Jingjing Zheng

Contact Information

Room 335
6201 Cecil Green Park Road
Vancouver, BC, Canada, V6T 1Z1

Phone: 1-(873)9922-169
Email: jjzheng233@gmail.com

Research Interests

Efficient and trustworthy large language models (LLMs); low-rank, sparse, and tensor-based representation learning; multimodal learning and tensorized architectures; safety, robustness, and reliability of LLMs under resource and compute constraints.

Programming Languages

Python; Matlab

Education

- **University of British Columbia**, Vancouver, BC, Canada 09/2023 - 05/2027 (expected)
  Ph.D. Student, Mathematics *Supervisor:* Yankai Cao
  Cumulative Average: 93.9/100
- **Memorial University of Newfoundland**, St.John's, NL, Canada 09/2020 - 07/2023
  Doctor of Engineering (D.E.), Computer Science *Supervisors:* Xianta Jiang, and Xiaoqin Zhang
  GPA: 4.0/4.0 (Average: 91.5/100)
- **Wenzhou University**, Zhejiang, P. R. China 09/2017 - 06/2020
  M.S., Applied Mathematics, *Supervisor:* Xiaoqin Zhang
- **Wuchang Institute of Technology**, Hubei, P. R. China 09/2011 - 06/2015
  B.A., Art Design, *Advisor:* Hao Cheng

Research Experience

- **ZERO Lab, Peking University**, Beijing, P. R. China. 05/2024 - 09/2024
  Visiting Student, *Advisor:* Zhouchen Lin
  Description:
  - **AdaMSS: Adaptive Multi-Subspace Approach for Parameter-Efficient Fine-Tuning** Analysis and Application of Multi-Subspace Distribution of Weight Matrices; Lowest-Rank Representation; Stronger Theoretical Generalization Guarantee; Multi-Subspace-Based Adaptive Budget Allocation; improves average accuracy by +4.7% on `ViT-Large` across seven image classification datasets and by +6.9% on GSM8K with `LLaMA 2-7B`, while requiring only 15.35% and 1.25% of the trainable parameters, respectively, compared to LoRA.
- **Nasdaq**, St.John's, NL, Canada. 05/2022 - 09/2022
  Research Intern, *Advisor:* John Hawkin
  Description:
  - **Unsupervised Financial Fraud Detection Using Low-rank Recovery.** Outlier Pursuit (OP) and Non-convex Variants; Unsupervised Financial Fraud Detection.

Entrepreneurship Experience

- **GradientX Technologies Inc.**, Vancouver, Canada 2025 – Present
  CTO & Co-Founder
  - GradientX is building the next generation of personalized financial intelligence.
  - Selected for Lab2market Validate Program, 2025 (Funded with $10,000)

Awards and honors

- The Borealis AI Fellowship (awarded to ten AI researchers from across Canada), 2023
- Government Award for Outstanding Self-financed Students Abroad (globally awarded to 650 young talents every year), 2023
- Fellow of the School of Graduate Studies, 2023
- MUN Outstanding Research Award, 2022
- National Scholarship, China, 2019
- Outstanding Graduates of Zhejiang Province, China, 2019
- CISC Outstanding Paper Award, China, 2018

- National Post-Graduate Mathematical Contest in Modeling, China (Second Prize, Team Leader), 2017

Grants

- Science and Technology Innovation Program for College Students in Zhejiang Province, Image Classification Based on New Norm and Its Generalization, Jingjing Zheng (Principal Investigator), Xiaoju Lu, Guiying Tang, 2018-2020, fund: RMB ¥ 10,000.
- Mitacs Accelerate Award with Verafin, Unsupervised Financial Fraud Detection Using Low-rank Recovery, CAD $15000, 2022.5-2022.9

Research Outputs

Notes: Supervisors = †; Corresponding authors = *; Please see *google scholar* for more of my work.

Conference Proceedings:

