

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

Efficient algorithms for large scale optimization problems in data science

Optimization and decision making under uncertainty

Matrix Optimization Problems, in particular, large scale convex quadratic semidefinite programming

Positions

- Sep 2018– Associate Professor, School of Data Science and Shanghai Center for Mathematical Sciences, Fudan University
- 2017–2018 Postdoctoral Research Associate, Department of Operations Research and Financial Engineering, Princeton University
- 2015–2017 Research Fellow, Department of Mathematics, National University of Singapore, Singapore
- Feb–Aug 2015 Research Assistant, Department of Mathematics, National University of Singapore, Singapore

Honors and Awards

- Aug 2019 Best Paper Prize for Young Researchers in Continuous Optimization, by the Mathematical Optimization Society, 2019 (**Awarded once every three years**)
- Oct 2013 Part-Time Teaching Assistant Award for AY 2012/2013, National University of Singapore

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
- ✉ Secretary, SIAM NUS Student Chapter, 2013-2014
- ✉ Reviewer for AMS Mathematical Reviews
- ✉ Referee for *Mathematical Programming*, *SIAM Journal on Optimization*, *Mathematics of Operations Research*, *Mathematical Programming Computation*, *SIAM Journal on Numerical Analysis*, *IEEE Transactions on Signal Processing*, *ICML*, *NIPS*, *Numerical Algorithms*, *Optimization and Engineering*, *Asia-Pacific Journal of Operational Research*, *Applied Mathematics and Mechanics (English Edition)*

Preprints

- 🔗 Rujun Jiang and Xudong Li, Hölderian error bounds and Kurdyka-Łojasiewicz inequality for the trust region subproblem, arXiv:1911.11955, 2019
- 🔗 Ziwei Zhu, Xudong Li, Mengdi Wang and Anru Zhang, Learning Markov models via low-rank optimization, arXiv:1907.00113, 2019

Publications

- 🔗 Qinzhen Li and Xudong Li, Fast projection onto the ordered weighted ℓ_1 norm ball, arXiv:2002.05004, *SCIENCE CHINA Mathematics*, in print, 2020
- 🔗 Xudong Li, Defeng Sun and Kim-Chuan Toh, An asymptotically superlinearly convergent semismooth Newton augmented Lagrangian method for Linear Programming, arXiv:1903.09546, *SIAM Journal on Optimization*, in print, 2020
- 🔗 Xudong Li and Ethan Xingyuan Fang, Invited discussion on the article “A Bayesian conjugate gradient method”, *Bayesian Analysis*, 14 (2019), 977-979
- 🔗 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, arXiv:1803.10803, *Mathematical Programming*, in print, DOI:10.1007/s10107-019-01423-x, 2020
- 🔗 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), pp. 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

Softwares

- 🔗 SuiteLasso: a MATLAB suite for regression problems with generalized Lasso regularizers
- 🔗 QSDPNAL: a MATLAB software for convex quadratic semidefinite programming problems

Conferences

Oct 2019 2019 INFORMS Annual Meeting, 20–23 October 2019, Seattle, WA, United States

- Aug 2019 The Sixth International Conference on Continuous Optimization, Technical University (TU) of Berlin, 03–08 August 2019, Berlin, Germany
- Dec 2018 The 4th International Conference on Big Data and Information Analytics, 17–19 December 2018, Houston, TX, United States
- Jun 2018 The 23rd International Symposium on Mathematical Programming, 26–28 June 2018, Bordeaux, France
- May 2018 Bridging Mathematical Optimization, Information Theory, and Data Science, Princeton University, 14–16 May 2018, Princeton, NJ, United States
- Apr 2018 Applied Math Days 2018, Rensselaer Polytechnic Institute, 6–7 April 2018, Troy, NY, United States
- May 2017 SIAM Conference on Optimization, 22–25 May 2017, Vancouver, Canada
- Aug 2016 The Fifth International Conference on Continuous Optimization, 6–11 Aug 2016, Tokyo, Japan
- Jul 2015 The 22nd International Symposium on Mathematical Programming, 12–17 Jul 2015, Pittsburgh, United States
- Jan 2014 The 9th Mathematical and Physical Science Graduate Congress, Faculty of Science, University of Malaya, 8–10 Jan 2014, Kuala Lumpur, Malaysia
- Jul 2013 The Fourth International Conference on Continuous Optimization, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, 27 Jul–1 Aug 2013, Lisbon, Portugal
- Nov 2011 Optimization: Computation, Theory and Modeling, Institute for Mathematical Sciences, National University of Singapore, 1 Nov–23 Dec 2012, Singapore

Other Experiences

- Sep 2019 Visiting Senior Research Fellow, Institute of Operations Research and Analytics, National University of Singapore
- Aug 2018 Visiting Senior Research Fellow, Institute of Operations Research and Analytics, National University of Singapore
- Aug 2017 Visiting Scholar, Department of Statistics, University of Wisconsin-Madison, 16 Aug–31 Aug 2017
- Mar 2017 Visiting Scholar, Operations Research and Financial Engineering, Princeton University, 5 Mar–18 Mar 2017
- Feb 2017 Visiting Scholar, Faculty of Science and Engineering, Curtin University, 7 Feb–18 Feb 2017
- Apr 2015 Visiting Academic, Mathematical Sciences, University of Southampton, 6 Apr–19 Apr 2015

Teaching Experience

- 2020 Spring Theory and Algorithms for Large-scale Optimization, Fudan University, Lecturer
- 2019 Spring Operations Research, Fudan University, Lecturer
- 2018 Fall Algorithms for Big data, Fudan University, Lecturer
- 2014 Fall Matrix Computation (MA4230), National University of Singapore, Teaching Assistant
- 2014 Spring Discrete Optimization (MA4254), National University of Singapore, Teaching Assistant
- 2013 Fall Nonlinear Programming (MA3236), National University of Singapore, Teaching Assistant
- 2013 Spring Discrete Optimization (MA4254), National University of Singapore, Teaching Assistant
- 2012 Spring and Fall Mathematics I & II (MA1505 & MA1506), National University of Singapore, Teaching Assistant