

Xudong Li

Curriculum Vitae

School of Data Science
Fudan University
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Education

- 2010–2015 **Ph.D. in Mathematics** (major in Optimization), *National University of Singapore*, Singapore.
Dissertation: *A two-phase augmented Lagrangian method for convex composite quadratic programming*
Advisors: Defeng Sun, Kim-Chuan Toh
- 2006–2010 **B.S. in Mathematics**, *University of Science and Technology of China*, Hefei, China.

Research Interests

Matrix optimization and manifold optimization
Efficient algorithms for large scale optimization problems in data science
Computational game theory, optimization and decision making under uncertainty

Positions

- May 2024 – Distinguished Professor of “Changjiang Scholars Program”, Ministry of Education, China
Jan 2024 – Professor, School of Data Science, Fudan University
Sep 2018 – Tenure-track Associate Professor, School of Data Science, Fudan University
Dec 2023
- Aug 2017 – Postdoctoral Research Associate, Department of Operations Research and Financial Engineering, Princeton University (working with Mengdi Wang)
Aug 2018
- Sep 2015 – Research Fellow, Department of Mathematics, National University of Singapore, Singapore
Jul 2017 (working with Kim-Chuan Toh and Defeng Sun)
- Feb – Aug 2015 Research Assistant, Department of Mathematics, National University of Singapore, Singapore

Honors and Awards

- Dec 2022 Young Researchers Prize, by the Operations Research Society of China, 2022
Jul 2022 ICML Outstanding Paper Award, by the International Conference on Machine Learning (ICML), 2022
Aug 2019 Best Paper Prize for Young Researchers in Continuous Optimization, by the Mathematical Optimization Society, 2019 (**Awarded once every three years**)

Professional Service

- ✉ Associate Editor, *Mathematical Programming Computation*
✉ Section Chair, the Sixth International Conference on Continuous Optimization (ICCOPT 2019)
✉ Section Chair, 2019 INFORMS Annual Meeting
✉ Section Chair, 2018 INFORMS Annual Meeting

