

Yuqi Gu

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Address: Department of Statistics, Columbia University, Room 928 SSW, 1255 Amsterdam Avenue, New York, NY 10027, USA.

Employment

Columbia University, New York, NY, USA.

Assistant Professor (tenure-track), Department of Statistics.

07/2021 – Present

Member, Data Science Institute.

07/2022 – Present

Duke University, Durham, NC, USA.

Postdoctoral Researcher, Department of Statistical Science.

07/2020 – 06/2021

Education

University of Michigan, Ann Arbor, MI, USA.

08/2015 – 05/2020

Ph.D., Statistics.

Tsinghua University, Beijing, China.

09/2011 – 07/2015

B.S., Pure and Applied Mathematics.

Research Interests

My research develops statistical theory and methodology for uncovering **latent structure** in modern complex data. A unifying theme is to make latent structure and representation learning identifiable, interpretable, computationally scalable, and statistically reliable.

- **Identifiable and interpretable deep generative models and causal representation learning:** Identifiability, latent graph discovery, and causal representation learning in nonlinear probabilistic graphical models with latent structures.
- **High-dimensional inference for latent structure:** Spectral, tensor, and likelihood-based methods for latent class, mixed-membership, clustering, and low-rank representation problems, with finite-sample theory and uncertainty quantification.
- **Latent variable models for psychometrics, heterogeneous populations, and AI evaluation:** Principled latent trait models for educational, psychological, biomedical, and language-model data, including cognitive diagnosis, item response theory, and psychometric frameworks for evaluating large language models (LLMs).

Publications

Underlined are my student or postdoc advisees. ☒ indicates I am the corresponding author.

* indicates co-first authors. † indicates alphabetical authorship.

Preprints in Submission:

37. Scalable Variational Inference for Probabilistic Boolean Matrix Factorization with Unknown Latent Dimension.
Russell Kunes, Mingzhang Yin, and **Yuqi Gu**✉. (2026+) (preprint [available here](#))
36. Discrete Causal Representation Learning.
Wenjin Zhang, Yixin Wang, and **Yuqi Gu**✉. (2026+) (preprint [arXiv:2603.25017](#))
(This paper received the *ASA SLDS Section 2026 Student Paper Award*)
35. Scalable Text-Embedding-informed Cognitive Diagnosis of Large Language Models.
Jia Liu, Zhiyu Xu, and **Yuqi Gu**✉. (2026+) (preprint [arXiv:2603.14676](#))
34. Covariate-assisted Mixed Membership Estimation via Shared Latent Geometry.
Zhiyu Xu and **Yuqi Gu**✉. (2026+) (preprint [arXiv:2601.17265](#))
33. On Theoretical Identifiability of Discrete Latent Causal Graphical Models.
Seunghyun Lee and **Yuqi Gu**. (2025+) (preprint [arXiv:2505.18410](#))
32. Covariate Dependent Bayesian Deep Latent Class Model.
Yuren Zhou, **Yuqi Gu**, David B. Dunson. (2025+) (preprint [arXiv:2503.17531](#))
31. Minimax-Optimal Spectral Clustering with Covariance Projection for High-Dimensional Anisotropic Mixtures.
Chengzhu Huang and **Yuqi Gu**✉. (2025+) (preprint [arXiv:2502.02580](#))
(This paper received the *2026 IMS Hannan Graduate Student Travel Award*)

Preprints Under Journal Revisions:

30. Valid and Efficient Two-Stage Latent Subgroup Analysis with Observational Data.
Yuanhui Luo, Xinzhou Guo✉, and **Yuqi Gu**✉. (2025+) (preprint [arXiv:2512.24223](#))
Under “Reject and Resubmit” at *Journal of the Royal Statistical Society Series B: Statistical Methodology*.
29. Latency-Response Theory Model: Evaluating Large Language Models via Response Accuracy and Chain-of-Thought Length.
Zhiyu Xu, Jia Liu, Yixin Wang, and **Yuqi Gu**✉. (2025+) (preprint [arXiv:2512.07019](#))
(This paper received the *ASA SLDS Section 2026 Student Paper Award*)
“Major Revision” submitted back to *Annals of Applied Statistics*.
28. Bayesian Deep Generative Models for Multiplex Networks with Multiscale Overlapping Clusters.
Yuren Zhou, **Yuqi Gu**, David B. Dunson. (2024+) (preprint [arXiv:2405.20936](#))
“Major Revision” submitted back to *Journal of the American Statistical Association*.

