Shixin Zheng

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PROFESSIONAL EXPERIENCE

University of Maryland, College Park, MD, USA   Aug 2025 - Now
- Postdoctoral Associate in Department of Mathematics (Mentor: [Haizhao Yang](#))
- Research Area: Deep Learning, Optimization, Riemannian Optimization

EDUCATION

Purdue University, West Lafayette, IN, USA   Sep 2018 - July 2025
- Ph.D., Applied Mathematics (supervised by [Xiangxiong Zhang](#))
- Research Area: Optimization, Riemannian Optimization, Riemannian Sampling, Machine Learning, Eigenvalue Problems

Shandong University, Jinan, Shandong, China   Sep 2014 - May 2018
- Bachelor of Science, Mathematics and Applied Mathematics
- GPA: 93.75/100   Rank: top 2 among 109 students

SELECTED PAPERS, PREPRINTS

[1] **S. Zheng**, W. Huang, B. Vandereycken, and X. Zhang. Riemannian optimization using three different metrics for Hermitian PSD fixed-rank constraints, [Journal of Computational Optimization and Applications](#), 2025

[2] **S. Zheng**, H. Yang, and X. Zhang. On the convergence of orthogonalization-free conjugate gradient method for extreme eigenvalues of hermitian matrices: A Riemannian optimization interpretation. [Journal of Computational and Applied Mathematics, 451:116053,](#) 2024

[3] T. Yu, **S. Zheng**, J. Lu, G. Menon, and X. Zhang. Riemannian Langevin Monte Carlo schemes for sampling PSD matrices with fixed rank, [arxiv.org/abs/2309.04072](#), 2023

[4] T. Yu, **S. Zheng**, J. Lu, G. Menon, and X. Zhang. Riemannian Langevin equations for PSD matrices of fixed rank, 2023 *(arxiv available soon)*

[5] **S. Zheng**, J. Lu, X. Zhang. Local convergence of Riemannian gradient descent in solving the ground state of Gross-Pitaevskii eigenvalue problem, 2024 *(arxiv available soon)*

[6] **S. Zheng,** X. Zhang, R. Zhang. Riemannian optimization on stratified sets: convergence of Burer-Monteiro method using a new metric, 2025 (ongoing)

EMPLOYMENT

Instructor, Department of Mathematics, University of Maryland   Aug 2025 - Now
- Instructor of Probability Class

Research and Teaching Assistant, Department of Mathematics, Purdue University   Sep 2018 - July 2025
- Teacher of Calculus II Recitation Class
- Grader of Multivariable Calculus, Linear Algebra, Real Analysis, ODEs, Optimizations, Numerical PDEs

AWARDS

T.T.Moh Scholarship, Purdue University   2023-2024
T.T.Moh Scholarship, Purdue University   2018-2019

Academic Experiences

Conference Attendance
Poster Presentation, New Trends in Scientific Computing, IPAM, UCLA   Apr 20-22 2022
Reviewer of International Journals
SIAM Journal on Optimization
Journal of Fixed Point Theory and Applications

SKILLS

Proficient in Matlab, Python | Familiar with C++/C, Git | Experienced in PySpark, Julia

Last Updated: 2025/09/01