

PROFESSIONAL EXPERIENCE

Postdoctoral Researcher

University of North Carolina at Chapel Hill, School of Data and Information Sciences

– Mentor: Yifei Lou

Aug. 2025–Present

Chapel Hill, NC, USA

EDUCATION

Ph.D. in Applied Mathematics and Statistics

Syracuse University

– Dissertation: “Sparse Recovery Using Scale and Signed Permutation Invariant Functions”

– Advisor: Lixin Shen

Sept. 2019–Jun. 2025

Syracuse, NY, USA

M.S. in Computational Mathematics

Hebei Normal University & Temple University (Joint Program)

– Thesis: “Image-driven Label Placement for Augmented Reality”

– Advisors: Wei Guo (Math) and Haibin Ling (Computer Science)

Sept. 2015–Jun. 2019

Philadelphia, PA, USA

B.S. in Mathematics and Applied Mathematics

Hebei Normal University

Sept. 2011–Jun. 2015

Shijiazhuang, China

RESEARCH INTERESTS

- Compressive sensing and its applications in data science
- Inverse problems and computational imaging
- Numerical analysis and optimization algorithms

HONORS AND AWARDS

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| • AMS–Simons Travel Grant , <i>American Mathematical Society</i> | 2026–2028 |
| • Heidelberg Laureate Forum Young Researcher , <i>Heidelberg Laureate Forum</i> | 2026 |
| • Outstanding TA Award , <i>Syracuse University</i> | 2024 |
| • Dissertation Fellowship Award , <i>Syracuse University</i> | 2024 |
| • Donald E. Kibbey Prize , <i>Syracuse University</i> | 2023 |
| • Outstanding Master’s Thesis Award , <i>Hebei Province, China</i> | 2020 |
| • Graduate Student National Scholarship , <i>China</i> | 2018 |
| • 2nd Prize, 14th National Mathematical Modeling Contest , <i>China</i> | 2017 |
| • First-Class Graduate Academic Scholarship , <i>Hebei Normal University</i> | 2016, 2017 |
| • Excellent Undergraduate Student Award , <i>Hebei Province, China</i> | 2015 |
| • 2nd Prize, 13th National English Public Speaking Contest , <i>China</i> | 2013 |

PUBLICATIONS

Google Scholar: <https://scholar.google.com/citations?hl=en&user=3Crep68AAAAJ>

Journal publications

- [1] J. Jia, A. Prater-Bennette, and L. Shen. Computing Proximity Operators of Scale and Signed Permutation Invariant Functions. *Journal of Optimization Theory and Applications* 208.1 (2026), p. 46.
- [2] J. Jia, A. Prater-Bennette, and L. Shen. Signal and Image Recovery with Scale and Signed Permutation Invariant Sparsity-Promoting Functions. *Analysis in Theory and Applications* 42.1 (2026), pp. 62–89.
- [3] J. Jia, A. Prater-Bennette, L. Shen, and E. E. Tripp. Sparse Recovery: The Square of ℓ_1/ℓ_2 Norms. *Journal of Scientific Computing* 102.1 (2025), p. 24.
- [4] S. Elezovikj, J. Jia, C. C. Tan, and H. Ling. PartLabeling: A Label Management Framework in 3D Space. *Virtual Reality and Intelligent Hardware* 5.6 (2023), pp. 490–508.
- [5] J. Jia, S. Elezovikj, H. Fan, S. Yang, J. Liu, W. Guo, C. C. Tan, and H. Ling. Semantic-Aware Label Placement for Augmented Reality in Street View. *The Visual Computer* 37.7 (2021), pp. 1805–1819.
- [6] J. Liu, S. Yang, L. Tian, W. Guo, B. Zhou, J. Jia, and H. Ling. Multi-Component Fusion Network for Small Object Detection in Remote Sensing Images. *IEEE Access* 7 (2019), pp. 128339–128352.

Conference publications

- [7] J. Albright, J. Jia, and Y. Lou. Error Function Regularization: A New Approach to Sparse Logistic Regression. 2026 IEEE 16th Annual Computing and Communication Workshop and Conference (CCWC). Best Paper Award. 2026.
- [8] S. Elezovikj, J. Jia, C. C. Tan, and H. Ling. PartLabeling: A Label Management Framework in 3D Space. *Computer Graphics International (CGI)*. 2023.
- [9] J. Jia, Y. Zhang, X. Wu, and W. Guo. Image-Based Label Placement for Augmented Reality Browsers. 2018 IEEE 4th International Conference on Computer and Communications (ICCC). 2018, pp. 1654–1659.

Preprints

- [10] J. Jia, Y. Gong, X. Zhang, J. Chai, Y. Ding, and Y. Lou. Plug-and-Play Volumetric Reconstruction for Compressive Sensing Light-Sheet Microscopy. arXiv:2607.01654; under review at SIAM Journal on Imaging Sciences. 2026.
- [11] N. Choudhury, J. Jia, and Y. Lou. Transformed ℓ_1 Gradient Regularization for Image Denoising. arXiv:2511.15060; under review at Inverse Problems and Imaging. 2026.
- [12] X. Zhang, J. Chai, Y. Gong, M. Almasian, J. Brewer, A. Saberigarakani, J. Jia, A. Hines, K. J. Carroll, Y. Lou, and Y. Ding. Compressive Axial-Integrated Planar Scanning (CAPS) Microscopy for High-Speed Volumetric Imaging of Cardiac Dynamics. bioRxiv:2026.04.21.720045; under review at Nature Communications. 2026.

