

SHIWEI WANG

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EDUCATION

**Academy of Mathematics and Systems Science,
University of Chinese Academy of Sciences, China**

Sep. 2018 – Jun. 2023

- Ph.D in Institute of Applied Mathematics, major in Operational Research and Cybernetics
- Supervisor: Prof. Chao Ding
- Thesis: Perturbation analysis of composite matrix optimization and its applications

Dalian University of Technology, China

Sep. 2014 – Jun. 2018

- B.S. in Information and Computing Science

EXPERIENCE

National University of Singapore, Singapore

Aug. 2025 – present

- Visiting Scholar at Institute of Operations Research and Analytics (IORA)
- Supervisor: Prof. Kim-Chuan Toh

National University of Singapore, Singapore

Dec. 2023 – July. 2025

- Research Fellow at Institute of Operations Research and Analytics (IORA)
- Supervisor: Prof. Kim-Chuan Toh

RESEARCH INTEREST

- Matrix optimization with applications
- Perturbation analysis

My research mainly focuses on nonpolyhedral matrix optimization, include analyzing its variational properties and developing efficient algorithms with convergence guarantees.

PUBLICATIONS

* corresponding author.

1. Nachuan Xiao, Tianyun Tang, **Shiwei Wang***, Kim-Chuan Toh, *An exact penalty approach for equality constrained optimization over a convex set*, accepted by Mathematical Programming, arXiv:2505.02495 (2026).
2. Xiaoyin Hu, Kim-Chuan Toh, **Shiwei Wang**, Nachuan Xiao*, *A minimization approach for minimax optimization with coupled constraints*, SIAM Journal on Optimization, 36, 811-840 (2026).
3. **Shiwei Wang**, Chao Ding*, Yangjing Zhang and Xinyuan Zhao, *Strong variational sufficiency in nonlinear semidefinite programming and its implications*, SIAM Journal on Optimization, 33, 2988-3011 (2023).
4. **Shiwei Wang***, Chao Ding, *Local convergence analysis of augmented Lagrangian method for nonlinear SDP problems*, Computational Optimization and Applications, 87, 39-81 (2024).

PREPRINTS

* corresponding author.

1. Chao Ding, Ebrahim Sarabi, **Shiwei Wang***, *Characterizations of tilt-stable local minimizers of a class of matrix optimization problems*, arXiv:2503.03217.
2. Di Hou, Tianyun Tang, Kim-Chuan Toh, **Shiwei Wang***, *On the efficient computation of proximal operators of affine-constrained nonconvex functions*, arXiv:2602.23626.
3. Chao Ding, Ebrahim Sarabi, **Shiwei Wang***, *Twice epi-differentiability of spectral functions and its applications*, arXiv:2602.05357.

4. Nachuan Xiao, **Shiwei Wang***, Tianyun Tang, Kim-Chuan Toh, *A quadratically convergent alternating projection method for nonconvex sets*, arXiv:2511.22916.

PRESENTATIONS

1. “A quadratically convergent alternating projection method for nonconvex sets”, SIAM OP26, University of Edinburgh, Edinburgh, UK, June 2-5, 2026
2. “Characterizations of tilt-stable local minimizers of a class of matrix optimization problems”, ICCOPT 2025, University of Southern California, Los Angeles, USA, July 19-24, 2025
3. “Strong variational sufficiency for nonlinear semidefinite programming and its implications”, 13th SIAM student chapter @ NUS, National University of Singapore, Singapore, May 28, 2024
4. “Strong variational sufficiency for nonlinear semidefinite programming and its implications”, Applied Math PhD Seminar, Fudan University, Shanghai, China, March 9, 2023
5. “Strong variational sufficiency for nonlinear semidefinite programming and its implications”, 2022 Workshop on Operational Research and Information, Beijing, China (virtual), November 30, 2022
6. “Local convergence analysis of augmented Lagrangian method for nonlinear semidefinite programming”, 2021 Workshop on Matrix Optimization, Shanghai, China (virtual), November 6 - 7, 2021
7. “A note on variational analysis of nonsmooth composite matrix optimization problems”, SIAM Annual Meeting OP21, Spokane, Washington, USA (virtual), July 20 - 23, 2021
8. “A note on variational analysis of nonsmooth composite matrix optimization problems”, 2020 Workshop on Matrix Optimization, Dalian, China, November 28 - 29, 2020

AWARDS

- Amei Scholarship, Academy of Mathematics and Systems Science, China, 2021
- Excellence Scholarship, Academy of Mathematics and Systems Science, China, 2020
- Outstanding Graduate Award, Dalian University of Technology, China, 2018
- First prize, Study Excellence Scholarship, Dalian University of Technology, China, 2015
- Second prize, Study Excellence Scholarship, Dalian University of Technology, China, 2016

JOURNAL REVIEW

SIAM Journal on Optimization

Computational Optimization and Applications

Set-valued and Variational Analysis

EURO Journal on Computational Optimization

Journal of Applied Mathematics and Computing

Asia-Pacific Journal of Operational Research