Xin Jiang

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Research interests

My research interests broadly include theory and algorithms for optimization, especially large-scale semidefinite programming. I design, analyze, and implement efficient and scalable algorithms for various applications including engineering, machine learning, and data science.

Education

Ph.D. Electrical and Computer Engineering 09/2017 – 06/2022 (expected)
University of California, Los Angeles *Los Angeles, CA*

- Thesis: Bregman first-order proximal splitting methods: Theory and Applications
- Advisor: Lieven Vandenberghe

M.S. Electrical and Computer Engineering 09/2015 – 06/2017
University of California, Los Angeles *Los Angeles, CA*

- Thesis: Minimum rank positive semidefinite matrix completion with chordal sparsity pattern
- Advisor: Lieven Vandenberghe

B.Eng. Electronic and Communication Engineering 09/2012 – 07/2015
The University of Hong Kong *Hong Kong, China*

- First class honors. Minor in Finance
- Thesis: Power optimization in hybrid localization mechanism for logistic applications
- Advisor: Victor O. K. Li

Awards and Honors

Summer Mentored Research Fellowship (SMRF)	2021
Ph.D. Preliminary Exam Fellowship	2018
Dean's Honors List	2013 – 2015
URFP Research Internship Award	2015
Tso Chiu Kit Scholarship	2015
Kai Chong Tong Scholarship	2013 – 2014
Chiap Hua Cheng's Foundation Scholarship	2013
S. Y. King Prize	2012
HKU Worldwide U/G Student Exchange Scholarship	2012

Publications

Preprints

[P1] **X. Jiang** and L. Vandenberghe. A unified framework for isotonic regression and 1D total variation regularization. *In preparation.*

[P2] **X. Jiang** and L. Vandenberghe. Bregman three-operator splitting methods. *Submitted.* 2022.

[P3] J. Xu, R. Huang, **X. Jiang**, Y. Cao, W. Zheng, H. Wang, C. Wang, and Y. Yang. Better with less: one graph is good enough for pre-training graph neural networks. *Submitted.* 2022.

[P4] **X. Jiang**, K. Cheng, S. Jiang, and Y. Sun. Chordal-GCN: Exploiting sparsity in training large-scale graph convolutional networks. 2019.

Journal articles

[J1] **X. Jiang** and L. Vandenberghe. Bregman primal–dual first-order method and application to sparse semidefinite programming. *Computational Optimization and Applications*, 2021.

Conference Proceedings (* as equal contribution)

[C1] J. Xu, Y. Sun, **X. Jiang**, Y. Wang, C. Wang, J. Lu, and Y. Yang. Blindfolded attackers still threatening: Strict black-box adversarial attacks on graphs. In *Proceedings of the 36th Conference on Artificial Intelligence (AAAI)*, 2022.

[C2] J. Xu, Y. Yang, J. Chen, **X. Jiang**, C. Wang, J. Lu, and Y. Sun. Unsupervised adversarially robust representation learning on graphs. In *Proceedings of the 36th Conference on Artificial Intelligence (AAAI)*, 2022.

[C3] Z. Jiao*, Z. Zhang*, **X. Jiang**, D. Han, S.-C. Zhu, Y. Zhu, and H. Liu. Consolidating kinematic models to promote coordinated mobile manipulations. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2021.

Presentations

Primal–dual proximal methods with Bregman distances 07/2021
EUROPT Workshop on Continuous Optimization *Toulouse (virtual)*

Bregman proximal methods for semidefinite optimization 07/2021
SIAM Conference on Optimization (OP21) *Virtual*

Bregman primal–dual first-order methods 11/2020
INFORMS Annual Meeting *Virtual*

Teaching and Mentorship

Teaching Experience

Teaching Assistant (five times) 2017 – 2022
ECE236B Convex Optimization *UCLA*

Teaching Assistant (four times) 2017 – 2021
ECE133A Applied Numerical Computing *UCLA*

Teaching Assistant Spring 2019
ECE236C Optimization Methods for Large-Scale Systems *UCLA*

Teaching Assistant Fall 2020
ECE205A Matrix Analysis for Scientists and Engineers *UCLA*

Mentorship Experience

Summer Research Program Supervisor 06/2021 – 08/2021
Summer Undergraduate Research Program (SURP) *UCLA*

- Project: Solving large-scale non-metric multidimensional scaling using ADMM
- Co-supervised (with Prof. Lieven Vandenberghe) two undergraduate students on a summer research project

Academic Mentor 06/2019 – 08/2019
Research in Industrial Projects for Students (RIPS) Program *IPAM, UCLA*

- Project: Obstacle avoidance of autonomous vehicles
- Guided four international undergraduates to work on an industrial project
- Communicated with industrial sponsor Amazon for technical assistance

Reviewing

Journal reviewer

Mathematical Programming · SIAM Journal on Optimization · Mathematics of Operations Research · IEEE Transactions on Pattern Analysis and Machine Intelligence

Conference reviewer

International Conference on Machine Learning (ICML) · AAAI Conference on Artificial Intelligence (AAAI) · International Conference on Learning Representations (ICLR)

Experience

Research Internship 01/2020 – 09/2020

Damo Academy, Alibaba *Seattle, WA*

- Work in the Decision Intelligence (Foundation) Group, supervised by Wotao Yin
- Participated in designing MindOpt, an optimization solver for large-scale linear programs
- Developed algorithms for bottom-level numerical linear algebra, and re-designed data structure

IEEE Eta Kappa Nu (HKN) 01/2014 – now

Department of Electrical and Electronic Department, HKU *Hong Kong, China*

- Participated as a student member of Lambda Iota Chapter, IEEE-HKN, a student honor society of IEEE
- Conducted tutorials to mentor juniors on their coursework