PRESENTATIONS AND TALKS

- “Sparse Recovery Using Scale and Signed Permutation Invariant Functions,” AMS Southeastern Sectional Meeting, Georgia Southern University, Savannah, GA, Mar. 28, 2026.
- “Computing Proximity Operators for Scale and Signed Permutation Invariant Functions,” Mathematics in Data Science (MINDS) Seminar, University of North Carolina at Chapel Hill, Oct. 14, 2025.
- “Sparse Recovery Using Scale and Signed Permutation Invariant Functions,” Applied Mathematics Seminar, Florida International University, Miami, FL, Oct. 10, 2025.
- “Sparse Recovery Using Scale and Signed Permutation Invariant Functions,” Mathematics Seminar, Fisk University, Nashville, TN, May 15, 2025.
- “Computing Proximity Operators for Scale and Signed Permutation Invariant Functions,” 50th Annual New York State Regional Graduate Mathematics Conference, Syracuse University, Syracuse, NY, Mar. 29, 2025.

- “Sparse Recovery Using Scale and Signed Permutation Invariant Functions,” Mathematics Seminar, Loyola University Maryland, Baltimore, MD, Jan. 31, 2025.
- “Sparse Recovery Using Scale and Signed Permutation Invariant Functions,” AMS Special Session on Inverse Problems and Harmonic Analysis, Joint Mathematics Meetings, Seattle, WA, Jan. 10, 2025.
- “Computing Proximity Operators for Scale and Signed Permutation Invariant Functions,” SIAM Northern New York–Pennsylvania Section Conference, Rochester Institute of Technology, Rochester, NY, Nov. 2, 2024.
- “PartLabeling: A Label Management Framework in 3D Space,” Computer Graphics International Conference, Shanghai, China, Aug. 28, 2023.
- “Image-Based Label Placement for Augmented Reality Browsers,” IEEE International Conference on Computer and Communications, Chengdu, China, Dec. 8, 2018.

TEACHING EXPERIENCE

School of Data and Information Sciences, UNC Chapel Hill

Instructor of Record

- DATA 110: *Introduction to Data Science* Fall 2025, Spring 2026, Fall 2026

Department of Mathematics, Syracuse University

Instructor of Record

- MAT 221: *Elementary Probability and Statistics I* Summer 2025
- MAT 222: *Elementary Probability and Statistics II* Spring 2022, Spring 2025
- MAT 284: *Business Calculus* Summer 2021
- MAT 285: *Life Sciences Calculus I* Fall 2021, Fall 2022, Spring 2023, Fall 2023, Spring 2024, Fall 2024
- MAT 286: *Life Sciences Calculus II* Spring 2021

Teaching Assistant

- MAT 121: *Probability and Statistics for the Liberal Arts I* Fall 2019, Fall 2020
- MAT 122: *Probability and Statistics for the Liberal Arts II* Spring 2020

Hebei College of International Education

Lecturer

- MAT 141: *Pre-Calculus* Summer 2016
- MAT 151: *Calculus I* Fall 2016
- MAT 202: *Business Calculus I* Spring 2017
- Special Lecture Series: *GRE Math* Spring 2018

College of Mathematical Sciences, Hebei Normal University

Teaching Assistant

- *Advanced Algebra II* Fall 2017
- *Analytic Geometry* Spring 2018

Research Mentorship

- Yi Gong. UNC Chapel Hill, Math, BS 2026. First: MS student at Yale.
- John Albright. UNC Chapel Hill, Math & Data Science, BS 2026. First: PhD student at UNC.
- Nabiha Choudhury. UNC Chapel Hill, Math & CS.

Seminar and Conference Organizer

- Mini-symposium organizer (joint with Guohui Song and Lixin Shen): *Optimization and Data-Driven Methods for Inverse Problems and Imaging*, SIAM Conference on Imaging Science, Nov. 2026.
- Mini-symposium organizer (joint with Yifei Lou): *Sparsity-Driven Methods for Scientific Computing and Inverse Problems*, SIAM Annual Meeting, Jul. 2026.
- Co-organizer, *Mathematics in Data Science (MINDS) Seminar*, University of North Carolina at Chapel Hill, Spring 2026.

Professional Memberships

- Society for Industrial and Applied Mathematics (SIAM)
- American Mathematical Society (AMS)
- Institute of Mathematical Statistics (IMS)

Ad-Hoc Reviewer

- *Signal Processing*
- *SIAM Journal on Imaging Sciences*
- *Inverse Problems and Imaging*
- *IEEE Open Journal of Signal Processing*
- *IET Image Processing*
- *Cognitive Computation*
- *npj Heritage Science*
- *Journal of Intelligent Information Systems*
- *Journal of King Saud University - Computer and Information Sciences*
- *Multimedia Systems*
- *Scientific Reports*
- *Signal, Image and Video Processing*
- *Frontiers in Applied Mathematics and Statistics*