

# Mufan (Bill) Li

<https://mufan-li.github.io/>

96 Saint Patrick Street  $\diamond$  Toronto, ON M5T 1V2

(416)-843-9179  $\diamond$  [mufan.li@mail.utoronto.ca](mailto:mufan.li@mail.utoronto.ca)

## DEGREES

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### University of Toronto

Ph.D. Statistics

Sept 2017 – Expected 2023

M.Sc. Statistics

June 2016

B.A.Sc. Engineering Science

June 2015

## RESEARCH ARTICLES

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### Improved Discretization Analysis for Underdamped Langevin Monte Carlo

Matthew Zhang, Sinho Chewi, Mufan (Bill) Li, Krishnakumar Balasubramanian, Murat A. Erdogdu  
*COLT (2023), arXiv Preprint, arXiv:2302.08049*

### Riemannian Langevin Algorithm for Solving Semidefinite Programs

Mufan (Bill) Li and Murat A. Erdogdu

*To appear in Bernoulli (2023+), arXiv Preprint, arXiv:2010.11176*

*Student Research Presentation Award at SSC 2021.*

### The Neural Covariance SDE: Shaped Infinite Depth-and-Width Networks at Initialization

Mufan (Bill) Li, Mihai Nica, and Daniel M. Roy

*NeurIPS (2022, Selected for oral, nominated for award), arXiv Preprint, arXiv:2206.02768*

### Acceleration of Gossip Algorithms through the Euler–Poisson–Darboux Equation

Raphaël Berthier and Mufan (Bill) Li

*IMA Journal of Applied Mathematics (2022), arXiv Preprint, arXiv:2202.10742*

### Analysis of Langevin Monte Carlo from Poincaré to Log-Sobolev

Sinho Chewi, Murat A. Erdogdu, Mufan (Bill) Li, Ruqi Shen, and Matthew Zhang

*COLT (2022) Extended Abstract, arXiv Preprint, arXiv:2112.12662*

### The Future is Log-Gaussian: ResNets and Their Infinite-Depth-and-Width Limit at Initialization

Mufan (Bill) Li, Mihai Nica, and Daniel M. Roy

*NeurIPS (2021), arXiv Preprint, arXiv:2106.04013*

### Higher Order Generalization Error for First Order Discretization of Langevin Diffusion

Mufan (Bill) Li and Maxime Gazeau

*arXiv Preprint, arXiv:2102.06229 (2021)*

## AWARDS

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Ontario Graduate Scholarship

2019–2023

University of Toronto

**MITACS Accelerate Fellowship**  
*with Borealis AI*

August 2018

**Faculty of Applied Science and Engineering Undergraduate Summer Research Fellowship**  
*with Professor Birsen Donmez*

May 2012

## WORK EXPERIENCE

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**Borealis AI**

*Machine Learning Research Intern*

Supported by the MITACS Accelerate Fellowship.

August 2018 - April 2019  
*Toronto, ON*

**Ontario Teachers' Pension Plan**

*Investment Analyst, Global Credit Products*

July 2016 - July 2017  
*Toronto, ON*

**RBC Capital Markets**

*Intern, Electronic and Algorithmic Trading*

May 2013 - August 2014  
*Toronto, ON*