Publications

- ✉ Shuoguang Yang, Xudong Li, and Guanghui Lan, Data-driven minimax optimization with expectation constraints, *Operations Research*, <https://doi.org/10.1287/opre.2022.0110>, 2024
- ✉ Tianchen Gu, Wangzhen Li, Aidong Zhao, Zhaori Bi, Xudong Li, Fan Yang, Changhao Yan, Wenchuang Hu, Dian Zhou, Tao Cui, Xin Liu, Zaikun Zhang, and Xuan Zeng, BBGP-sDFO: Batch Bayesian and Gaussian process enhanced subspace derivative free optimization for high-dimensional analog circuit synthesis, *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, 43 (2024), pp. 417–430
- ✉ Xuyu Chen, Xudong Li, and Yangfeng Su, An active-set based recursive approach for solving convex isotonic regression with generalized order restrictions, *Asia-Pacific Journal of Operational Research*, 41 (2024), pp. 2350025-1–2350025-27
- ✉ Yuetian Luo, Xudong Li, and Anru Zhang, On geometric connections of embedded and quotient geometries in Riemannian fixed-rank matrix optimization, *Mathematics of Operations Research*, 49 (2024), pp. 782–825
- ✉ Yuetian Luo, Wen Huang, Xudong Li, and Anru Zhang, Recursive importance sketching for rank constrained least squares, *Operations Research*, 72 (2024), pp. 237–256
- ✉ Zhensheng Yu, Xuyu Chen, and Xudong Li, A dynamic programming approach for generalized nearly isotonic optimization, *Mathematical Programming Computation*, 15 (2023), pp.195–225
- ✉ Aidong Zhao, Xianan Wang, Zixiao Lin, Zhaori Bi, Xudong Li, Changhao Yan, Fan Yang, Li Shang, Dian Zhou, and Xuan Zeng, cVTS: A constrained Voronoi tree search method for high dimensional analog circuit synthesis, *Design Automation Conference (DAC)*, 2023
- ✉ Jiali Wang, Wen Huang, Rujun Jiang, Xudong Li, and Alex L. Wang, Solving Stackelberg prediction game with least squares loss via spherically constrained least squares reformulation, *International Conference on Machine Learning (ICML)*, 2022
ICML 2022 Outstanding Paper Award
- ✉ Ling Liang, Xudong Li, Defeng Sun, and Kim-Chuan Toh, QPPAL: A two-phase proximal augmented Lagrangian method for high dimensional convex quadratic programming problems, in print, *ACM Transactions on Mathematical Software*, 48 (2022), 33:1–27
- ✉ Rujun Jiang and Xudong Li, Hölderian error bounds and Kurdyka-Łojasiewicz inequality for the trust region subproblem, *Mathematics of Operations Research*, 47 (2022), 3025–3050
- ✉ Qinzhen Li and Xudong Li, Fast projection onto the ordered weighted norm ball, *SCIENCE CHINA Mathematics*, 65 (2022), pp. 869–886
- ✉ Ziwei Zhu, Xudong Li, Mengdi Wang, and Anru Zhang, Learning Markov models via low-rank optimization, *Operations Research*, 70 (2022), 1953–2596
- ✉ Liang Chen, Xudong Li, Defeng Sun, and Kim-Chuan Toh, On the equivalence of inexact proximal ALM and ADMM for a class of convex composite programming, *Mathematical Programming*, 185 (2021), 111–161
- ✉ Xudong Li, Defeng Sun, and Kim-Chuan Toh, An asymptotically superlinearly convergent semismooth Newton augmented Lagrangian method for Linear Programming, *SIAM Journal on Optimization*, 30 (2020), 2410–2440
- ✉ Xudong Li, Efficient proximal point algorithm for convex composite optimization, *Mathematica Numerica Sinica*, 42 (2020), 385–404 (in Chinese)
- ✉ Xudong Li, Defeng Sun and Kim-Chuan Toh, On the efficient computation of a generalized Jacobian of the projector over the Birkhoff polytope, *Mathematical Programming*, 179 (2020), 419–446
- ✉ Xudong Li, Defeng Sun and Kim-Chuan Toh, A block symmetric Gauss-Seidel decomposition theorem for convex composite quadratic programming and its applications, *Mathematical Programming*, 175 (2019), 396–418

- ✉ Xudong Li, Mengdi Wang and Anru Zhang, Estimation of Markov chain via rank-constrained likelihood, arXiv:1804.00795, *Proceedings of the 35-th International Conference on Machine Learning (ICML)*, Stockholm, Sweden, PMLR 80, 2018
- ✉ Xudong Li, Defeng Sun and Kim-Chuan Toh, QSDPNAL: A two-phase augmented Lagrangian method for convex quadratic semidefinite programming, *Mathematical Programming Computation*, 10 (2018), 703–743
- ✉ Xudong Li, Defeng Sun and Kim-Chuan Toh, On efficiently solving the subproblems of a level-set method for fused lasso problems, *SIAM Journal on Optimization*, 28 (2018), 1842–1866
- ✉ Xudong Li, Defeng Sun and Kim-Chuan Toh, A highly efficient semismooth Newton augmented Lagrangian method for solving Lasso problems, *SIAM Journal on Optimization*, 28 (2018), 443–458
Best Paper Prize for Young Researchers in Continuous Optimization, ICCOPT 2019 (1 in 3 years)
- ✉ Ying Cui, Xudong Li, Defeng Sun and Kim-Chuan Toh, On the convergence of a majorized ADMM for the linearly constrained convex optimization problems of coupled objective functions, *Journal of Optimization Theory and Applications*, 169 (2016), 1013–1041
- ✉ Xudong Li, Defeng Sun and Kim-Chuan Toh, A Schur complement based proximal ADMM for convex quadratic conic programming and extensions, *Mathematical Programming*, 155 (2016), 333–373