Qiong Zhang

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Contact Information

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Research Interests

Distributed learning, federated learning, mixture model

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. GPA: 4.0/4.0
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. GPA: 4.0/4.0
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. GPA: 3.66/4.3

Publications

† denotes corresponding author

* denotes equal author contribution with alphabetical order.

Preprints

1. **Qiong Zhang** and Jiahua Chen. "Byzantine-tolerant distributed learning of finite mixture models." Available at arXiv:2407.13980.
2. Ruinan Jin, Minghui Chen, **Qiong Zhang**†, and Xiaoxiao Li†. "Forgettable federated linear learning with certified data removal." Available at arXiv:2306.02216.
3. **Qiong Zhang**, Jing Peng*, Xin Zhang*, Aline Talhouk, Gang Niu, and Xiaoxiao Li. "FedMT: Federated learning with mixed-type labels." Available at arXiv:2210.02042.

Refereed Papers

1. **Qiong Zhang**, Archer Gong Zhang, and Jiahua Chen. "Gaussian mixture reduction with composite transportation divergence." *IEEE Transactions on Information Theory* 70(7), 5191–5212, 2024.
2. **Qiong Zhang** and Jiahua Chen. "Distributed learning of finite Gaussian mixtures." *Journal of Machine Learning Research* 23(1), 4265–4304, 2022.
3. **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.
4. **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.
5. 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).
6. 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).
7. Zhanshou Chen, Jiahua Chen, and **Qiong Zhang**. "Small area quantile estimation via spline regression and empirical likelihood." *Survey Methodology* 45(1), 81–99, 2019.
8. 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.
9. 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).

Teaching Experience

Instructor, Renmin University of China

PhD level courses

- Bayesian modeling and inference — 02/2023–06/2023, 02/2024–06/2024
- Special topics in big data (with a focus on distributed learning) — 02/2023–06/2023, 02/2024–06/2024
- Advanced statistical computing — 09/2022–12/2022, 09/2023–12/2023, 09/2024–12/2024

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 09/2019–04/2020
- 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 09/2015–04/2018

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

Grants and Awards

- 2024–2026 National Natural Science Foundation of China (NSFC) young scientists fund
- 2023–2025 Renmin University of China (RUC) startup research grant
- 2023–2024 RUC early development research grant
- 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 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

Talks & Presentations

Poster Presentation

- 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.

Invited Talks

- 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.

Professional Experience & Activities

Student supervision

- Jing Peng (MSc.) 2023–present
- Jianhuang Gan (MSc.) 2022–present
- Pengcheng Kong (MSc.) 2022–present
- Cong Ye (MSc.) 2022–present

Service

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

Reviewer

- Electronic Journal of Statistics
- IEEE Transactions on Image Processing
- IEEE Transactions on Neural Networks and Learning Systems
- Journal of Machine Learning Research
- International Conference on Machine Learning (ICML)
- International Conference on Learning Representations (ICLR)
- Neural Information Processing Systems (NeurIPS)

Organizer & Conference Volunteer

- RUC ISBD 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 and Software Skills

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