Published/Accepted Peer-reviewed Journal Publications:

27. Generalized Grade-of-Membership Estimation for High-dimensional Locally Dependent Data.
Ling Chen*, Chengzhu Huang*, **Yuqi Gu**✉. (preprint [arXiv:2412.19796](#))
Journal of the American Statistical Association (2026+), accepted.

26. [Adaptive Transfer Clustering: A Unified Framework](#).
Yuqi Gu[†], Zhongyuan Lyu[†], Kaizheng Wang[†]. (preprint [arXiv:2410.21263](#))
Journal of the American Statistical Association (2026+), accepted.
25. [Deep Discrete Encoders: Identifiable Deep Generative Models for Rich Data with Discrete Latent Layers](#).
Seunghyun Lee and **Yuqi Gu**✉.
Journal of the American Statistical Association (2026), 121(553):194–208.
 (This paper received the *ASA SLDS Section 2025 Student Paper Award*)
24. [Spectral Clustering with Likelihood Refinement for High-dimensional Latent Class Recovery](#).
Zhongyuan Lyu and **Yuqi Gu**✉.
Psychometrika (2026+), accepted.
23. [Constructive Q-Matrix Identifiability via Novel Tensor Unfolding](#).
Yuqi Gu✉.
Psychometrika (2026), 91:131–150.
22. [A Blockwise Mixed Membership Model for Multivariate Longitudinal Data: Discovering Clinical Heterogeneity and Identifying Parkinson’s Disease Subtypes](#).
Kai Kang✉ and **Yuqi Gu**✉.
Annals of Applied Statistics (2026), 20(1):452–475.
21. [Deep Generative Modeling for Cognitive Diagnosis via Exploratory DeepCDMs](#).
Jia Liu and **Yuqi Gu**✉.
Psychometrika (2026), 91:151–176.
20. [Degree-heterogeneous Latent Class Analysis for High-dimensional Discrete Data](#).
Zhongyuan Lyu, Ling Chen, **Yuqi Gu**✉.
Journal of the American Statistical Association (2025), 120(552), 2435–2448.
19. [Learning from Similar Linear Representations: Adaptivity, Maximality, and Robustness](#).
Ye Tian, **Yuqi Gu**, Yang Feng.
Journal of Machine Learning Research (2025), 26(187):1–125.
 (This paper received the *ASA SLDS Section 2025 Student Paper Award*)
18. [Blessing of Dependence: Identifiability and Geometry of Discrete Models with Multiple Binary Latent Variables](#).
Yuqi Gu✉.
Bernoulli (2025), 31(2):948–972.
17. [Exploratory General-response Cognitive Diagnostic Models with Higher-order Structures](#).
Jia Liu, Seunghyun Lee, **Yuqi Gu**✉.
Psychometrika (2025), 90:1651–1678.
16. [Going Deep in Diagnostic Modeling: Deep Cognitive Diagnostic Models \(DeepCDMs\)](#).
Yuqi Gu✉.
Psychometrika (2024), 89:118–150.

