Xiaoqian Liu

CONTACT INFORMATION	1400 Pressler St, MD Anderson Cancer Center *E-mail:* xliu31@mdanderson.org Houston, TX 77030 *Website:* https://xiaoqian-liu.github.io/

<small>RESEARCH INTERESTS</small>

Numerical Optimization, Statistical Machine Learning, Convex Analysis, Non-convex Regularization, High-dimensional Data Analysis

<small>PROFESSIONAL EXPERIENCE</small>

The University of Texas M. D. Anderson Cancer Center, Houston, TX

Postdoctoral Fellow   Aug. 2022 - Present
- Mentor: Prof. Wenyi. Wang

Argonne National Laboratory, Lemont, IL

Research Aide   Aug. 2021 – July. 2022
Wallace Givens Associate   May 2021 – Aug. 2021
- Supervisor: Dr. Stefan M. Wild

<small>EDUCATION</small>

North Carolina State University, Raleigh, NC

Ph.D., Statistics   2018 – 2022
- Thesis: *Penalization Methods for Structured Data Analysis*
- Adviser: Prof. Eric C. Chi
- GPA: $4.0/4.0$

Renmin University of China, Beijing, China

M.S., Statistics   2015 – 2018
- Thesis: *Sparse Principal Component Analysis with Fused Penalty*
- Adviser: Prof. Bo Zhang
- GPA: $3.96/4.0$

China University of Mining and Technology, Xuzhou, China

B.S., Mathematics and Applied Mathematics   2011 – 2015
- *Cum Laude Graduate of University*
- GPA: $3.94/4.0$

<small>HONORS AND AWARDS</small>

2022 SDSS – Student & Early Career Travel Award, American Statistical Association, 2022
Student Travel Award, North Carolina Chapter of the American Statistical Association, 2020
Member of Mu Sigma Rho, National Statistics Honor Society, 2019
National Scholarship for Graduate Students, Ministry of Education of China, 2017
First Class Academic Scholarship of University, Renmin University of China, 2015, 2016, 2017
National Scholarship for Undergraduates, Ministry of Education of China, 2012, 2013, 2014

<small>PUBLICATIONS</small>

Published / Accepted

[1] **X. Liu**, E. C. Chi, and K. L. Lange. A Sharper Computational Tool for L_2E Regression. *Technometrics*. Accepted. arXiv:2203.02993 [stat.ME]

[2] **X. Liu** and E. C. Chi. Revisiting Convexity-Preserving Signal Recovery with the Linearly Involved GMC Penalty. *Pattern Recognition Letters*, 156:60-66, 2022.

[3] **X. Liu**, M. Vardhan, Q. Wen, A. Das, A. Randles, and E. C. Chi. An Interpretable Machine Learning Model to Classify Coronary Bifurcation Lesions. In: *The 43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, Oct. 31 – Nov. 4, 2021.

[4] B. Zhang and **X. Liu**. Sparse Principal Component Analysis with Fused Penalty. *Statistical Research*, 36(4):119–128, 2019.

Preprints and Submissions

[5] **X. Liu**, A. J. Molstad, and E. C. Chi. A Convex-Nonconvex Strategy for Grouped Variable Selection. Submitted. arXiv:2111.15075 [stat.ME]

Working Papers

[6] **X. Liu**, X. Han, E. C. Chi, and B. Nadler. A Majorization-Minimization Gauss-Newton Method for 1-Bit Matrix Completion.

[7] **X. Liu** and S. M. Wild. An Adaptive Method for Scalable Derivative-Free Optimization via Random Projections.

PRESENTATIONS AND TALKS

[1] R for Data Science. At: *Biomedical Data Science Workshop & Careers Panel, UCLA. July 17, 2022.* Workshop instructor.

[2] A Convex-Nonconvex Strategy for Grouped Variable Selection. At: *2022 Symposium on Data Science & Statistics*, June 9, 2022. Refereed presentation.

[3] A Convex-Nonconvex Strategy for Grouped Variable Selection. *University of California, Los Angles (OpenMendel Group)*, Nov. 10, 2021. Invited talk.

[4] A Tutorial on CART Algorithm. *Duke University (Randles Lab)*, Nov. 9, 2021. Invited talk.

[5] An Interpretable Machine Learning Model to Classify Coronary Bifurcation Lesions. In: *The 43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, Oct. 31 – Nov. 4, 2021. Presentation.

[6] Randomized Projections in Derivative-Free Optimization. In: *Summer Argonne Student Symposium (SASSy) 2021*, July 30, 2021. Presentation.

[7] Revisiting Convexity-Preserving Signal Recovery with the Linearly Involved GMC Penalty. In: *International Chinese Statistical Association (ICSA) 2020 Applied Statistics Symposium*, Dec. 14, 2020. E-poster presentation.

[8] Revisiting Convexity-Preserving Signal Recovery with the Linearly Involved GMC Penalty. In: *Women in Statistics and Data Science Virtual Conference*, Oct. 1, 2020. E-poster presentation.

TEACHING EXPERIENCE

North Carolina State University, Raleigh, NC

Teaching Assistant

• ST779 (Advanced Probability for Statistical Inference)	Spring 2022
• ST517 (Applied Statistical Methods)	Fall 2021
• ST370 (Probability and Statistics for Engineers)	Fall 2018, Spring 2019, Fall 2019

Renmin University of China, Beijing, China

Teaching Assistant

• Time Series Analysis	Fall 2017
• Stochastic Analysis	Spring 2016

SOFTWARE	L2E: R package for robust structured regression with L_2 criterion.

PROFESSIONAL SERVICES

Reviewer for Journals
- Journal of Computational and Graphical Statistics
- Communications in Statistics - Simulation and Computation

Student mentorship
- Lisa Lin (undergraduate), Rice University
- Arie (REU), Rice University

Other Services
- Chair of the *High-dimensional Statistics* session at *2022 Symposium on Data Science & Statistics*

VOLUNTEER AND LEADERSHIP

Volunteer, The Green Chair Project, Raleigh, NC   Sept. 2021 – Dec. 2021
- Worked as a volunteer using data science skills to help the nonprofit understand the needs of the community (e.g., the number of children that need beds in Wake County) and the impact of the organization (e.g., on educational outcomes).

Volunteer, Alternative Intercultural Service Break, NCSU   Mar. 9 – 17, 2019
- Worked as a volunteer with ABCCM in Black Mountain, NC, including homeless services, gardening and environmental protection services.
- Visited and gave presentations in Black Mountain middle and elementary schools to introduce international cultures.

President, University Youth Volunteers Association, CUMT   Jun. 2013 – Jun. 2014
- Organized collaborative volunteer activities among local commonweal organizations in Xuzhou.
- Organized the inaugural University Volunteer Forum with five universities and colleges in Xuzhou.