Xiaomeng Ju

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Education

University of British Columbia — Vancouver, BC, CA
Ph.D. in Statistics — Aug 2022

University of Michigan-Ann Arbor — Ann Arbor, MI, US
M.A. in Statistics — May 2015

Renmin University of China — Beijing, China
B.S. in Statistics — May 2013

Research Interests

Methodology: Bayesian Statistics; Computational Statistics; Functional Data Analysis; Statistical Learning Robust Statistics; Tensor Modeling

Applications: Neuroimaging; Precision Medicine.

Professional Experience

New York University Grossman School of Medicine — New York, NY, US
Postdoctoral Researcher in Biostatistics — Apr 2023 - Present

- Supervised by Thaddeus Tarpey and Hyung G. Park
- Led methodological projects on Bayesian modeling for matrix-, tensor-, and functional neuroimaging data.
- Collaborated with the Department of Neuroscience at NYU on applications to pain studies.

University of British Columbia — Vancouver, BC, CA
Postdoctoral Researcher in Statistics — Sep 2022 - Mar 2023

- Supervised by William Welch
- Explored alternative approaches to Bayesian optimization and developed software tools.
- Mentored undergraduate students on research project in time series analysis and Bayesian calibration

University of British Columbia — Vancouver, BC, CA
Research Assistant/Teaching Assistant/Statistical Consultant — Sep 2015 - Aug 2022

- Ph.D. research on robust and functional gradient boosting algorithms, supervised by Matías Salibián-Barrera.
- Teaching assistant for undergraduate and graduate courses in statistics, data science, and computer science.
- Statistical consultant with the Applied Statistics and Data Science Group (ASDa), including service on the management team.

1QB Information Technologies — Vancouver, BC, CA
Research Scientist Intern — Aug. 2018 - May. 2019

- Developed graph convolutional networks to predict molecular docking scores for drug discovery and explored active learning strategies for molecule selection.

Ford Motor Credit Company — Dearborn, MI, US
Data Scientist Intern — May. 2015 - Aug. 2015

- Developed survival models to predict car lease contract renewals.

Publications

[1] **Xiaomeng Ju**, H. G. Park, and T. Tarpey, "Projection-pursuit Bayesian regression for symmetric matrix predictors", *Journal of Multivariate Analysis*, vol. 211, p. 105 539, 2026.

[2] **Xiaomeng Ju**, H. G. Park, and T. Tarpey, "Bayesian scalar-on-network regression with applications to brain functional connectivity", *Biometrics*, vol. 81, no. 1, ujaf023, Mar. 2025.

[3] **Xiaomeng Ju** and M. Salibián-Barrera, "Tree-based boosting with functional data", *Computational Statistics*, vol. 39, no. 3, pp. 1587–1620, 2024.

[4] **Xiaomeng Ju** and M. Salibián-Barrera, "Robust boosting for regression problems", *Computational Statistics & Data Analysis*, vol. 153, p. 107 065, 2021.

[5] **Xiaomeng Ju***, Y. Sun*, S. Vaswani*, and M. Schmidt, "Accelerating boosting via accelerated greedy coordinate descent", *Optimization for Machine Learning Workshop (OPT)*, 2019.
* equal contribution

Under Review

[1] **Xiaomeng Ju**, T. Tarpey, and H. G. Park, "Bayesian Mixed-Effects Models for Multilevel Two-way Functional Data: Applications to EEG Experiments", *arXiv preprint arXiv:2507.20092*, 2025.

[2] **Xiaomeng Ju** and M. Salibián-Barrera, "Robust gradient boosting for functional regression", *under double-blind review; manuscript available upon request*, 2025.

[3] H. Zhang, **Xiaomeng Ju**, B. Shi, L. Meng, and T. Tarpey, "K-Tensors: Clustering Positive Semi-Definite Matrices", *arXiv preprint arXiv:2306.06534*, 2025.

[4] H. G. Park, G. Kenefati, M. M. Rockholt, **Xiaomeng Ju**, R. R. Wu, Z. S. Chen, T. A. Gonda, J. Wang, and L. V. Doan, "Low Frequency Oscillations in the Medial Orbitofrontal Cortex Mediate Widespread Hyperalgesia Across Pain Conditions", *medRxiv*, pp. 2025–06, 2025.

