January 2012.

19. **Simulation-based maximum likelihood inference for partially observed Markov process models** - Department of Statistics and Actuarial Science, University of Waterloo, Waterloo, ON, January 2012.

Other Invited Presentations:

20. **Deep Kernel Posterior Learning under Infinite Variance Prior Weights** - Invited talk, IISA Conference, Kochi, India, December 2024.

21. **Likelihood Based Inference in Fully and Partially Observed Exponential Family Graphical Models with Intractable Normalizing Constants** - Invited talk, Joint Statistical Meetings, Portland, OR, August 2024.

22. **Likelihood Based Inference in Fully and Partially Observed Exponential Family Graphical Models with Intractable Normalizing Constants** - Invited talk, ISBA World Meeting, Venice, Italy, July 2024.

23. **Likelihood Based Inference in Fully and Partially Observed Exponential Family Graphical Models with Intractable Normalizing Constants** - Invited talk, 2024 ICSA Applied Statistics Symposium, Nashville, TN, June 2024.

24. **Graphical Evidence** - Invited talk, 64th ISI World Statistics Congress, Ottawa, ON, July 2023.

25. **Bayesian Covariate-Dependent Quantile Directed Acyclic Graphical Models for Individualized Inference** - Invited talk, IISA Conference, Golden, CO, June 2023.

26. **Graphical Evidence** - Invited talk, New England Statistics Symposium, Boston, MA, June 2023.

27. **Graphical Evidence** - Invited talk, IISA Conference, Bangalore, India, December 2022.

28. **Graphical Evidence** - Invited talk, 2022 IMS International Conference on Statistics and Data Science (ICSDS 2022), Florence, Italy, December 2022.

29. **Graphical Evidence** - Invited talk, ISBA World Meeting, Montréal, QC, June 2022.

30. **Bayesian Robust Learning in Chain Graph Models for Integrative Pharmacogenomics** - Invited talk, ENAR Spring Meeting, Houston, TX, March 2022.

31. **Beyond Matérn: on a class of confluent hypergeometric covariance functions for Gaussian process modeling** - Invited talk, Joint Statistical Meetings (virtual), August 2021.

32. **Beyond Matérn: on a class of confluent hypergeometric covariance functions for Gaussian process modeling** - Invited talk, 2020 ICSA Applied Statistics Symposium (virtual), December 2020.

33. **Horseshoe regularization for machine learning in complex and deep models** - Invited talk, Joint Statistical Meetings (virtual), August 2020.

34. **Horseshoe regularization for machine learning in complex and deep models** - Invited talk, Statistics 50th Anniversary Symposium, University of Michigan, Ann Arbor, MI, September 2019.

35. **Horseshoe regularization for machine learning in complex and deep models** - Invited talk, SAMSI Deep Learning Opening Workshop, Durham, NC, August 2019.

36. **Prediction risk in linear regression models under global-local shrinkage priors** - Topic-contributed talk, Joint Statistical Meetings, Denver, CO, August 2019.

37. **The graphical horseshoe estimator for inverse covariance matrices** - Invited talk, ASA Conference on Statistical Learning and Data Science / Nonparametric Statistics, New York City, NY, June 2018.

38. **The graphical horseshoe estimator for inverse covariance matrices** - Invited talk, IISA Conference, Gainesville, FL, May 2018.

39. **Prediction risk for global-local shrinkage regression** - Invited talk, The 10th ICSA International Conference, Shanghai, China, December 2016.

40. **Prediction risk for global-local shrinkage regression** - Invited talk, Latent Variables 2016 Conference, Columbia, SC, October 2016.

41. **Prediction risk for global-local shrinkage regression** - Topic-contributed talk, Joint Statistical Meetings, Chicago, IL, August 2016.

42. **Prediction risk for global-local shrinkage regression** - Invited talk, 2016 ICSA Applied Statistics Symposium, Atlanta, GA, June 2016.

43. **The horseshoe+ estimator of sparse signals** - Young researchers special invited talk (45 minutes), 2015 IISA Conference, Pune, India, December 2015.

44. **Bayesian feature selection in high-dimensional regression in presence of correlated noise** - Invited talk, 2014 IISA Conference, Riverside, CA, July, 2014.

45. **Bayesian feature selection in high-dimensional regression in presence of correlated noise** - Invited talk, ISBIS and SLDM meeting, Durham, NC, June, 2014.

46. **High-dimensional joint Bayesian variable and covariance selection: Applications in eQTL analysis and cancer genomics** - Invited talk, International Conference in Honor of H. N. Nagaraja, Richardson, TX, March, 2014.

47. **Screening strategies for high-dimensional multiple predictor, multiple response data with an application in genomics** - Topic-contributed talk, Joint Statistical Meetings, Montréal, QC, August 2013.

48. **Joint high-dimensional Bayesian variable and covariance selection with an application to eQTL analysis** - Invited talk, Statistical Bioinformatics Seminar Series, Purdue University, West Lafayette, IN, February, 2013.

49. **Joint high-dimensional Bayesian variable and covariance selection with an application to eQTL analysis** - Invited talk, Machine Learning and Applications Seminar Series, Purdue University, West Lafayette, IN, October, 2012.