1. **Jingjing Zheng**, Anda Tang, Qiangqiang Mao, Zhouchen Lin*, Yankai Cao*,†. ReFTA: Breaking the Weight Reconstruction Bottleneck in Tensorized Parameter-Efficient Fine-Tuning, submitted to *CVPR 2026*.
2. **Jingjing Zheng**, Wanglong Lu, Yiming Dong, Chaojie Ji, Yankai Cao*,†, Zhouchen Lin*. AdaMSS: Adaptive Multi-Subspace Approach for Parameter-Efficient Fine-Tuning. *NeurIPS*, 2025.
3. Qiangqiang Mao, Jiayang Ren, Yixiu Wang, Chenxuanyin Zou, **Jingjing Zheng**, Yankai Cao*,†. Differentiable Decision Tree via "ReLU+Argmin" Reformulation. *NeurIPS* (spotlight), 2025.
4. **Jingjing Zheng**, Wanglong Lu, Wenzhe Wang, Yankai Cao*,†, Xiaoqin Zhang, Xianta Jiang. Handling The Non-Smooth Challenge in Tensor SVD: A Multi-Objective Tensor Recovery Framework. *ECCV*, 2024.
5. Ziang Wu, Xianta Jiang, **Jingjing Zheng**, Bin Zheng, Stella Atkins. Measuring Motor Task Difficulty using Low/High Index of Pupillary Activity. *Proceedings of the 2024 Symposium on Eye Tracking Research and Applications*, 2024.
6. **Jingjing Zheng**, Yankai Cao*,†. Bayesian-Driven Learning of A New Weighted Tensor Norm for Tensor Recovery. *Tiny Paper Track at ICLR*, 2024.
7. **Jingjing Zheng***, John Hawkin, Charles Robertson, Alexander Howse, Yuanzhu Chen, Xianta Jiang†. Unsupervised Financial Fraud Detection Using Low-rank Recovery. *Canadian Conference on Artificial Intelligence*, 2023.
8. Xianta Jiang, Ziang Wu, **Jingjing Zheng**, Bin Zheng, M. Stella Atkins. Index Pupil Activity Echoing with Task Difficulty in Fitts' Law Setting, *Eyes4ICU workshop at ETRA*, 2023.
9. **Jingjing Zheng**, Xiaoqin Zhang*,†, Wenzhe Wang, Xianta Jiang. Handling Slice Permutations Variability in Tensor Recovery. *AAAI Conference on Artificial Intelligence*, 2022.
10. Mengqing Sun, Li Zhao*, **Jingjing Zheng** and Jiawei Xu. A Nonlocal Denoising Framework Based on Tensor Robust Principal Component Analysis with ℓ_p norm. *IEEE Conference on Big Data*, 2020.
11. Xiaoju Lu, Guiying Tang, Di Wang, Xiaoqin Zhang and **Jingjing Zheng***. Structural Dictionary Learning based on Non-convex Surrogate of $\ell_{2,1}$ Norm for Classification. *IEEE Conference on Big Data*, 2019:5056-5061.
12. Yufang Yan, Xiaoqin Zhang*, **Jingjing Zheng** and Li Zhao. Weighted Tensor Schatten p-norm Minimization for Image Denoising. *China Intelligent System Conference*, 2019:163-172. **2018 Outstanding Paper Award**

Journal Publications:

1. Xiaoqin Zhang†, Ziwei Huang, **Jingjing Zheng***, Shuo Wang, Xianta Jiang. DcnnGrasp: Towards Accurate Grasp Pattern Recognition with Adaptive Regularizer Learning, *Science China Information Sciences*, 2024. *(IF:7.6)*
2. Xixiang Chen, **Jingjing Zheng**, Li Zhao, Wei Jinag, Xiaoqin Zhang. Orthogonal Tensor Recovery Based on Non-Convex Regularization and Rank Estimation, *IEEE Access*, 2024.
3. Zhiwei Huang, **Jingjing Zheng**, Li Zhao*, Huiling Chen, Xianta Jiang, Xiaoqin Zhang. DL-Net: Sparsity Prior Learning for Grasp Pattern Recognition, *IEEE Access*, 2023.
4. Xiaoqin Zhang*,†, **Jingjing Zheng**, Di Wang, Guiying Tang, Zhengyuan Zhou, and Zhouchen Lin. Structured Sparsity Optimization with Non-Convex Surrogates of $\ell_{2,0}$-Norm: A Unified Algorithmic Framework. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2023. *(IF:20.8)*
5. Xiaoqin Zhang*,†, **Jingjing Zheng**, Li Zhao, Zhengyuan Zhou, Zhouchen Lin. Tensor Recovery With Weighted Tensor Average Rank. *IEEE Transactions on Neural Networks and Learning Systems*, 2022. *(IF:11.1)*
6. Shuo Wang, **Jingjing Zheng**, Bin Zheng, Xianta Jiang*. Phase-Based Grasp Classification for Prosthetic Hand Control Using sEMG. *Biosensors*, 2022.
7. Shuo Wang, **Jingjing Zheng**, Ziwei Huang, Xiaoqin Zhang, Vinicius Prado, Bin Zheng and Xianta Jian*. Integrating computer vision to prosthetic hand control with sEMG: Preliminary results in grasp classification, *Frontiers in Robotics and AI*, 2022.
8. Wenzhe Wang, **Jingjing Zheng**, Li Zhao*, Huiling Chen, Xiaoqin Zhang. A Non-Local Tensor Completion Algorithm Based on Weighted Tensor Nuclear Norm, *Electronics*, 2022.
9. Xiaoqin Zhang*,†, **Jingjing Zheng**, Di Wang and Li Zhao. Exemplar-Based Denoising: A Unified Low-rank Recovery Framework. *IEEE Transactions on Circuits and Systems for Video Technology*, 2020,30(8):2538 - 2549. *(IF:14.255)*
10. Xiaoqin Zhang, **Jingjing Zheng**, Yufang Yan, Li Zhao*, Runhua Jiang. Joint Weighted Tensor Schatten p-Norm and Tensor l_p-norm Minimization for Image Denoising. *IEEE Access*, 2019.

