

# Leo L. Duan

220 Griffin-Floyd Hall  
Gainesville FL 32610

<https://leoduan.github.io/>  
li.duan@ufl.edu

## Professional Experience

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<b>Associate Professor (with Tenure)</b> <i>Department of Statistics, University of Florida</i>	2025– Present Gainesville, FL
<b>Assistant Professor</b> <i>Department of Statistics, University of Florida</i>	2018 – 2025 Gainesville, FL
<b>Affiliate Faculty</b> <i>McKnight Brain Institute</i>	2021 – Present Gainesville, FL
<b>Affiliate Faculty</b> <i>University of Florida Artificial Intelligence and Informatics Research Institute</i>	2018 – Present Gainesville, FL, USA
<b>Postdoctoral Fellow</b> <i>Johns Hopkins University &amp; Duke University</i>	2016 – 2018 Durham, NC
<b>Data Scientist</b> <i>Civitas Learning, LLC</i>	2015 – 2016 Austin, TX
<b>Biostatistician</b> <i>Cincinnati Children's Hospital Medical Center</i>	2012 – 2015 Cincinnati, OH

## Education

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<b>PhD in Mathematics</b> <i>University of Cincinnati</i>	2011 - 2015 Cincinnati, OH
<b>Bachelor of Science (with Honors)</b> <i>Sichuan University</i>	2005 - 2009 Chengdu, China

## Publications ( †: Graduate Student Advised)

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### Manuscripts under review

- Leo L Duan, Yuexi Wang, and Jason Xu. Bayesian Distance-to-Set Models: from Latent Variable to Latent Projection. *arXiv preprint arXiv:2604.10178*, under review at *Journal of the American Statistical Association*, April 2026.
- Zitian Wu, Arkaprava Roy, and Leo L Duan. Graphical Model-based Inference for Persistent Homology. *arXiv preprint arXiv:2511.11996*, under review at *Biometrika*, November 2025.
- Yu Zheng<sup>†</sup>, Leo L Duan, and Arkaprava Roy. Consistency of Graphical Model-based Clustering: Robust Clustering using Bayesian Spanning Forest. *arXiv preprint arXiv:2409.19129*, revision submitted to *Bernoulli*, November 2025.
- Yu Zheng<sup>†</sup>, Malay Ghosh, and Leo Duan. Statistical Modeling of Combinatorial Response Data. *arXiv preprint arXiv:2504.11630*, revision submitted to *Journal of the American Statistical Association*, October 2025.
- Cheng Zeng<sup>†</sup>, Eleni Dilma<sup>†</sup>, Jason Xu, and Leo L Duan. The Bridged Posterior: Optimization, Profile Likelihood and a New Approach to Generalized Bayes. *arXiv preprint arXiv:2403.00968*, revision submitted to *Journal of the American Statistical Association*, March 2025.
- Cheng Zeng<sup>†</sup>, Yaozhi Yang<sup>†</sup>, Jason Xu, and Leo L Duan. Gradient-bridged Posterior: Bayesian Inference for Models with Implicit Functions. *arXiv preprint arXiv:2503.11637*, under review at *Journal of Machine Learning Research*, March 2025.
- Michael Lim and Trevor Hastie. Learning interactions via hierarchical group-lasso regularization. *Journal of Computational and Graphical Statistics*, 24(3):627–654, 2015.