50. **Joint high-dimensional Bayesian variable and covariance selection with an application to eQTL analysis** - Topic-contributed talk, Joint Statistical Meetings, San Diego, CA, August 2012.

51. **Joint high-dimensional Bayesian variable and covariance selection with an application to eQTL analysis** - Invited minisymposium talk, SIAM Conference on the Life Sciences, San Diego, CA, August 2012.

52. **Joint high-dimensional Bayesian variable and covariance selection with an application to eQTL analysis** - Invited talk, The Third Biennial Workshop on Nutrition, Biostatistics and Bioinformatics, College Station, TX, February 2012.

53. **An adaptive particle allocation scheme for off-line iterated sequential importance sampling based techniques** - Invited talk, Yahoo! Research (Machine Learning Division), Santa Clara, CA, June 2011.

54. **An adaptive particle allocation scheme for off-line iterated sequential importance sampling based techniques** - Invited talk, 2011 IISA Conference on Probability, Statistics and Data Analysis, Raleigh, NC, April 2011.

55. **Iterated filtering and its applications in modeling infectious disease dynamics** - Invited talk, Department of Biostatistics, The University of Texas MD Anderson Cancer Center, Houston, TX, February 2010.

56. **Malaria transmission: Modeling and inference** - Invited talk, Parameter estimation for dynamical systems workshop, EURANDOM, Technische Universiteit Eindhoven, Eindhoven, The Netherlands, June 2009.

POSTDOCTORAL FELLOWS	• Xiao Fang (current).
PHD STUDENTS	• Zejin Gao (current).
	• Yujie Chen (current).
	• Jorge Loría (Graduation: May, 2024).
	• Ksheera Sagar (Graduation: May, 2023, *winner of a 2022 ENAR Distinguished Student Paper Award; IISA 2022 Best Poster Award*).
	• Yunfan Li (Graduation: May, 2019).
MS STUDENTS	• Manni Zhang (Graduation: May, 2021)

PROFESSIONAL ACTIVITIES

- **Service to Professional Societies:**

  1. 2025 Program Chair, Section on Bayesian Statistical Science (SBSS), The American Statistical Association.

- **Journal Referee Service:** Annals of Applied Statistics; Bayesian Analysis; Bioinformatics; Biometrics; Biometrika; Biostatistics; Computational Statistics and Data Analysis; Epidemics; IEEE Transactions on Biomedical Engineering; Journal of Agricultural, Biological, and Environmental Statistics; Journal of the American Statistical Association; Journal of Business and Economic Statistics; Journal of Computational and Graphical Statistics; Journal of Machine Learning Research; Journal of the Royal Society Interface; Journal of the Royal Statistical Society: Series B (Statistical Methodology); Journal of the Royal Statistical Society: Series C (Applied Statistics); Sankhya; Statistica Sinica; Statistical Applications in Genetics and Molecular Biology; Statistics and Computing; Statistics and Probability Letters; Statistics in Biosciences; Statistics in Medicine.

- **Grant Reviewer:**

  1. National Science Foundation (NSF), panel, 2024; ad hoc, 2025.
  2. National Security Agency (NSA), ad hoc, 2013.

- **Working Group Leader:** 2019 SAMSI program on deep learning, working group on uncertainty quantification.

- **Program Committee Member:**

  1. The 9th Bayesian, Fiducial and Frequentist Conference (BFF 9); May 2025.
  2. The 2019 IISA International Conference; December, 2019.
  3. The 18th International Conference on Artificial Intelligence and Statistics (AISTATS 2015); May, 2015.

- **Session Organizer:**

  1. "Bayesian inference and sampling algorithms under intractable likelihood and latent variable models," The 9th Bayesian, Fiducial and Frequentist Conference (BFF 9), Indianapolis, IN, May 2025.

2. "Bayesian learning in highly structured latent variable models (invited, co-organized with Sylvia Frühwirth-Schnatter)," ISBA World Meeting, Venice, Italy, July 2024.

3. "Recent Advances in Bayesian Methodology for Complex Models (invited)," 64th ISI World Statistics Congress, Ottawa, ON, July 2023.

4. "New frontiers in Bayesian graphical and network models (invited)," ISBA World Meeting, Montréal, QC, June 2022.

5. "Recent advances in graphical models: methodology, computation and applications (invited)," ENAR Spring Meeting, Houston, TX, March 2022.

6. "High Fidelity Gaussian Process Surrogate Modeling: Deep and Shallow (invited, co-organized with Bobby Gramacy)," Joint Statistical Meetings (virtual), August 2021.

7. "Advances in Bayesian methods and computation (Invited)," 2019 IISA International Conference, Mumbai, India, December 2019.

8. "Scalable Bayesian Methods for Large and Complex Data (Invited)," 9th International Purdue Symposium on Statistics, West Lafayette, IN, June 2018.

9. "High-dimensional Bayesian statistics: spike and slab and global-local shrinkage (Invited)," Joint Statistical Meetings, Chicago, IL, August 2016.

10. "Statistical Methods with Applications in Biological and Epidemiological Research (Topic-contributed)," Joint Statistical Meetings, Montréal, QC, August 2013.

- **Member:** American Statistical Association (ASA), Institute of Mathematical Statistics (IMS), International Society for Bayesian Analysis (ISBA), International Indian Statistical Association (IISA, Life Member).