

Lexiao Lai

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Education

Columbia University in the City of New York

Doctor of Philosophy in Operations Research

Advisor: Cédric Jozs [\[website\]](#)

Master of Science in Operations Research

New York, U.S.

Sept. 2019 - May 2024 (expected)

Sept. 2019 - May 2020

The University of Hong Kong

Bachelor of Science Major in Mathematics, Minor in Finance

Hong Kong, China

Sept. 2015 - June 2019

Research Interests

Nonconvex optimization, applied semi-algebraic geometry, data science

Preprints

1. Cédric Jozs, Lexiao Lai, Global stability of first-order methods for coercive tame functions, *arXiv preprint*, 2023, [\[preprint\]](#)

Publications

1. Cédric Jozs, Lexiao Lai, Xiaopeng Li, Convergence of the momentum method for semi-algebraic functions with locally Lipschitz gradients, *SIAM Journal on Optimization* (to appear), 2023 [\[preprint\]](#)
2. Cédric Jozs, Lexiao Lai, Sufficient conditions for instability of the subgradient method with constant step size, *SIAM Journal on Optimization* (to appear), 2023 [\[preprint\]](#)
3. Cédric Jozs, Lexiao Lai, Lyapunov stability of the subgradient method with constant step size, *Mathematical Programming, Full Length Paper, Series A*, 2023 [\[preprint\]](#) [\[journal doi\]](#)
4. Cédric Jozs, Lexiao Lai, Nonsmooth rank-one matrix factorization landscape, *Optimization Letters*, 2022 [\[preprint\]](#) [\[journal doi\]](#)
5. Elliot Cartee, Lexiao Lai, Qianli Song, Alexander Vladimirovsky, Time-dependent surveillance-evasion games, *58th IEEE Conference on Decision and Control*, 2019 [\[preprint\]](#) [\[conference doi\]](#)

Talks

1. SIAM Conference on Optimization, Seattle, June 1st 2023, *Global stability of first-order methods with constant step size for coercive tame functions*
2. CUHK SEEM Department Seminar, Hong Kong, December 8th 2022, *Lyapunov stability of the subgradient method with constant step size*
3. HKU Optimization and Machine Learning Seminar, Hong Kong, December 6th 2022, *Lyapunov stability of the subgradient method with constant step size*
4. PGMODAYS 2022, Paris, November 29th 2022, *Lyapunov stability of the subgradient method with constant step size*
5. INFORMS, Annual Meeting, Indianapolis, October 17th 2022, *Lyapunov stability of the subgradient method with constant step size*

Awards & Honours

- Columbia IEOR Department Fellowship 2019
- Walter Brown Memorial Prizes in Mathematics, HKU 2019
Awarded to the best final year student in Mathematics
- Doris Chen Undergraduate Project Prize, HKU 2018
- Liu Ming-Chit Prize in Mathematics, HKU 2018
- Outstanding Winner of *Mathematical Contest in Modelling* 2017
Top 13 winners out of 8843 teams
- Ranked 134 out of 4638 in *78th William Putnam Mathematical Competition* 2017
- Alan John Allis Prize in Mathematics, HKU 2016, 2017
- Dean's Honours List, HKU 2016, 2017, 2019
- HKSAR Government Scholarship, HKU 2015-2019

Teaching Experience

As Teaching Assistant:

- **Columbia:** Convex Optimization (TA evaluation: 4.42/5) Spring 2023
- **HKU:** Linear Algebra I Spring 2019

Service

Session chair:

- *Structured and tame optimization*, INFORMS, Annual Meeting, 2023

Reviewer:

- AISTATS
- Computational Optimization and Applications
- Journal of Optimization Theory and Applications

Internship

TCL Corporate Research (Hong Kong) Company Limited
Research Intern, AI Research Lab

Hong Kong
May-Sept. 2021

Computer Skills

Programming Languages: Python, MATLAB, \LaTeX