## Published

- Leo L Duan and Anirban Bhattacharya. Graph-Accelerated Markov Chain Monte Carlo Using Approximate Samples. *Journal of Machine Learning Research*, 26(232):1–25, November 2025.
- Edric Tam, David B Dunson, and Leo L Duan. Exact Sampling of Spanning Trees via Fast-Forwarded Random Walks. *Biometrika*, April 2025.
- Yu Zheng<sup>†</sup> and Leo L Duan. Gibbs Sampling Using Anti-Correlation Gaussian Data Augmentation, With Applications to L1-Ball-Type Models. *Journal of Computational and Graphical Statistics*, January 2025.
- Leo L Duan and Arkaprava Roy. Spectral Clustering, Spanning Forest, and Bayesian Forest Process. *Journal of the American Statistical Association*, 119(547):2140–2153, August 2024.
- Jinpeng Wang, Yujie Hu, Leo L Duan, and George Michailidis. Analysing and Visualising Mobility Vulnerability and Recovery Across Florida Neighbourhoods: A Case Study of Hurricane Ian. *Regional Studies, Regional Science*, 11(1):384–386, July 2024.
- Zeyu He, Yujie Hu, Leo L Duan, and George Michailidis. Returners and Explorers Dichotomy in the Face of Natural Hazards. *Scientific Reports*, 14(1):13184, June 2024.
- Maoran Xu<sup>†</sup>, Hua Zhou, Yujie Hu, and Leo L Duan. Bayesian Inference using the Proximal Mapping: Uncertainty Quantification under Varying Dimensionality. *Journal of the American Statistical Association*, 119(547):1847–1858, 2024.
- Leo L Duan and David B Dunson. Bayesian Spanning Tree: Estimating the Backbone of the Dependence Graph. *Journal of Machine Learning Research*, 24(397):1–44, December 2023.
- Leo L Duan, Zeyu Yuwen<sup>†</sup>, George Michailidis, and Zhengwu Zhang. Low Tree-Rank Bayesian Vector Autoregression Models. *Journal of Machine Learning Research*, 24(286):1–35, October 2023.
- Maoran Xu<sup>†</sup> and Leo L Duan. Bayesian Inference with the L1-ball Prior: Solving Combinatorial Problems with Exact Zeros. *Journal of the Royal Statistical Society Series B (Statistical Methodology)*, 85(5):1538–1560, July 2023.
- Cheng Zeng<sup>†</sup>, Jeffrey Miller, and Leo L Duan. Quasi-Bernoulli Stick-Breaking: Infinite Mixture With Cluster Consistency. *Journal of Machine Learning Research*, 24:1–32, May 2023.
- Leo L Duan, George Michailidis, and Mingzhou Ding. Bayesian Spiked Laplacian Graphs. *Journal of Machine Learning Research*, 23:1–35, November 2022.
- Alexandra Badea, Jacques A Stout, Robert J Anderson, Gary P Cofer, Leo L Duan, and Joshua T Vogelstein. Imaging Biomarkers for Alzheimer’s Disease Using Magnetic Resonance Microscopy. *Magnetic Resonance Microscopy: Instrumentation and Applications in Engineering, Life Science, and Energy Research*, August 2022.
- Leo L Duan. Transport Monte Carlo: High-Accuracy Posterior Approximation via Random Transport. *Journal of the American Statistical Association*, 118(543):1659–1670, January 2022.
- Leo L Duan and David B Dunson. Bayesian Distance Clustering. *Journal of Machine Learning Research*, 22(224):1–27, August 2021.
- Rhonda D Szczesniak, Teresa Pestian, Leo L Duan, Dan Li, Sophia Stamper, Brycen Ferrara, Elizabeth Kramer, John P Clancy, and Daniel Grosseohme. Data Driven Decision Making to Characterize Clinical Personas of Parents of Children With Cystic Fibrosis: A Mixed Methods Study. *BMC Pulmonary Medicine*, 20(1):1–14, June 2020.
- Leo L Duan, Alex Young, Akihiko Nishimura, and David B. Dunson. Bayesian Constraint Relaxation. *Biometrika*, 107(1):191–204, March 2020.
- Leo L Duan. Latent Simplex Position Model: High Dimensional Multi-view Clustering with Uncertainty Quantification. *Journal of Machine Learning Research*, 21(38):1–25, January 2020.