In Progress

Xiaomeng Ju, T. Tarpey, and H. G. Park, "Bayesian modeling for multilevel EEG dynamic functional connectivity", 2025.

- Results presented at Statistics Department Seminar at the University of British Columbia (Sep 2025) and Functional Data Analysis Working Group (FDAWG) at Columbia University (Nov 2025).

Dissertation

Xiaomeng Ju, "Boosting for regression problems with complex data", Ph.D. dissertation, University of British Columbia, 2022.

Software Development

`BMEF:` https://github.com/xmengju/BMEF

- R package implementing Bayesian mixed-effects models for multilevel two-way functional data.

`RRBoost:` https://github.com/xmengju/RRBoost

- R package implementing robust gradient boosting algorithms for functional regression.

`RTFBoost:` https://github.com/xmengju/RTFBoost

- R package implementing tree-based boosting algorithms for functional regression and robust variations.

`EGO:` https://github.com/xmengju/EGO

- R package implementing Bayesian optimization algorithms

Teaching

Guest Lecturer at New York University

- Advanced Regression Modeling (BMSC-GA 4494, PhD level) — Fall 2024, 2025
- Statistical Learning (EHSC-GA 2341, PhD level) — Fall 2024

Teaching Assistant at University of British Columbia

Undergraduate level:

- Elementary Statistics for Applications (STAT 200) — 2016
- Statistical Inference for Data Science (STAT 201) — 2021
- Elementary Statistics (STAT 251; Head TA in 2021) — 2016, 2018, 2021
- Introduction to Probability (STAT 302) — 2016, 2022
- Introduction to Statistical Inference (STAT 305) — 2017, 2022
- Sample Surveys (STAT 344) — 2015, 2016, 2021

Graduate level:

- Statistical Inference II (STAT 561) — 2022
- Algorithms and Data Structures (DSCI 512) — 2019
- Databases and Data Retrieval (DSCI 513) — 2019
- Supervised Learning I (DSCI 571) — 2018
- Machine Learning (CPSC 540) — 2019, 2020

Mentorship Experience

Xiaoting Xing, Ph.D. Candidate in Biostatistics, New York University — Feb 2024–Present

- Provide mentorship on Bayesian hierarchical models and doctoral dissertation proposal (with Thaddeus Tarpey).

Junsong Tang, Undergraduate Student in Mathematics, University of British Columbia — Oct 2022–Mar 2023

- Provided mentorship on time series modeling with applications to hydrology (with William Welch).
- Currently pursuing a Master's degree in Statistics, University of British Columbia.

Parham Pishrobat, Undergraduate Student in Statistics, University of British Columbia — Oct 2022–Mar 2023

- Provided mentorship on Bayesian calibration in experimental design (with William Welch).
- Currently pursuing a Ph.D. in Statistics, University of British Columbia.

Conference/Seminar Presentations

Functional Data Analysis Working Group (FDAWG) at Columbia University (invited) — New York, NY, US

- *Title: Bayesian mixed-effects models for functional data* — Nov 2025

Emerging Leaders in Research Lecture Series, NYU Grossman School of Medicine (invited) — New York, NY, US

- *Title: Bayesian modeling for functional neuroimaging data* — Oct 2025

Statistics Department Seminar at University of British Columbia (invited) — Vancouver, BC, Canada

- *Title: Bayesian modeling for functional neuroimaging data* — Sep 2025

International Conference on Statistics and Data Science (invited) — Vancouver, BC, Canada

- *Title: Bayesian scalar-on-network regression with applications to brain functional connectivity* — Jun 2025

Statistical Methods in Imaging (SMI) Conference (Poster) — Houston, TX, US

- *Title: A Bayesian modeling framework for EEG data in multi-condition experiments* — May 2025

NYU Department of Population Health Trainee Research Day (Poster) — New York, NY, US

- *Title: A Bayesian modeling framework for EEG data in multi-condition experiments* — Apr 2025

Eastern North American Region (ENAR) Spring Meeting — New Orleans, LA, US

- *Title: A probabilistic factor model for tensor EEG data with functional modes* — Mar 2025

Functional Data Analysis Working Group (FDAWG) at Columbia University (invited) — New York, NY, US
- *Title: Bayesian modeling for regression with brain functional connectivity features* — Nov 2024