15. [Latent Conjunctive Bayesian Network: Unify Attribute Hierarchy and Bayesian Network for Cognitive Diagnosis.](#)
Seunghyun Lee and **Yuqi Gu**✉.
Annals of Applied Statistics (2024), 18(3):1988–2011.
(This paper received the 2024 IMS Hannan Graduate Student Travel Award)
14. [A Spectral Method for Identifiable Grade of Membership Analysis with Binary Responses.](#)
Ling Chen and **Yuqi Gu**✉.
Psychometrika (2024), 89:626–657.
13. [New Paradigm of Identifiable General-response Cognitive Diagnostic Models: Beyond Categorical Data.](#)
Seunghyun Lee and **Yuqi Gu**✉.
Psychometrika (2024), 89:1304–1336.
(This paper received the 2023 Psychometric Society Student Travel Award)
12. [New directions in Algebraic Statistics: Three challenges from 2023.](#)
Yulia Alexandr, Miles Bakenhus, Mark Curiel, Sameer Deshpande, Elizabeth Gross, **Yuqi Gu**, Max Hill, Joseph Johnson, Bryson Kagy, Vishesh Karwa, Jiayi Li, Hanbaek Lyu, Sonja Petrovi and Jose Israel Rodriguez.
Algebraic Statistics (2024), 15(2):357–382.
11. [Bayesian Pyramids: Identifiable Multilayer Discrete Latent Structure Models for Discrete Data.](#)
Yuqi Gu✉ and David B. Dunson.
Journal of the Royal Statistical Society Series B: Statistical Methodology (2023), 85(2):399–426.
10. [Generic Identifiability of the DINA Model and Blessing of Latent Dependence.](#)
Yuqi Gu✉.
Psychometrika (2023), 88:117–131.
9. [A Joint MLE Approach to Large-Scale Structured Latent Attribute Analysis.](#)
Yuqi Gu✉ and Gongjun Xu.
Journal of the American Statistical Association (2023), 118(541):746–760.
8. [Dimension-Grouped Mixed Membership Models for Multivariate Categorical Data.](#)
Yuqi Gu✉, Elena A. Eroshova, Gongjun Xu, and David B. Dunson.
Journal of Machine Learning Research (2023), 24(88):1–49.
7. [A Tensor-EM Method for Large-Scale Latent Class Analysis with Binary Responses.](#)
Zhenghao Zeng, **Yuqi Gu**, and Gongjun Xu.
Psychometrika (2023), 88(2):580–612.
6. [Identifiability of Hierarchical Latent Attribute Models.](#)
Yuqi Gu and Gongjun Xu.
Statistica Sinica (2023), 33, 2561–2591.
5. [Sufficient and Necessary Conditions for the Identifiability of the \$Q\$ -matrix.](#)
Yuqi Gu and Gongjun Xu.
Statistica Sinica (2021), 31, 449–472.

4. [Partial Identifiability of Restricted Latent Class Models.](#)
Yuqi Gu and Gongjun Xu.
Annals of Statistics (2020), 48(4):2082–2107.
3. [Learning Attribute Patterns in High-Dimensional Structured Latent Attributes Models.](#)
Yuqi Gu and Gongjun Xu.
Journal of Machine Learning Research (2019), 20(115):1–58.
2. [The Sufficient and Necessary Condition for the Identifiability and Estimability of the DINA Model.](#)
Yuqi Gu and Gongjun Xu.
Psychometrika (2019), 84(2):468–483.
1. [Hypothesis Testing of the \$Q\$ -Matrix.](#)
Yuqi Gu, Jingchen Liu, Gongjun Xu and Zhiliang Ying.
Psychometrika (2018), 83(3):515–537.

Book Chapter:

- Chapter in the book draft *Bayesian Deep Learning*: “Interpretable and identifiable deep generative models via Bayesian pyramids and their extensions.”
Yuqi Gu*, Yuren Zhou*, David B. Dunson.

Published Discussions:

- [Discussion of “Vintage Factor Analysis with Varimax Performs Statistical Inference” by Rohe & Zeng.](#)
 Yinqiu He, **Yuqi Gu**, and Zhiliang Ying.
Journal of the Royal Statistical Society Series B: Statistical Methodology (2023), 85(4):1071–1074.

Technical Report:

- [Unfolding Tensors to Identify the Graph in Discrete Latent Bipartite Graphical Models.](#)
Yuqi Gu✉. (2025) (preprint [arXiv:2501.10897](https://arxiv.org/abs/2501.10897))

Grant Support

National Science Foundation (NSF) Grant DMS-2210796: Latent Dependence and Identifiable, Graphical, Deep Modeling of Discrete Latent Variables.

Role: (Sole) Principal Investigator. **Amount:** \$150,000. **Period:** 09/01/2022 – 08/31/2026.

Students and Postdoc Advisees

(Unless otherwise specified, the following advisees are from Columbia University.)