- Gleb Tikhonov, Leo L Duan, Nerea Abrego, Graeme Newell, Matt White, David Dunson, and Otso Ovaskainen. Computationally Efficient Joint Species Distribution Modeling of Big Spatial Data. *Ecology*, 101(2):e02929, November 2019.
- Leo L Duan, James E Johndrow, and David B Dunson. Scaling Up Data Augmentation MCMC via Calibration. *Journal of Machine Learning Research*, 19(1):2575–2608, October 2018.
- Leo L Duan, Xia Wang, John P Clancy, and Rhonda D Szczesniak. Joint Hierarchical Gaussian Process Model With Application to Personalized Prediction in Medical Monitoring. *Stat*, 7(1):e178, March 2018.
- Leo L Duan, Rhonda D Szczesniak, and Xia Wang. Functional Inverted-Wishart for Bayesian Multivariate Spatial Modeling with Application to Regional Climatology Model Data. *Environmetrics*, 28(7), September 2017.
- Judith W Dexheimer, Eric S Kirkendall, Michal Kouril, Philip A Hagedorn, Thomas Minich, Leo L Duan, Monifa Mahdi, Rhonda D Szczesniak, and S Andrew Spooner. The Effects of Medication Alerts on Prescriber Response in a Pediatric Hospital. *Applied Clinical Informatics*, 8(2):491–501, August 2017.
- Otso Ovaskainen, Gleb Tikhonov, Anna Norberg, F. Guillaume Blanchet, Leo L Duan, David B. Dunson, Tomas Roslin, and Nerea Abrego. How to Make More Out of Community Data? A Conceptual Framework and Its Implementation as Models and Software. *Ecology Letters*, 20(5):561–576, August 2017.
- Rhonda D Szczesniak, Dan Li, Leo L Duan, Mekibib Altaye, Menachem Miodovnik, and Jane C Khoury. Longitudinal Patterns of Glycemic Control and Blood Pressure in Pregnant Women with Type 1 Diabetes Mellitus: Phenotypes From Functional Data Analysis. *American Journal of Perinatology*, 33(13):1282–1290, November 2016.
- Leo L Duan, John P Clancy, and Rhonda D Szczesniak. Bayesian Ensemble Trees for Clustering and Prediction in Heterogeneous Data. *Journal of Computational and Graphical Statistics*, 25(3):748–761, August 2016.
- Kavitha Kotha, Rhonda D Szczesniak, Anjaparavanda P Naren, Matthew C Fenchel, Leo L Duan, Gary L McPhail, and John P Clancy. Concentration of Fractional Excretion of Nitric Oxide: A Potential Airway Biomarker of Restored CFTR Function. *Journal of Cystic Fibrosis*, 14(6):733–740, June 2015.
- Rhonda D Szczesniak, Gary L. McPhail, Leo L Duan, Maurizio Macaluso, Raouf S Amin, and John P Clancy. A Semiparametric Approach to Estimate Rapid Lung Function Decline in Cystic Fibrosis. *Annals of Epidemiology*, 23(12):771–777, August 2013.

#### *Funding & Support*

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##### **Recently submitted and under review**

**National Science Foundation MMS (PI)**, \$675, 036 2026 – 2029  
*Modernizing Compute for Bayesian Inference via Distances and Optimization*

##### **Funded**

**National Science Foundation DMS-ATD (PI)**, \$255, 000 2023 – 2026

*Geospatial Modeling and Risk Mitigation for Human Movement Dynamics, DMS-2319551,*  
**UFII SEED Funding Award (PI)**, \$100, 000 2022 – 2023

*Using High-resolution fMRI Data to Learn the Backbone Functional Connectivity of the Human Brain*  
**UF Junior Faculty Start-up Fund**, \$200, 000 2018 – 2021

#### *Awards & Honors*

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**UF CLAS College Fellowship** 2024

**UF CLAS College Faculty Travel Award** 2022

UF Statistics Faculty Award	2021
NeurIPS Bayesian Nonparametrics Award	2018
Objective Bayes Travel Award	2017
ASA Paper Competition Award in Section on Bayesian Statistical Science	2015
Woodside Foundation Award for Contribution in Biostatistics and Epidemiology Research	2014

