Qiong Zhang

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Contact Info

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Research Interests

Merging statistics and machine learning methodology for heterogeneous data, with a focus on

- Mixture reduction with applications to distributed learning, computer graphics
- Empirical likelihood for intelligent federated learning, handling label noise
- Tabular foundation models and in-context learning for statistical tasks

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Employment

Renmin University of China — 09/2022–present
Beijing, China
Tenure Track Assistant Professor
Institute of Statistics and Big Data

Education

University of British Columbia — 09/2017–05/2022
Vancouver, British Columbia, Canada
Ph.D. in Statistics
Supervisor: Professor Jiahua Chen
Thesis: Inference under finite mixture models: distributed learning and approximate inference

University of British Columbia — 09/2015–09/2017
Vancouver, British Columbia, Canada
M.Sc. in Statistics
Supervisor: Professor Jiahua Chen
Thesis: Small area quantile estimation under unit-level models

University of Science and Technology of China — 09/2011–06/2015
Hefei, Anhui, China
B.Sc. in Statistics, School of the Gifted Young

Publications

† denotes corresponding author
* denotes equal contribution or alphabetical order
♢ denotes student author that I supervised/co-supervised for the project

Preprints

1. Qiong Zhang, Qinglong Tian, and Pengfei Li. "Neyman-Pearson multiclass classification under label noise." Available on arXiv.
2. Qiong Zhang, Jing Peng*,♢, Xin Zhang*, Aline Talhouk, Gang Niu, and Xiaoxiao Li. "FedMT: Federated learning with mixed-type labels." Available on arXiv.

Manuscripts under review

3. Tianqi Zhao$^{\diamondsuit}$, Guanyang Wang, Yan Shuo Tan, and Qiong Zhang. "TabClustPFN: A prior-fitted network for tabular data clustering." Available on arXiv.
4. Junjun Lang, Qiong Zhang†, and Yukun Liu†. "Minimum Wasserstein distance estimator under covariate shift: closed form and super-efficiency." Available on arXiv. (***Major revision at JASA***).
5. Ruinan Jin, Gexin Huang, Xinwei Shen, Qiong Zhang, Yan Shuo Tan, and Xiaoxiao Li. "Reference image-guided comparative vision-language models for medical diagnosis." Available on arXiv. (***Under review at Medical Image Analysis***).
6. Qiong Zhang*, Yan Shuo Tan*, Qinglong Tian*, and Pengfei Li. "TabPFN: one model to rule them all?" Available on arXiv. (***Major revision at JASA***).

Published

7. Ruinan Jin$^{\diamondsuit}$, Minghui Chen$^{\diamondsuit}$, Qiong Zhang†, and Xiaoxiao Li. "Forgettable federated linear learning with certified data removal." Available on arXiv. (*Accepted by IEEE Transactions on Neural Networks and Learning Systems (**TNNLS**)*, to appear).
8. Qiong Zhang*, Yan Shuo Tan*, and Jiahua Chen. "Byzantine-tolerant distributed learning of finite mixture models." Available on arXiv. (*Accepted by **JRSSB***, to appear).
9. Zijian Wang$^{\diamondsuit}$, Xiaofei Zhang, Xin Zhang, Yukun Liu, and Qiong Zhang†. "Beyond aggregation: Guiding clients in heterogeneous federated learning." **ICLR**, 2026 (28.18% acceptance).
10. Tao Wang*$^{,\diamondsuit}$, Mengyu Li*$^{,\diamondsuit}$, Geduo Zeng$^{\diamondsuit}$, Cheng Meng†, and Qiong Zhang†. "Gaussian herding across pens: an optimal transport perspective on global Gaussian reduction for 3DGS." **NeurIPS**, 2025 ***(spotlight, 3.19% acceptance)***.
11. Jing Peng$^{\diamondsuit}$, Meiqi Yang, Qiong Zhang†, Xiaoxiao Li. "S4M: S4 for multivariate time series forecasting with Missing values." **ICLR**, 2025 (31.73% acceptance).
12. Qiong Zhang, Archer Gong Zhang, and Jiahua Chen. "Gaussian mixture reduction with composite transportation divergence." *IEEE Transactions on Information Theory* **(TIT)** 70(7), 5191–5212, 2024.
13. Qiong Zhang and Jiahua Chen. "Distributed learning of finite Gaussian mixtures." *Journal of Machine Learning Research* (**JMLR**) 23(1), 4265–4304, 2022.
14. Qiong Zhang and Jiahua Chen. "Minimum Wasserstein distance estimator under finite Location-scale mixtures." In *Advances and Innovations in Statistics and Data Science*, pp. 69–98. Springer, Cham, 2022.
15. Qiong Zhang and Jihua Chen. "Robustness of Gaussian mixture reduction for split-and-conquer learning of finite Gaussian mixtures." 3rd *International Conference on Statistics: Theory and Applications* (ICSTA), 2021.
16. Hanwen Liang*, Qiong Zhang*, Peng Dai, and Juwei Lu. "Boosting the generalization capability in cross-domain few-shot learning via noise-enhanced supervised autoencoder." *International Conference on Computer Vision* (**ICCV**), 2021 (25.9% acceptance).
17. Xin Ding*, Qiong Zhang*, and William J. Welch. "Classification beats regression: counting of cells from greyscale microscopic images based on annotation-free training samples." *CAAI International Conference on Artificial Intelligence*, 2021 (34.5% acceptance).
18. Zhanshou Chen, Jiahua Chen, and Qiong Zhang. "Small area quantile estimation via spline regression and empirical likelihood." *Survey Methodology* 45(1), 81–99, 2019.
19. Philippe Phan, Brandon Budhram, Qiong Zhang, Carly S. Rivers, Vanessa K. Noonan, Tova Plashkes, Eugene K. Wai, Jérôme Paquet, Darren M. Roffey, Eve Tsai, and Nader Fallah. "Highlighting discrepancies in walking prediction accuracy for patients with traumatic spinal cord injury: an evaluation of validated prediction models using a Canadian multicenter spinal cord injury registry." *The Spine Journal*, 19(4), 703–710, 2019.

