

PETER POTAPTCHIK

EDUCATION

University of Oxford - Keble College

Sep 2023 - Present

DPhil in Statistical Machine Learning

Supervised by George Deligiannidis, Saifuddin Syed and Yee Whye Teh

Teaching Assistant: Probability, Statistical Learning Theory

University of Toronto - Trinity College

Sep 2018 - May 2023

Honours Bachelor in Computer Science and Statistics - 4.0 (94.5%)

Teaching Assistant: Linear Algebra, Operating Systems

PUBLICATIONS AND PREPRINTS

Peter Potaptchik, Iskander Azangulov, George Deligiannidis “Linear Convergence of Diffusion Models Under the Manifold Hypothesis” Available at arXiv:2410.09046

Kacper Kapusniak, **Peter Potaptchik**, Teodora Reu, Leo Zhang, Alexander Tong, Michael Bronstein, Avishek Joey Bose, Francesco Di Giovanni “Metric Flow Matching for Smooth Interpolations on the Data Manifold” Advances in Neural Information Processing Systems, 2024. Available at arXiv:2405.14780

Peter Potaptchik, Daniel M. Roy, David Schritterser “de Finetti’s theorem and the existence of regular conditional distributions and strong laws on exchangeable algebras” Available at arXiv:2312.16349

OTHER RESEARCH EXPERIENCE

Poincaré Inequalities for Parallel Tempering with Langevin Diffusion

Oct 2023 - Present

Supervised by Professor George Deligiannidis

- Proved a Poincaré Inequality that implies that LD with PT can converge exponentially quick even if the target distribution does not satisfy such an inequality

Applications of Nonstandard Analysis in Probability and Statistics

Sep 2022 - Dec 2023

Supervised by Professor Daniel M. Roy

- Proved results in nonstandard analysis to show that bayesian nonparametric models can be viewed as nonstandard bayesian parametric models
- Won best short talk award at BAYSM 2023
- Accepted as a poster at ISBA 2024

Expected Running Time of a New Sampling Algorithm

Sep 2020 - Dec 2021

Supervised by Professor Chris J. Maddison

- Studied perturbation models which reduce sampling from a probability distribution to a stochastic optimization problem
- Derived bounds on the expected running times of these methods and compared them to other sampling methods such as adaptive rejection sampling

WORK EXPERIENCE

D. E. Shaw

June 2022 - Aug 2022

Quantitative Developer Intern

New York City, NY

- Researched and implemented changes to the portfolio optimizer for one of the funds

Coinbase*Software Engineer Intern***May 2021 - Aug 2021***San Francisco, CA*

- Added a workflow to handle cryptocurrency vault withdrawals
- Modified how fiat currency is withdrawn to allow for the cancellation and reversal of payments

Microsoft*Software Engineer Intern***May 2020 - Aug 2020***Redmond, WA*

- Developed infrastructure to maintain different pools of Azure Function Apps; used this infrastructure to add support for additional backend languages (including C# and Python) to Azure Static Web Apps

KPMG*Data Science Intern***May 2019 - Aug 2019***Toronto, ON*

- Automated a market research project by building a tool to monitor and cluster news from various sources
- Generated reputational risk reports using sentiment analysis and Google News / Twitter APIs

AWARDS AND HONOURS

Best Short Talk Award BAYSM		2023
Toronto Department of Computer Science Research Award	\$7,500	2021
NSERC Undergraduate Student Research Award (Declined)	\$6,000	2021
University of Toronto Scholar In-Course Award	\$1,500	2019, 2020, 2021
<ul style="list-style-type: none"> • Awarded to the top ~100 (of 15,000) students of each grade 		
University of Toronto Scholar Entrance Scholarship	\$7,500	2018
Trinity College Entrance Scholarship	\$2,000	2018
Canadian Mathematical Olympiad (CMO)		2017