

# LING LIANG

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## EXPERIENCE

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- **Postdoctoral Associate, University of Maryland at College Park, USA**  
August 2023 – Present  
Advisor: Prof. Haizhao Yang
- **Visiting Postdoctoral Researcher, Weierstrass Institute, Germany**  
March 2023 – June 2023  
Advisor: Dr. Jia-Jie Zhu
- **Research Fellow, National University of Singapore, Singapore**  
January 2022 – July 2023  
Advisor: Prof. Kim-Chuan Toh
- **Research Assistant, National University of Singapore, Singapore**  
August 2021 – December 2021  
Advisor: Prof. Kim-Chuan Toh

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## EDUCATION

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- **Ph.D. in Mathematics, National University of Singapore, Singapore**  
August 2017 – November 2021  
Advisor: Prof. Kim-Chuan Toh
- **B.Sc. in Mathematics, University of Science and Technology of China, China**  
September 2013 – July 2017  
Advisor: Prof. Zhouwang Yang

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## AWARDS AND ACKNOWLEDGEMENTS

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- **Louis Chen Hsiao Yun Best Dissertation Prize, National University of Singapore, 2022**  
(Awarded annually to the student with the best PhD thesis in mathematics and its applications)
- **Top Graduate Tutor Award, National University of Singapore, 2019 and 2020**
- **Research Scholarship, National University of Singapore, 2017-2021**

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## TEACHING

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- **University of Maryland at College Park**
  - Instructor, Computational Methods, Fall 2023
- **National University of Singapore**
  - Graduate Tutor, Linear Algebra, Fall 2018
  - Graduate Tutor, Linear Algebra, Spring 2019
  - Graduate Tutor, Linear Algebra, Fall 2019
  - Graduate Tutor, Linear Algebra, Spring 2020

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## INVITED TALKS

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- **SIAM Conference on Optimization, Seattle, May 2023**

A Squared Smoothing Newton Method for Semidefinite Programming
- **The Hua Luogeng Applied Mathematics Youth Forum, Beijing, March 2023**

A Squared Smoothing Newton Method for Semidefinite Programming
- **Argonne National Laboratory, Online Seminar, May 2022**

An Inexact Projected Gradient Method with Rounding and Lifting by Nonlinear Programming for Solving Rank-One Semidefinite Relaxation of Polynomial Optimization
- **SIAM Conference on Optimization, Online Conference, July 2021**

On Degenerate Doubly Nonnegative Projection Problems
- **Workshop on Matrix Optimization, Beijing, November 2019**

A New Homotopy Proximal Variable-Metric Framework for Composite Convex Minimization
- **The Sixth International Conference on Continuous Optimization, Berlin, August 2019**

A New Homotopy Proximal Variable-Metric Framework for Composite Convex Minimization

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## PUBLICATIONS

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(Note: \* = Corresponding Author)

- Hong T.M. Chu, **Ling Liang**, Kim-Chuan Toh, and Lei Yang.  
“An Efficient Implementable Inexact Entropic Proximal Point Algorithm for A Class of Linear Programming Problems.”  
Computational Optimization and Applications 85, no. 1 (2023): 107-146.
- Heng Yang, **Ling Liang\***, Luca Carlone, and Kim-Chuan Toh.

“An Inexact Projected Gradient Method with Rounding and Lifting by Nonlinear Programming for Solving Rank-One Semidefinite Relaxation of Polynomial Optimization.”

Mathematical Programming 201, no. 1-2 (2023): 409-472.

- **Ling Liang\***, Xudong Li, Defeng Sun, and Kim-Chuan Toh.

“QPPAL: A Two-Phase Proximal Augmented Lagrangian Method for High Dimensional Convex Quadratic Programming.”

ACM Transactions on Mathematical Software 48, no. 3 (2022): 1-27.

- Ying Cui, **Ling Liang\***, Defeng Sun, and Kim-Chuan Toh.

“On Degenerate Doubly Nonnegative Projection Problems.”

Mathematics of Operations Research 47, no. 3 (2022): 2219-2239.

- Tran-Dinh Quoc, **Ling Liang**, and Kim-Chuan Toh.

“A New Homotopy Proximal Variable-Metric Framework for Composite Convex Minimization.”

Mathematics of Operations Research 47, no. 1 (2022): 508-539.

- **Ling Liang\***, Defeng Sun, and Kim-Chuan Toh.

“An Inexact Augmented Lagrangian Method for Second-Order Cone Programming with Applications.”

SIAM Journal on Optimization 31, no. 3 (2021): 1748-1773.

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## PREPRINTS

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- Di Hou, **Ling Liang\***, Kim-Chuan Toh.

“A Sparse Smoothing Newton Method for Solving Discrete Optimal Transport Problems.”

arXiv preprint arXiv:2311.06448 (2023).

- Lei Yang, **Ling Liang\***, Hong T.M. Chu, Kim-Chuan Toh.

“A Corrected Inexact Proximal Augmented Lagrangian Method with a Relative Error Criterion for a Class of Group-quadratic Regularized Optimal Transport Problems.”

arXiv preprint arXiv:2311.01976 (2023).

- **Ling Liang\***, Defeng Sun, and Kim-Chuan Toh.

“A Squared Smoothing Newton Method for Semidefinite Programming.”

arXiv preprint arXiv: 2303.05825 (2023).

- Ching-Pei Lee, **Ling Liang**, Tianyun Tang, and Kim-Chuan Toh.

“Escaping Spurious Local Minima of Low-Rank Matrix Factorization through Convex Lifting.”

arXiv preprint arXiv:2204.14067 (2022).

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## PROFESSIONAL SERVICES

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- **Referee for Journals**
  - Mathematical Programming
  - SIAM Journal on Optimization
  - Mathematical Programming Computation
  - SIAM Journal on Mathematics of Data Science
  - Computational Optimization and Applications
  - Journal of Scientific Computing
  - Optimization Methods and Software
- **Conference and Workshop Organizations**
  - Session Chair, Optimization in the Big Data Era, National University of Singapore, 2022.
- **Judge for Singapore International Mathematics and Computational Challenge, November 2022.**
- **AD-HOC Non-Teaching Consultation Work, National University of Singapore, November 2022.**

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## REFERENCES

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- **Prof. Kim-Chuan Toh**  
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Department of Mathematics and Institute of Operations Research and Analytics  
National University of Singapore, 10 Lower Kent Ridge Road, 119076, Singapore
- **Prof. Defeng Sun**  
[defeng.sun@polyu.edu.hk](mailto:defeng.sun@polyu.edu.hk)  
Department of Applied Mathematics  
The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong
- **Prof. Ying Cui**  
[yingcui@berkeley.edu](mailto:yingcui@berkeley.edu)  
Department of Industrial Engineering and Operations Research  
University of California, Berkeley, CA, U.S.A
- **Prof. Victor Tan (Teaching)**  
[mattanv@nus.edu.sg](mailto:mattanv@nus.edu.sg)  
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