— **Postdoctoral Researcher** —

Current Postdoc:

- Jia Liu. 11/2025 – present.

Former Postdoc:

- Zhongyuan Lyu. 07/2023 – 08/2025. (co-mentored with Kaizheng Wang)
First job: Lecturer (Assistant Professor) in the Discipline of Business Analytics at the University of Sydney Business School.

— Ph.D. Students —

Graduated Ph.D. Student:

- Ling Chen. Ph.D. graduated in May 2025. (co-advised with Jingchen Liu)
Dissertation Title: Modern Latent Variable Analysis: High-dimensional Grade of Membership Models and Process Data.
First job: Quantitative Researcher at Tudor Investment Corporation.

Current Ph.D. Students:

- Seunghyun Lee. Since 05/2022. Expected Graduation in 2026.
(co-advised with Sumit Mukherjee)
 - Received an *ASA Statistical Learning and Data Science (SLDS) Student Paper Award* and an *Korean International Statistical Society Outstanding Student Paper Award* to present our work “Deep Discrete Encoders” at JSM 2025.
 - Received an *IMS Hannan Graduate Student Travel Award* to present our work “Latent Conjunctive Bayesian Network” at the 2024 Bernoulli-IMS 11th World Congress in Probability and Statistics.
 - Received a *Student Travel Award from the Psychometric Society* to present our work “New paradigm of identifiable general-response cognitive diagnostic models” at the International Meeting of the Psychometric Society (IMPS) 2023.
- Chengzhu Huang. Since 09/2023.
 - Received an *IMS Hannan Graduate Student Travel Award* to present our work “Covariance Projected Spectral Clustering” at an IMS meeting in 2026.
- Zhiyu Xu. Since 09/2024.
 - Received an *ASA Statistical Learning and Data Science (SLDS) Student Paper Award* to present our work “Latency-Response Theory Model for Evaluating LLMs” at JSM 2026 in Boston.
- Wenjin Zhang. Since 09/2025.
 - Received an *ASA Statistical Learning and Data Science (SLDS) Student Paper Award* to present our work “Discrete Causal Representation Learning” at JSM 2026 in Boston.
- David Snider. Since 09/2025.

— Mentored Visiting Ph.D. Student —

- Jia Liu, 11/2023 – 10/2024.
Ph.D. student from the Northeast Normal University, China.
- **Mentored Master’s Student Researcher** —
- Junze Zhou. Since 09/2024.
- **Mentored Undergraduate Student Researchers** —
- Chengzhu Huang, USTC, 2022.
Placement: Statistics Ph.D. Program at Columbia University since 2023.
- Lehao Fu, USTC, 2023.
Placement: Statistics Ph.D. Program at Cornell University since 2024.
- Zhiyu Xu, Tsinghua University, 2023.
Placement: Statistics Ph.D. Program at Columbia University since 2024.
- Wenjin Zhang, USTC, 2024.
Placement: Statistics Ph.D. Program at Columbia University since 2025.
- **Mentored High School Student Researcher** —
- Ari Stockwell, Riverdale Country School, Summer 2024.
Mentored research project: Applying longitudinal mixed membership modeling to analyze election survey data to understand how the U.S. political ideology evolves.
Placement: Admitted into Columbia College for Fall 2025.

Teaching Experience

As a Primary Instructor at Columbia University:

Statistics GR6102: Applied Statistics II.	Spring 2026
Statistics GR6103: Applied Statistics III: Statistical Learning with Latent Structures.	Fall 2025
Statistics GR6102: Applied Statistics II.	Spring 2025
Statistics GR5205 / GU4205: Linear Regression Models.	Fall 2024
Statistics GR6102: Applied Statistics II.	Spring 2024
Statistics GR5205 / GU4205: Linear Regression Models.	Fall 2023
Statistics GR6102: Applied Statistics II.	Spring 2023
Statistics GR5205 / GU4205: Linear Regression Models.	Fall 2022
Statistics GR6102: Applied Statistics II, co-instructed with Andrew Gelman.	Spring 2022
Statistics GR5205 / GU4205: Linear Regression Models.	Fall 2021

