

Lexiao Lai

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Education

Columbia University in the City of New York	New York, U.S.
Doctor of Philosophy in Operations Research	Sept. 2019 - May 2024 (expected)
Advisor: Cédric Jozs [website]	
Master of Science in Operations Research	Sept. 2019 - May 2020
The University of Hong Kong	Hong Kong, China
Bachelor of Science Major in Mathematics, Minor in Finance	Sept. 2015 - June 2019

Interests

Nonconvex optimization, applied semi-algebraic geometry, data science

Publications

1. Cédric Jozs, Lexiao Lai, Sufficient conditions for instability of the subgradient method with constant step size, *SIAM Journal on Optimization*, 2024 [[preprint](#)] [[journal doi](#)]
2. Cédric Jozs, Lexiao Lai, Xiaopeng Li, Convergence of the momentum method for semi-algebraic functions with locally Lipschitz gradients, *SIAM Journal on Optimization*, 2023 [[preprint](#)] [[journal doi](#)]
3. Cédric Jozs, Lexiao Lai, Global stability of first-order methods for coercive tame functions, *Mathematical Programming, Full Length Paper, Series A*, 2023 [[preprint](#)] [[journal doi](#)]
4. 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](#)]
5. Cédric Jozs, Lexiao Lai, Nonsmooth rank-one matrix factorization landscape, *Optimization Letters*, 2022 [[preprint](#)] [[journal doi](#)]
6. Elliot Cartee, Lexiao Lai, Qianli Song, Alexander Vladimirsky, Time-dependent surveillance-evasion games, *58th IEEE Conference on Decision and Control*, 2019 [[preprint](#)] [[conference doi](#)]

Talks

1. IMS Young Mathematical Scientists Forum – Applied Mathematics, Singapore, January 9th 2024, *Global stability of first-order methods for coercive tame functions*
2. INFORMS Annual Meeting, Phoenix, October 17th 2023, *Global stability of first-order methods for coercive tame functions*
3. UCSD Optimization and Data Science Seminar, San Diego, October 4th 2023, *Global stability of first-order methods for coercive tame functions*
4. International Congress on Industrial and Applied Mathematics, Tokyo, August 24th 2023, *Global stability of first-order methods for coercive tame functions*
5. SIAM Conference on Optimization, Seattle, June 1st 2023, *Global stability of first-order methods with constant step size for coercive tame functions*
6. CUHK SEEM Department Seminar, Hong Kong, December 8th 2022, *Lyapunov stability of the subgradient method with constant step size*
7. HKU Optimization and Machine Learning Seminar, Hong Kong, December 6th 2022, *Lyapunov stability of the subgradient method with constant step size*
8. PGMODAYS, Paris, November 29th 2022, *Lyapunov stability of the subgradient method with constant step size*
9. 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 Spring 2023
- Optimization Methods & Models for Financial Engineering Fall 2023
- Optimization Methods & Models Spring 2024

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

Python, MATLAB, L^AT_EX