Lexiao Lai

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Employment	**The University of Hong Kong**	Hong Kong, China
	Assistant Professor, Department of Mathematics	July 2024 -

Interests Nonconvex optimization, applied semialgebraic geometry, data science

Education	**Columbia University in the City of New York**	New York, U.S.
	Ph.D. in Operations Research [thesis]	Sept. 2019 - May 2024
	Advisor: Cédric Josz	
	The University of Hong Kong	Hong Kong, China
	B.Sc. in Mathematics	Sept. 2015 - June 2019

Preprints & Publications

1. (with Junren Chen and Arian Maleki) Phase transitions in phase-only compressed sensing *arXiv preprint*, 2025 [preprint]
2. (with Cédric Josz) Nonsmooth rank-one symmetric matrix factorization landscape, *Optimization Letters*, 2025 [preprint] [journal doi]
3. (with Cédric Josz and Xiaopeng Li) Proximal random reshuffling under local Lipschitz continuity, *arXiv preprint*, 2024 [preprint]
4. (with Cédric Josz) Sufficient conditions for instability of the subgradient method with constant step size, *SIAM Journal on Optimization*, 2024 [preprint] [journal doi]
5. (with Cédric Josz and Xiaopeng Li) Convergence of the momentum method for semialgebraic functions with locally Lipschitz gradients, *SIAM Journal on Optimization*, 2023 [preprint] [journal doi]
6. (with Cédric Josz) Global stability of first-order methods for coercive tame functions, *Mathematical Programming, 2023* [preprint] [journal doi]
7. (with Cédric Josz) Lyapunov stability of the subgradient method with constant step size, *Mathematical Programming, 2023* [preprint] [journal doi]
8. (with Cédric Josz) Nonsmooth rank-one matrix factorization landscape, *Optimization Letters*, 2022 [preprint] [journal doi]
9. (with Elliot Cartee, Qianli Song, and Alexander Vladimirsky) Time-dependent surveillance-evasion games, *58th IEEE Conference on Decision and Control*, 2019 [preprint] [conference doi]

Talks

1. International Conference on Scientific Machine Learning, Hong Kong, December 3rd 2024, *Proximal random reshuffling under local Lipschitz continuity*
2. 14th Triennial International Conference of APORS, Hangzhou, November 17th 2024, *Proximal random reshuffling under local Lipschitz continuity*
3. International Symposium on Mathematical Programming, Montréal, July 23rd 2024, *Global stability of first-order methods for coercive tame functions*
4. IMS Young Mathematical Scientists Forum – Applied Mathematics, Singapore, January 9th 2024, *Global stability of first-order methods for coercive tame functions*
5. INFORMS Annual Meeting, Phoenix, October 17th 2023, *Global stability of first-order methods for coercive tame functions*
6. UCSD Optimization and Data Science Seminar, San Diego, October 4th 2023, *Global stability of first-order methods for coercive tame functions*
7. International Congress on Industrial and Applied Mathematics, Tokyo, August 24th 2023, *Global stability of first-order methods for coercive tame functions*
8. SIAM Conference on Optimization, Seattle, June 1st 2023, *Global stability of first-order methods with constant step size for coercive tame functions*
9. CUHK SEEM Department Seminar, Hong Kong, December 8th 2022, *Lyapunov stability of the subgradient method with constant step size*

10. HKU Optimization and Machine Learning Seminar, Hong Kong, December 6th 2022, *Lyapunov stability of the subgradient method with constant step size*

11. PGMODAYS, Paris, November 29th 2022, *Lyapunov stability of the subgradient method with constant step size*

12. 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
	· Doris Chen Undergraduate Project Prize, HKU	2018
	· Liu Ming-Chit Prize in Mathematics, HKU	2018
	· 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 Course Instructor:
HKU: Operations Research I   Spring 2025

As Teaching Assistant:
Columbia:
  · Optimization Methods & Models   Spring 2024
  · Convex Optimization   Spring 2023
  · Optimization Methods & Models for Financial Engineering   Fall 2023
HKU: Linear Algebra I   Spring 2019

Service

Session chair:
  · *Recent advances in first-order methods*, International Conference on Continuous Optimization, 2025
  · HKMS-HKSIAM Joint Young Scholars Symposium, 2024
  · *First-order methods and large-scale optimization*, International Symposium on Mathematical Programming, 2024
  · *Structured and tame optimization*, INFORMS Annual Meeting, 2023
Reviewer:
  · AISTATS
  · Applied Mathematics and Optimization
  · Computational Optimization and Applications
  · Journal of Optimization Theory and Applications
  · Mathematics of Operations Research

Internship

TCL Corporate Research (Hong Kong) Company Limited   Hong Kong, China
Research Intern, AI Research Lab   May-Sept. 2021

Computer Skills

Python, MATLAB, LaTeX