Honors and Awards

Best Reviewer Award for <i>Psychometrika</i> (Psychometric Society)	2024
Outstanding Reviewer, American Educational Research Association and Journal of Educational and Behavioral Statistics	2023
IMS New Researcher Travel Award, Institute of Mathematical Statistics (IMS)	2021
ProQuest Distinguished Dissertation Awards Honorable Mention, University of Michigan	2020
IMS Lawrence D. Brown Ph.D. Student Award, Institute of Mathematical Statistics	2019
Rackham Predoctoral Fellowship, Rackham Graduate School, UMich	2019–2020
Outstanding Graduate Student Instructor Award, Department of Statistics, UMich	2019
Tsinghua Xuetang Talents Program in Mathematics, Tsinghua University	2013–2015

Invited Talks

2026:

- Invited Seminar, Department of Statistics and Data Science, Washington University in St. Louis, 11/2026.
- Invited Talk, ASA Statistical Learning and Data Science (SLDS) Conference, New York City, 11/2026.
- Invited Seminar, Department of Biostatistics, Virginia Commonwealth University, 09/2026.
- Invited Seminar, Department of Epidemiology and Biostatistics, Memorial Sloan Kettering Cancer Center, New York City, 09/2026.
- Invited Talk, International Meeting of the Psychometric Society (IMPS) 2026, Seoul, Republic of Korea, 07/2026.
- Invited Talk, ICML 2026 Workshop “*Connecting Low-rank Representations in AI: From Practice to Theory*”, Seoul, Republic of Korea, 07/2026.
- Invited Talk, 2026 ICSA China Conference, Shenzhen, China, 06/2026.
- IMS Asia Pacific Rim Meeting, Hong Kong, 06/2026.
- Network Stochastic Processes and Time Series (NeST) Online Seminar Series, 06/2026.
- Department of Statistics Student Seminar, Columbia University, 04/2026.
- Invited Seminar, Pennsylvania State University Statistics Colloquium, 03/2026.
- Invited Seminar, University of Virginia Statistics Colloquium, 03/2026.
- Invited Talk, Causal identification and discovery Workshop, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, 03/2026.

- Joint workshop of SNAB (Statistical Network Analysis and Beyond) and RMTA (random matrix theory and analysis), Nanjing, China, 01/2026.

2025:

- Workshop at Imperial College London: “Statistics and Machine Learning for Networks and High-Dimensional Data”, London, UK, 12/2025.
- 19th International Joint Conference on Computational and Financial Econometrics (CFE) and Computational and Methodological Statistics (CMStatistics), King’s College London, 12/2025.
- Invited Statistics Seminar, London School of Economics and Political Science, 12/2025.
- Invited Statistics Seminar, Department of Statistics, University of Illinois Urbana-Champaign, 10/2025.
- Big Data and Artificial Intelligence in Econometrics, Finance, and Statistics, University of Chicago, 10/2025.
- 14th International Conference on Bayesian Nonparametrics (BNP 14), UCLA, 06/2025.
- Workshop on Statistical Network Analysis and Beyond (SNAB 2025), Tokyo, Japan, 06/2025.
- International Chinese Statistical Association (ICSA) 2025 Applied Statistics Symposium, Storrs, Connecticut, 06/2025.
- Seminar, The University of Hong Kong (HKU) Business School, 05/2025.
- Seminar on Statistics, Department of Mathematics, Hong Kong University of Science and Technology, 05/2025.
- Math and Data (MaD) Seminar, Center for Data Science (CDS) at New York University, 04/2025.
- Invited Seminar, Department of Statistics, University of California, Irvine, 01/2025.
- 2025 Statistics Empowering Data Science (SEEDS) Conference, Marshall School of Business, University of Southern California, 01/2025.

2024:

- 2024 IMS International Conference on Statistics and Data Science (ICSIDS), Nice, France, 12/2024.
- Department of Statistics Seminar, Rutgers University, Piscataway, New Jersey, 11/2024.
- Department of Statistics Colloquium, University of South Carolina, Columbia, South Carolina, 11/2024.
- New York University (NYU) Center for Practice and Research at the Intersection of Information, Society, and Methodology (PRIISM), 10/2024.
- Joint Statistical Meetings (JSM), Portland, Oregon, 08/2024.

