Jingjing Zheng

Contact Information

Room 335
6201 Cecil Green Park Road
Vancouver, BC, Canada, A1B 3X7

Cell: 1-(873)9922-169
E-mail: jjzheng233@gmail.com

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Education

- **University of British Columbia**, Vancouver BC, Canada — 09/2023 - Current
  Ph.D. Student, Mathematics — *Advisor:* Yankai Cao
- **Memorial University of Newfoundland**, St.john's NL, Canada — 09/2020 - 07/2023
  D.E., Computer Science — *Advisors:* Xianta Jiang, Xiaoqin Zhang, and Yuanzhu Chen
- **Wenzhou University**, Zhejiang, P. R. China — 09/2017 - 06/2020
  M.S., Applied Mathematics, — *Advisor:* Xiaoqin Zhang

Research Interests

Low-rank recovery, sparse representation learning, optimization, explainable deep neural networks, and computer vision-based robot hand control.

Research Experience

- **ZERO Lab, Peking University**, Beijing, P. R. China. — 05/2024 - 09/2024
  Visiting Student, — *Advisor:* Zhouchen Lin

Awards and honors

- The Borealis AI 2023 Fellowship (awarded to ten AI researchers from across Canada), 2023
- 2022 Chinese Government Award for Outstanding Self-financed Students Abroad (globally awarded to 650 young talents every year), 2023
- Fellow of the School of Graduate Studies, 2023.05
- MUN Outstanding Research Award, 2022.03
- National Scholarship, China, 2019
- Outstanding Graduates of Zhejiang Province, China, 2019
- National Post-Graduate Mathematical Contest in Modeling, China (Second Prize, Team Leader), 2017

Reviewing Experience

- **Journals:** IEEE Transactions on Industrial Informatics, IEEE Access, Scientific Reports, Computers in Biology and Medicine
- **Conferences:** Canadian AI 2023, the 2021 Aldrich conference

Teaching Experience

Teaching Assistant:

1. Computer Science 2002: Data Structures and Algorithms, Winter 2022, Memorial University of Newfoundland
2. Math Learning Center, Winter Term 1, University of British Columbia
3. Math Learning Center, Winter Term 2, University of British Columbia
4. Matrix Algebra, Winter Term 1, University of British Columbia
5. Abstract Linear Algebra, Winter Term 2, University of British Columbia

Mentoring Experience

1. Mengqing Sun, College of Mathematics and Physics, Wenzhou University, Zhejiang, P. R. China
2. Wenzhe Wang, College of Computer Science and Artificial Intelligence, Wenzhou University, Zhejiang, P. R. China

3. Zhiwei Huan, College of Computer Science and Artificial Intelligence, Wenzhou University, Zhejiang, P. R. China
4. Xixiang Chen, College of Computer Science and Artificial Intelligence, Wenzhou University, Zhejiang, P. R. China

Professional Activities

Conference Talks:

1. Handling Slice Permutations Variability in Tensor Recovery, AAAI Conference on Artificial Intelligence, 2022
2. Handling Slice Permutations Variability in Tensor Recovery, the First Annual SEA Conference, 2022
3. Handling Slice Permutations and Transpose Variability in Tensor Recovery, AARMS CRG workshop, June 2, 2022
4. Unsupervised Financial Fraud Detection Using Low-rank Recovery, Canadian Conference on Artificial Intelligence, 2023

Selected Publications

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*. (under review)
2. 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*, 2022.
3. 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.
4. 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*, 2019,(99):1-1.

Conference Publications:

1. 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. *arXiv: 2311.13958, 2023.* (submitted to ECCV2024)
2. Jingjing Zheng, Yankai Cao*. Bayesian-Driven Learning of A New Weighted Tensor Norm for Tensor Recovery. Accepted to ICLR as a tiny paper, 2024.
3. 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.
4. Jingjing Zheng, Xiaoqin Zhang*, Wenzhe Wang, Xianta Jiang. Handling Slice Permutations Variability in Tensor Recovery. *AAAI Conference on Artificial Intelligence*, 2022.
5. 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**

Preprint Paper:

1. Jingjing Zheng, Wenzhe Wang, Xiaoqin Zhang, Xianta Jiang. A Novel Tensor Factorization-Based Method with Robustness to Inaccurate Rank Estimation. *arXiv:2305.11458*, 2023.

Dissertations:

1. Jingjing Zheng. Effective Tensor-Tensor Product-Based Tensor Recovery and Its Efficient Non-Convex Optimization Framework. Memorial University of Newfoundland, 2023.
2. Jingjing Zheng. Low rank recovery based on L_0 norm non-convex surrogate methods and its application. Wenzhou University, 2020.
3. Jingjing Zheng. Portable design of residential unit is analysed. Wuchang Institute of Technology, 2015.

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 (issued)
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 (submitted)

Grants

1. 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.
2. Mitacs Accelerate Award with Verafin, Unsupervised Financial Fraud Detection Using Low-rank Recovery, $15000, 2022.5-2022.9