International Conference on Trends and Perspectives in Linear Statistical Inference (LinStat) (invited) — Poprad, Slovakia
- *Title: Projection-based Bayesian regression for matrix-valued predictors* — Sep 2024

Joint Statistical Meetings (invited) — Portland, OR, US
- *Title: Bayesian scalar-on-network regression with applications to brain functional connectivity* — Aug 2024

The 11th Thomas R. Ten Have Symposium (invited) — New York, NY, US
- *Title: Bayesian scalar-on-network regression with applications to brain functional connectivity* — Aug 2024

Precision Health Interest Group (PHIG) at New York University (invited) — New York, NY, US
- *Title: Bayesian scalar-on-network regression with applications to brain functional connectivity* — Mar 2024

Computational and Methodological Statistics (CMStatistics) (invited) — Berlin, Germany
- *Title: Bayesian scalar-on-network regression with applications to brain functional connectivity* — Dec 2023

Joint Statistical Meetings — Toronto, ON, Canada
- *Title: Tree-based boosting with functional data* — Aug 2023

Functional Data Analysis Working Group (FDAWG) at Columbia University (invited) — New York, NY, US
- *Title: Boosting with functional data and its robust variations* — Jun 2023

Statistics Department Seminar at University of British Columbia — Vancouver, BC, Canada
- *Title:Boosting for regression problems with complex data* — Aug 2022

UBC-SFU Joint Statistics Seminar — Virtual
- *Title: Tree-based boosting with functional data* — Mar 2022

International Chinese Statistical Association Symposium (ICSA) (invited) — Banff, AB, Canada
- *Title: Robust gradient boosting for regression problems* — Jul 2022

Canadian Statistical Sciences Institute (CANSSI) Showcase — Virtual
- *Title: Tree-based boosting for functional data* — Nov 2021

Joint Statistical Meetings — Virtual
- *Title: Robust boosting for regression problems* — Aug 2021

Scholarships and Awards

Outstanding Postdoc Award in Biostatistics — 2024
New York University Grossman School of Medicine

Graduate Student Travel Fund — 2022
University of British Columbia

Resource Allocation Competition Award ($12,498 in computing resources) — 2021–2022
Competition title: Boosting methods for regression problems with complex data
Digital Research Alliance of Canada – National high-performance computing consortium

President's Academic Excellence Initiative PhD Award — 2020–2021
University of British Columbia

Mitacs Accelerate Funding ($16,000) — 2018–2019
Mitacs – National research organization in Canada supporting academia–industry partnerships

International Tuition Award — 2015–2022
University of British Columbia

Faculty of Science PhD Tuition Award — 2015–2022
University of British Columbia

Margaret Wylie Memorial Scholarship in Statistics — 2015
University of British Columbia

Professional Activities and Service

Volunteer Researcher, BRIDGE Project (Pathfinders Phase Two) 2025

- The BRIDGE Project is an international initiative on global neuroimaging data governance and accessibility, led by the Pestilli Lab, Department of Psychology, The University of Texas at Austin.
- Assisted with accessing and processing international fMRI datasets to evaluate barriers in global data sharing.

Journal Reviewer

- *Journal of Multivariate Analysis; Journal of Nonparametric Statistics; Machine Learning; Computational Statistics; Statistical Analysis and Data Mining*

Session Chair

- *ENAR 2025 Contributed Papers: Integrative Approaches to Functional and Spatial Data Analysis* *2025*

Organizer

- *University of British Columbia (UBC)-Simon Fraser University (SFU) Joint Statistics Seminar* *2018, 2019*
- *Graduate Student Writing Workshop, Department of Statistics, University of British Columbia* *2016, 2017*

Training

- *SHARP NIH Grant Writing Boot Camp, Columbia University Mailman School of Public Health* 2025

Service

- *Volunteer, Project SHORT (Students for Higher Education Opportunities and Representation in Training) A nonprofit supporting equitable access to graduate education through mentorship and application guidance* *2025*
- *Volunteer, NYU Langone Postdoctoral Association* *2023, 2024*
- *Volunteer, International Chinese Statistical Association Symposium (ICSA)* *2017*
- *Treasurer, Statistics Graduate Student Association, University of British Columbia* *2016, 2017*