Preprints:

1. **Jingjing Zheng**, Yankai Cao*,†. Adaptive Principal Components Allocation with the $\ell_{2,g}$-regularized Gaussian Graphical Model for Efficient Fine-Tuning Large Models. *arXiv:2412.08592*, 2024.
2. **Jingjing Zheng**, Wenzhe Wang, Xiaoqin Zhang*,†, Xianta Jiang*,†. A Novel Tensor Factorization-Based Method with Robustness to Inaccurate Rank Estimation. *arXiv:2305.11458*, 2023.
3. Xiaoqin Zhang, Ziwei Huang, **Jingjing Zheng***, Shuo Wang, Xianta Jiang. DcnnGrasp: Towards Accurate Grasp Pattern Recognition with Adaptive Regularizer Learning. *arXiv: 2205.05218*, 2022.

Patents:

1. Xiaoqin Zhang†, **Jingjing Zheng**, Yufang Yan, Image Denoising Method Based on Novel Norm, Patent Number: 201810233460.7, Date of Application: 2018.03.21
2. Li Zhao, Xiaoqin Zhang†, **Jingjing Zheng**, Wenzhe Wang, A Nonlocal Denosing Framework Based on Generalized Non-convex Tensor Robust Principal Component Analysis for Color Image and Video, Patent Number: CN202110010629.4, Date of Application: 2021.01.06

Community Service

- **Women and Gender-diverse Mathematicians at UBC (WGM)**, organizing committee, 2025-2026
- **UBC Green College Academic Committee**, 2025-2026
- **Reviewing Experience:**
  - Conferences: AAAI, WACV, ICLR, CVPR, ICCV, NeurIPS, Canadian AI
  - Journals: IEEE Transactions on Industrial Informatics
- **Meeting/Conference Organizing:**
  - UBC Applied Mathematics Meeting, 2025

Professional Activities

Presentations (Poster/Oral):

1. UBC Math Graduate and postdoc seminar, Vancouver, 20/11/2025
2. CAN-CWiC West 2025 (poster), Vancouver, 7/11/2025
3. UBC-hosted event collocated with ICML 2025 (poster), Vancouver, 15/07/2025
4. The 18th European Conference on Computer Vision (poster), MiCo Milano, 2024
5. Canadian Conference on Artificial Intelligence (oral+poster), Montreal, 2023
6. AAAI Conference on Artificial Intelligence (poster), Vancouver (remote), 2022
7. the First Annual SEA Conference (poster), Newfoundland, 2022
8. AARMS CRG workshop (oral), Newfoundland, June 2, 2022

Mentoring Experience

1. Suleman Ahmad, Engineering, University of British Columbia, 08/2025-Current
2. Wenzhe Wang, Zhiwei Huan, Xixiang Chen, College of Computer Science and Artificial Intelligence, Wenzhou University, Zhejiang, P. R. China, 2019-2023
3. Mengqing Sun, College of Mathematics and Physics, Wenzhou University, Zhejiang, P. R. China, 2018-2021

Teaching Experience

Teaching Assistant:

1. MATH_V 340 101: Introduction to Linear Programming, 2025 Winter Term 1 (2025), University of British Columbia
2. MATH_V 340 201/202: Introduction to Linear Programming, 2024 Winter Term 2 (2025), University of British Columbia
3. MATH_V 340 101: Introduction to Linear Programming, 2024 Winter Term 1 (2024), University of British Columbia
4. Abstract Linear Algebra, 2023 Winter Term 2 (2024), University of British Columbia
5. Matrix Algebra, 2023 Winter Term 1 (2023), University of British Columbia
6. Math Learning Center, 2023-2025, University of British Columbia
7. Computer Science 2002: Data Structures and Algorithms, Winter 2022, Memorial University of Newfoundland