

Mufan (Bill) Li

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RESEARCH POSITIONS

Postdoctoral Research Associate, Princeton University
Department of ORFE, Supervised by Boris Hanin

2023-Present

DEGREES

Ph.D. Statistics, University of Toronto
Thesis: *Analysis of Learning Algorithms via Diffusion Limits*
Supervised by Daniel M. Roy and Murat A. Erdogdu

2017-2023

M.Sc. Statistics, University of Toronto

2015-2016

B.A.Sc. Engineering Science, University of Toronto

2010-2015

RESEARCH ARTICLES

See also my [Google Scholar](#) or [Semantic Scholar](#) pages.

1. Lorenzo Noci*, Chuning Li*, **M. Li***, Bobby He, Thomas Hofmann, Chris Maddison, and Daniel M. Roy, *The Shaped Transformer: Attention Models in the Infinite Depth-and-Width Limit*. Preprint 2023. [arXiv:2306.17759](#).
2. Matthew Zhang, Sinho Chewi, **M. Li**, Krishnakumar Balasubramanian, and Murat A. Erdogdu, *Improved Discretization Analysis for Underdamped Langevin Monte Carlo*. [COLT 2023](#). [arXiv:2302.08049](#).
3. **M. Li** and Murat A. Erdogdu, *Riemannian Langevin Algorithm for Solving Semidefinite Programs*. [Bernoulli 2023](#). [arXiv:2010.11176](#).
4. **M. Li**, Mihai Nica, and Daniel M. Roy, *The Neural Covariance SDE: Shaped Infinite Depth-and-Width Networks at Initialization*. [NeurIPS 2022](#) (Selected for Oral, Nominated for Award). [arXiv:2206.02768](#).
5. Raphaël Berthier and **M. Li**, *Acceleration of Gossip Algorithms through the Euler–Poisson–Darboux Equation*. [IMA Journal of Applied Mathematics 2022](#). [arXiv:2202.10742](#).
6. Sinho Chewi, Murat A. Erdogdu, **M. Li**, Ruoqi Shen, and Matthew Zhang, *Analysis of Langevin Monte Carlo from Poincaré to Log-Sobolev*. [COLT 2022 Extended Abstract](#). Under review at Ann. of Appl. Prob. [arXiv:2112.12662](#).
7. **M. Li**, Mihai Nica, and Daniel M. Roy, *The Future is Log-Gaussian: ResNets and Their Infinite-Depth-and-Width Limit at Initialization*. [NeurIPS 2021](#). [arXiv:2106.04013](#).
8. **M. Li**, and Maxime Gazeau, *Higher Order Generalization Error for First Order Discretization of Langevin Diffusion*. Preprint 2021. [arXiv:2102.06229](#).

AWARDS

Doctoral Award, University of Toronto

2023

Ontario Graduate Scholarship

2019-2023

Student Research Presentation Award, Stat. Soc. of Canada

2021

MITACS Accelerate Fellowship, with Borealis AI

2018-2019

Undergraduate Summer Research Fellowship, University of Toronto

2012

INVITED TALKS

Google DeepMind

August 2023

The Shaped Transformer: Attention Models in the Infinite Depth-and-Width Limit

*Equal Contribution.

	DeepProb, University of Oxford	Feb 2023
	<i>Neural Covariance SDE: Shaped Infinite Depth-and-Width Networks at Initialization</i>	
	OPTML++, MIT (Video)	Feb 2023
	<i>Neural Covariance SDE: Shaped Infinite Depth-and-Width Networks at Initialization</i>	
	Deep Learning Foundations, University of Maryland (Video)	Sept 2022
	<i>Neural Covariance SDE: Shaped Infinite Depth-and-Width Networks at Initialization</i>	
CONTRIBUTED TALKS	Statistical Society of Canada Annual Meeting	May 2023
	<i>Neural Covariance SDE: Shaped Infinite Depth-and-Width Networks at Initialization</i>	
	Institute of Mathematical Statistics Annual Meeting	Jun 2022
	<i>Analysis of Langevin Monte Carlo from Poincaré to Log-Sobolev</i>	
	Statistical Society of Canada Annual Meeting	May 2022
	<i>Analysis of Langevin Monte Carlo from Poincaré to Log-Sobolev</i>	
	Statistical Society of Canada Annual Meeting	May 2021
	<i>Riemannian Langevin Algorithm for Solving Semidefinite Programs</i>	
WORK EXPERIENCE	Research Intern, Borealis AI	Aug 2018 - Apr 2019
	Investment Analyst, Ontario Teachers' Pension Plan	Jul 2016 - Jul 2017
	Electronic Trading Intern, RBC Capital Markets	May 2013 - Aug 2014
PEER REVIEW	Journal of Machine Learning Research (JMLR)	
	Transactions on Machine Learning Research (TMLR) Expert Reviewer	
	SIAM Journal on Mathematics of Data Science (SIMODS)	
	Journal of Computational and Graphical Statistics (JCGS)	
	Neural Information Processing Systems (NeurIPS)	
	International Conference on Learning Representations (ICLR)	
	International Conference on Machine Learning (ICML)	