- Department of Mathematical Sciences, Tsinghua University, Beijing, China, 06/2024.
- 2024 Workshop on Statistical Network Analysis and Beyond (SNAB 2024), Nassau, Bahamas, 06/2024.
- Keynote speaker, [UC San Diego Halicolu Data Science Institute Causality Workshop](#), San Diego, California, 04/2024.
- Theory and Foundations of Statistics in the Era of Big Data, Florida State University, Tallahassee, Florida, 04/2024.
- 2024 National Council for Measurement in Education (NCME) Annual Meeting, Philadelphia, Pennsylvania, 04/2024.
- 2024 Eastern North American Region (ENAR) of the International Biometrics Society (IBS) Spring Meeting, Baltimore, Maryland, 03/2024.

2023:

- 16th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics), Berlin, Germany, 12/2023.
- Online Causal Inference Seminar, 11/2023.
- Invited talk (virtual), Statistics Seminar, Northeast Normal University (China), 11/2023.
- Algebraic Economics Workshop, Institute for Mathematical and Statistical Innovation (IMSI), Chicago, Illinois, 11/2023.
- Big Data and Machine Learning in Econometrics, Finance, and Statistics, Chicago, Illinois, 10/2023.
- Econometrics and Statistics Colloquium, University of Chicago Booth School of Business, Illinois, 10/2023.
- Algebraic Statistics for Ecological and Biological Systems Workshop, Institute for Mathematical and Statistical Innovation (IMSI), Chicago, Illinois, 10/2023.
- Joint Statistical Meetings (JSM), Toronto, Canada, 08/2023.
- ICSA 2023 Applied Statistics Symposium, Ann Arbor, Michigan, 06/2023.
- 2023 Berkeley-Columbia Meeting in Engineering and Statistics, 04/2023.

2022:

- Statistics Colloquium, Tsinghua University, 10/2022.
- Fordham Psychometrics Program Seminar, Fordham University, 11/2022.
- Department of Statistics, Texas A&M University, 09/2022.
- Department of Mathematical Sciences, University of Texas at Dallas, 09/2022.
- Joint Statistical Meetings (JSM), Washington, D.C., 08/2022.

- International Chinese Statistical Association (ICSA) 2022 Applied Statistics Symposium, Gainesville, Florida, 06/2022.
- New Advances in Statistics and Data Science, Honolulu, Hawaii, 05/2022.
- Department of Mathematics, The Hong Kong University of Science and Technology, Virtual, 03/2022.

2021:

- Department of Statistics Colloquium Series at University of Missouri, Virtual, 11/2021.
- Econometrics Colloquium, Department of Economics, Columbia University, 10/2011.
- Department of Statistics Student Seminar, Columbia University, 09/2021.
- IMS Invited Session on “Inference, Optimization, and Computation on Discrete Structures”, Joint Statistical Meetings (JSM), Virtual, 08/2021.
- Bernoulli-IMS 10th World Congress in Probability and Statistics, Virtual, July 2021.
- ETH Young Data Science Researcher Seminar, Virtual, 04/2021.

2020:

- Early Career Speaker as the Lawrence D. Brown Ph.D. Student Award Recipient, Bernoulli-IMS One World Symposium, Virtual, 08/2020.
- Department of Statistics, Pennsylvania State University, 02/2020.
- Department of Statistics, Rutgers University, 02/2020.
- Department of Statistics, University of Wisconsin-Madison, 02/2020.
- Department of Statistics, Columbia University, 01/2020.
- Department of Statistics and Data Science, Cornell University, 01/2020.
- Department of Mathematics and Statistics, McGill University, 01/2020.
- Department of Statistics, University of California, Irvine, 01/2020.
- Department of Statistics, Florida State University, 01/2020.
- Department of Statistics and Operations Research, University of North Carolina at Chapel Hill, 01/2020.
- Department of Data Sciences and Operations, Marshall School of Business, University of Southern California, 01/2020.
- Department of Statistics, The Wharton School, University of Pennsylvania, 01/2020.
- Department of Statistics, University of Washington, 01/2020.
- Department of Statistics and Data Sciences, University of Texas at Austin, 01/2020.