20. Bo Chang*, Qiong Zhang*, Shenyi Pan, and Lili Meng. "Generating handwritten Chinese characters using CycleGAN." In 2018 IEEE *Winter Conference on Applications of Computer Vision* (**WACV**), pp. 199–207. IEEE, 2018 (45.9% acceptance).

Grants & Awards

Grants

- 2025–2029 **National Key R&D Program of China – Young scientists project (Co-PI)**
- 2024–2026 Key Laboratory of Advanced Theory and Application in Statistics and Data Science open research fund (PI)
- 2024–2026 **National Natural Science Foundation of China young scientists fund (PI)**
- 2023–2025 Renmin University of China (RUC) startup research grant (PI)
- 2023–2024 RUC early development research grant (PI)

Awards

- 2021 Honorable mentions for the presentation award of 2nd Waterloo student conference in statistics, actuarial science and finance
- 2019 Winner of SSC (Statistical Society of Canada) annual meeting case study
- 2017 Margaret Wylie memorial scholarship in statistics
- 2017–2021 University of British Columbia (UBC) international doctoral fellowship
- 2017–2021 UBC faculty of science graduate award
- 2016 CANSSI (Canadian Statistical Sciences Institute) scholarship
- 2015–2021 UBC international tuition award
- 2013, 2014 University of Science and Technology of China (USTC) outstanding undergraduate scholarship
- 2011 USTC outstanding freshman scholarship

Teaching

Instructor, Renmin University of China
Undergraduate level courses

- Introduction to probability and mathematical statistics — 09/2025–12/2025

Master level courses

- Data visualization — 09/2025–12/2025

PhD level courses

- Applied statistics — 03/2026–06/2026
- Bayesian modeling and inference — 02/2025–06/2025, 02/2024–06/2024, 02/2023–06/2023
- Special topics in big data (with a focus on distributed learning) — 02/2025–06/2025, 02/2024–06/2024, 02/2023–06/2023

- Advanced statistical computing — 09/2025–12/2025, 09/2024–12/2024, 09/2023–12/2023, 09/2022–12/2022

Teaching Assistant, University of British Columbia
Held weekly labs and office hours, created and marked assignments and exams

- STAT 201: Statistical inference for data science — 01/2022–04/2022
- STAT 404: Design and analysis of experiments — 09/2021–12/2021
- STAT 305: Introduction to statistical inference — 07/2021–08/2021
- STAT 251: Elementary statistics — 05/2021–06/2021
- STAT 300: Intermediate statistics for applications — 01/2021–04/2021
- STAT 344: Sample surveys — 09/2020–12/2020
- STAT 302: Introduction to probability — 01/2020–04/2020, 09/2019–12/2019
- STAT 461/561: Statistical theory II — 01/2019–04/2019
- STAT 306: Finding relationships in data — 09/2018–12/2018
- STAT 200: Elementary statistics for applications — 01/2018–04/2018, 09/2017–12/2017, 01/2017–04/2017, 09/2016–12/2016, 01/2016–04/2016, 09/2015–12/2015

Teaching Assistant, University of Science and Technology of China
Held weekly TA office hours, marked assignments and exams

- Linear algebra (B1) — 02/2015–06/2015
- Linear algebra (B2) — 09/2014–01/2015

Other

- Trainer for teaching assistant program (@ UBC Statistics) — 09/2019–09/2021
- UBC instructional skills workshops — 11/2019

Talks

Invited Talks

- 08/2025 RIKEN AIP: Robust and Scalable Federated Learning of Finite Mixture Models: Addressing Label Switching and Byzantine Failures.
- 08/2025 Gouxionghui: Distributed learning of finite mixture models with and without Byzantine failures.
- 08/2025 EcoSta 2025: Byzantine tolerant distributed learning of finite mixture models.
- 06/2025 Yunnan University conference: TabPFN: One model to rule them all?
- 12/2024 NENU seminar: Distributed learning of finite mixture models with and without Byzantine failures.