*Invited and Plenary Talks (2018 – Present)*

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<i>Harnessing optimization in Bayesian inference</i>	<i>Short Course at Joint Statistical Meetings, 2025</i>
<i>Statistical modeling of combinatorial response data</i>	<i>Statistical Methods in Imaging Conference, 2025</i>
<i>Graph-accelerated Markov chain Monte Carlo</i>	<i>BayesComp, 2025</i>
<i>Statistical modeling of combinatorial response data</i>	<i>Seminar at Florida State University, 2025</i>
<i>Graphical model-based clustering: a new hope</i>	<i>Seminar at Cornell University, 2025</i>
<i>Graphical model-based clustering: a new hope</i>	<i>Seminar at North Carolina State University, 2024</i>
<i>High-dimensional clustering using continuous mixture</i>	<i>Joint Statistical Meetings, 2024</i>
<i>High-dimensional clustering using continuous mixture</i>	<i>International Symposium on Nonparametric Statistics, 2024</i>
<i>Bridged posterior</i>	<i>Seminar at Duke University, 2024</i>
<i>Bridged posterior</i>	<i>Seminar at University of Washington, 2023</i>
<i>Model-based spectral clustering</i>	<i>Seminar at Harvard University, 2023</i>
<i>Spectral clustering, spanning forest, and Bayesian forest process</i>	<i>Seminar at Texas A&amp;M University, 2023</i>
<i>Bayesian forest process</i>	<i>International Conference on Bayesian Nonparametrics, 2022</i>
<i>Detection limit theory for L1-ball model</i>	<i>International Society for Bayesian Analysis World Meetings, 2022</i>
<i>Bayesian VAR with tree-rank prior</i>	<i>CMStatistics, 2021</i>
<i>Bayesian inference with proximal mapping</i>	<i>International Society for Bayesian Analysis World Meetings, 2021</i>
<i>Application of tree-rank prior to fMRI data analysis</i>	<i>Statistical Methods in Imaging Conference, 2021</i>
<i>Bayesian modeling with L1-ball priors</i>	<i>Joint Statistical Meetings, 2021</i>
<i>Transport Monte Carlo</i>	<i>Joint Statistical Meetings, 2020</i>
<i>Transport Monte Carlo</i>	<i>Seminar at University of Massachusetts at Amherst, 2020</i>
<i>Latent simplex position model</i>	<i>CMStatistics, 2019</i>
<i>Bayesian nonparametrics on spectral graph statistics</i>	<i>New England Statistics Symposium, 2019</i>
<i>Latent simplex position model</i>	<i>Seminar at Department of Biostatistics at University of Florida, 2019</i>
<i>Spiked Laplacian graphs</i>	<i>Seminar at Duke University, 2019</i>
<i>Generalized distribution-based clustering</i>	<i>NeurIPS Workshop on Bayesian Nonparametrics, 2018</i>

*Services to the Science Community*

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<b>Associate Editor of Data Science in Science</b>	2022 – Present
<b>Review Panelist for National Science Foundation</b>	2024 – Present
<b>Organizing Committee for University of Florida Winter Workshop</b>	2025
<b>Scientific Committee for International Chinese Statistical Association</b>	2022
<b>Scientific Committee for University of Florida Winter Workshop</b>	2021
<b>Reviewer for</b> <i>AISTAT, Applied Network Science, Bayesian Analysis, Bernoulli, Biometrics,</i> <i>Journal of Computational and Graphical Statistics, Journal of Machine Learning Research,</i> <i>Journal of the American Statistical Association, NeurIPS, Statistics in Medicine, Statistical Sinica</i>	2011 – Present

*Mentored Doctoral Students*

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**Luis Hasenauer**  
2026 – Present

**Sunghyun Cho**  
2025 – Present

**Zitian Wu (Biostatistics)**  
2024 – Present, Co-advised with Arkaprava Roy

**Yu Zheng**  
2022 – 2026

**Zeyu Yuwen**  
2021 – 2025, Co-advised with George Michailidis

**Cheng Zeng**  
2019 – 2025

**Eleni Dilma**  
2020 – 2024, Co-advised with Brenda Betancourt

**Maoran Xu**  
2018 – 2022, Graduated