2019:

- School of Statistics, University of Minnesota, 12/2019.
- Department of Statistics, University of Florida, 12/2019.
- Department of Statistics, University of British Columbia, 12/2019.
- Department of Statistics, Iowa State University, 12/2019.
- Department of Statistics and Actuarial Science, University of Waterloo, 12/2019.
- Department of Mathematics, University of Maryland, 11/2019.
- Department of Statistics & Department of Psychology, University of Illinois at Urbana-Champaign, 11/2019.
- International Chinese Statistical Association (ICSA) Applied Statistics Symposium, Raleigh, NC, 06/2019.

Other Talks and Presentations

- Talk in a Topic-Contributed Session, Joint Statistical Meetings (JSM) 2025, Nashville, Tennessee, 08/2025.
- Contributed Talk, International Meeting of the Psychometric Society (IMPS) 2025, Minneapolis, Minnesota, 07/2025.
- Talk at the “Statistics Meets Tensors” Workshop, IMSI, Chicago, 05/2025.
- Department of Statistics Student Seminar, Columbia University, 02/2025.
- Contributed Talk, International Meeting of the Psychometric Society (IMPS) 2023, University of Maryland, College Park, MD, 07/2023.
- Contributed Talk, International Meeting of the Psychometric Society (IMPS) 2021, Virtual, 07/2021.
- Contributed Talk, International Society for Bayesian Analysis 2021, Virtual, 06/2021.
- Research Talk, Michigan Institute for Data Science (MIDAS) 2019 Symposium, Ann Arbor, MI, 10/2019.
- Poster Presentation, Statistics in the Data Science Era: A Symposium to Celebrate 50 Years of Statistics at the University of Michigan, Ann Arbor, MI, 09/2019.
- Contributed Talk, Joint Statistical Meetings (JSM), Denver, CO, 07/2019.
- Poster Presentation, Midwest Machine Learning Symposium, Madison, WI, 06/2019.
- Contributed Talk, Joint Statistical Meetings (JSM), Vancouver, BC, Canada, 08/2018.
- Contributed Talk, International Meeting of the Psychometric Society (IMPS) 2018, New York, NY, 07/2018.
- Speed Oral and Poster Presentation, Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS), University of Michigan, Ann Arbor, MI, 04/2018.

Professional Services

Research Workshop Organizer:

- Organizer of the 2026 “*Workshop on Statistical Network Analysis and Beyond (SNAB)*”, Vietnam, June 8 – June 10, 2026.
 - Co-organized with Can Le (UC Davis), Xiaodong Li (UC Davis), Jiashun Jin (Carnegie Mellon University), and Ji Zhu (University of Michigan).
- Organizer of the workshop “*Statistics meets Tensors: Methodology, Theory, and Applications*” at the Institute of Mathematics and Statistical Innovation, Chicago, May 5 – May 9, 2025.
 - Co-organized with Anru Zhang (Duke University), Yuxin Chen (University of Pennsylvania), and Cong Ma (University of Chicago).
- Organizer of the “*Psychometrics Workshop*” at Columbia University, September 22 – September 23, 2023.
 - Co-organized with Jingchen Liu and Zhiliang Ying (Columbia University).

Grant Proposal Reviewer and Panelist:

- National Science Foundation Panelist and Reviewer for the Statistics Program: 2024.
- National Science Foundation external reviewer for grant proposals: 2021, 2024.
- Reviewer for Columbia University Data Science Institute seed fund proposals: 2023.

Journal Editorial Board:

- Editorial Board Member for *Journal of Educational and Behavioral Statistics*.

Journal Reviewer:

- *Annals of Applied Statistics, Applied Psychological Measurement, Bayesian Analysis, Bernoulli, Behavior Research Methods, Biometrical Journal, Biometrics, Biometrika, British Journal of Mathematical and Statistical Psychology, Electronic Journal of Statistics, IEEE Transactions on Signal Processing, Journal of Business & Economic Statistics, Journal of Computational and Graphical Statistics, Journal of Educational and Behavioral Statistics, Journal of Machine Learning Research, Journal of the American Statistical Association, Journal of the Royal Statistical Society: Series A, Journal of the Royal Statistical Society: Series B, Proceedings of the National Academy of Sciences, Psychometrika, Stat, Statistica Sinica, Technometrics.*

Paper Award Committee Member for:

- IMS Lawrence D. Brown Ph.D. Student Award: May 2023 – May 2026.
- IMS Thelma and Marvin Zelen Emerging Women Leaders in Data Science Award: Since 2024.