- 06/2024 USTC seminar: Distributed learning of finite mixture models with and without Byzantine failures.
- 06/2024 East China Normal University seminar: Distributed learning of finite mixture models with and without Byzantine failures.
- 12/2023 Banff International Research Station(BIRS)-Institue for Advanced Study in Mathematics (IASM) workshop on harnessing the power of latent structure models and modern big data: Distributed learning of finite mixture models.
- 12/2023 East China Normal University colloquium: Gaussian mixture reduction with composite transportation divergence.
- 11/2023 Nankai University seminar: Distributed learning of finite Gaussian mixtures.
- 08/2023 1st International Conference on Machine Learning and Statistics: Gaussian mixture reduction with composite transportation divergence.
- 05/2023 USTC seminar: Distributed learning of finite Gaussian mixtures.
- 12/2022 Xiamen University conference: Gaussian mixture reduction with composite transportation divergence.
- 11/2022 Shanghai Jiao Tong University seminar: Distributed learning of finite Gaussian mixtures.
- 10/2022 Renmin University of China conference: Federated learning with mixed-type labels.

Contributed Talks

- 08/2024 JSM: Byzantine tolerant distributed learning of finite mixture models.
- 07/2023 Joint conference on statistics and data science in China (JCSDS): Gaussian mixture reduction with composite transportation divergence.
- 2021 Waterloo student conference of statistics, actuarial science and finance: Distributed learning of finite Gaussian mixtures.
- 2021 JSM: Distributed learning of finite Gaussian mixtures.
- 2021 ICSTA: Robustness of Gaussian mixture reduction for split-and-conquer learning of finite Gaussian mixtures.
- 2021 UBC/SFU joint student seminar: Distributed learning of finite Gaussian mixtures.
- 2018 UBC/SFU joint student seminar: Generating handwritten Chinese characters using CycleGAN.
- 08/2016 Statistics Canada: Estimation of small area means and quantiles using EBLUP, Pseudo-EBLUP and M-quantile approaches.

Poster Presentation

- 2025 NeurIPS: Gaussian herding across pens: an optimal transport perspective on global Gaussian reduction for 3DGS.
- 2023 IMS New Researcher Conference: Distributed learning of finite Gaussian mixtures.
- 2022 NeurIPS journal to conference track: Distributed learning of finite Gaussian mixtures.
- 2021 CANSSI showcase: Distributed learning of finite Gaussian mixtures.
- 2019 SSC (Statistical Society of Canada) case study: Classification beats regression in cell counting from microscopic images.
- 2018 JSM data expo: Do I really need a jacket?
- 2018 WACV: Generating handwritten Chinese characters using CycleGAN.

Professional Experience & Activities

Student supervision

- Tianqi Zhao (Ph.D.) 2025–present
- Zijian Wang (Ph.D.) 2025–present
- Yimei Zhang (Ph.D.) 2024–present
- Jing Peng (MSc.) → Georgia Institute of Technology (CS Ph.D.) 2023–2025
- Jianhuang Gan (MSc.) → Fuwai Hospital 2022–2024
- Pengcheng Kong (MSc.) → Shanghai Stock Exchange 2022–2024
- Cong Ye (MSc.) → Iowa State University (Stat Ph.D.) 2022–2024

Service

- Graduate committee, Institute of Statistics and Big Data, RUC 2023–present
- Faculty search committee, Department of Statistics, UBC 2022

Reviewer

- Statistics: Statistica Sinica, Journal of Multivariate Analysis, Electronic Journal of Statistics
- Machine Learning: Machine Learning (ML), IEEE Transactions on Neural Networks and Learning Systems (TNNLS), Journal of Machine Learning Research (JMLR), International Conference on Machine Learning (ICML), International Conference on Learning Representations (ICLR), Neural Information Processing Systems (NeurIPS)
- Computer Vision: IEEE Transactions on Image Processing, Conference on Computer Vision and Pattern Recognition (CVPR)
- General: Scientific Reports

Organizer & Conference Volunteer

- RUC ISBD department seminar organizer 2023–2024
- UBC Constance van Eeden lecture organizer 2019–2020
- UBC/SFU joint student seminar organizer 2017–2019
- 2018 JSM–ICSA volunteer 08/2018
- ICSA-Canada chapter 2017 symposium volunteer 08/2017

Internship

- Huawei Noah's Ark Lab, Markham, ON, Canada 05/2020–09/2020
  Computer Vision Team
- Rick Hansen Institute, Vancouver, BC, Canada 05/2017–08/2017
- Statistics Canada, Ottawa, ON, Canada 06/2016–08/2016
  International Cooperation and Corporate Statistical Methods Division

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Hardware & Software

Programming: Proficient with Python, R; some experience with C, Matlab, SAS
Deep Learning API: Pytorch
Office & Publishing: Microsoft office, LaTeX