- American Statistical Association Statistical Learning and Data Science (SLDS) Student Paper Award: 2023, 2024, 2025.
- ASA Section on Bayesian Statistical Science (SBSS) Student Paper Competition: 2025.
- ASA Business and Economic Statistics Section Student Paper Competition: 2025.
- The 34th New England Statistics Symposium (NESS): September 2021.

IMS Representative for JSM 2026: Contributed session chair.

Conference Session Organizer for:

- Invited Session, Joint Statistical Meetings (JSM) 2026, Boston, Massachusetts.
- Topic-Contributed Sessions, JSM 2025, Nashville, Tennessee.
- Invited Sessions, International Chinese Statistical Association (ICSA) 2023 Applied Statistics Symposium, Ann Arbor, Michigan.
- Invited Session, International Society for Bayesian Analysis (ISBA) 2022, “Bayesian methods for complex dependent data with application to education and psychology”.
- Invited Session, International Chinese Statistical Association (ICSA) 2022 Applied Statistics Symposium, “Latent Variable Models in the Data Science Era”, Gainesville, Florida.

Local Organizing Committee Member: 2025 Lifetime Data Science Conference.

Internal Services at Columbia University

- Statistics Ph.D. Admission Committee: Academic years 2022–2023, 2024–2025, 2025–2026.
- Statistics Ph.D. Qualifying Exam Committee: 2023, 2024, 2025.
- Term Assistant Professor Search Committee: 2026.
- Statistics Seminar Organizing Committee: Academic years 2021–2022, 2022–2023, 2023–2024.
- Co-organizer, moderator, and panelist of the Graduate Research Opportunities Workshop “GROW Columbia 2024”, Columbia University.
- Departmental Founder’s Postdoc Recruitment Committee: 2024.
- First-year faculty mentors for Ph.D. students: Claire He (2022-2023), Chengzhu Huang (2023-2024), Nikira Walter (2024-2025), Wenjin Zhang (2025-2026).
- Statistics Ph.D. Dissertation Defense Committee:
 - Fangyi Chen, April 2026.
Dissertation title: Nonparametric and Semiparametric Dynamic Factor Models for Event History Data
 - Luhuan Wu, September 2025.
Dissertation title: Advances in Probabilistic Machine Learning: Scalable Inference, Conditional Generation, and Invariance Modeling

- Ye Tian, May 2025.
Dissertation title: Modern Challenges and Statistical Insights in Data Integration.
- Ling Chen, April 2025.
Dissertation title: Modern Latent Variable Analysis: High-dimensional Grade of Membership Models and Process Data.
- Diane Lu, December 2023.
Dissertation title: Machine Learning Workflow on Embolism Detection and Spatial Survival Analysis subject to Missing Censorship Type Indicator.
- Owen Ward, June 2022.
Dissertation title: Latent Variable Models for Events on Social Networks.
- Statistics Ph.D. Oral Exam (Dissertation Prospectus) Committee: Chengzhu Huang (April 2026), David Snider (April 2026), Irene Chang (April 2026), Claire He (April 2026), Luhuan Wu (June 2024), Fangyi Chen (May 2024), Ling Chen (April 2024), Seunghyun Lee (September 2023), Ye Tian (May 2022).
- Econometrics Prospectus Defense Committee: Ruoqing Jiang, May 2023.
- Faculty Advisor for Master's Students in Applied Statistics (about 15 students in each cohort): Academic years 2021–2022, 2022–2023, 2023–2024, 2024–2025.
- Guest Faculty Speaker: Academic Job Search Club, Department of Statistics, Columbia University, October 2021.

Professional Society Memberships

American Statistical Association

Institute of Mathematical Statistics

International Chinese Statistical Association

Psychometric Society