

# Ekansh Sharma

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## CONTACT INFORMATION

Email: [ekansh@cs.toronto.edu](mailto:ekansh@cs.toronto.edu)  
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## EDUCATION

**University of Toronto**, Toronto, ON, Canada  
*Doctor of Philosophy*, Computer Science, expected 2025  
Adviser: Prof. Daniel M. Roy

**University of Toronto**, Toronto, ON, Canada  
*Master of Science*, Computer Science, conferred 2018  
Thesis title: Sparse exchangeable bi-partite graphs  
Adviser: Prof. Daniel M. Roy

**University of Toronto**, Toronto, ON, Canada  
*Bachelor of Applied Science with Honors*, Electrical Engineering, conferred 2016  
Minor in Robotics and Mechatronics

## PREPRINTS

**Sharma E.**, Roy D.M., Dziugaite G. K.. “The non-local merging problem: Permutation symmetries and variance collapse.” *arXiv preprint* [arXiv:2410.12766](https://arxiv.org/abs/2410.12766).

## REFEREED PUBLICATIONS

**Sharma E.**, Kwok D., Denton T., Roy D.M., Rolnick D., Dziugaite G. K.. “Simultaneous linear connectivity of neural networks modulo permutation.” *Joint European Conference on Machine Learning and Knowledge Discovery in Databases*. Cham: Springer Nature Switzerland, 2024 ([link](#)).

Naulet Z., Roy D.M., **Sharma E.**, Victor Veitch. “Bootstrap estimators for the tail-index and for the count statistics of graphex processes”, *Electronic Journal of Statistics, Electron. J. Statist.* 15(1), 282-325, 2021 ([link](#)).

## REFEREED CONFERENCE ABSTRACTS AND PRESENTATIONS

Jain, R., Adnan, M., **Sharma, E.**, Ioannou, Y. “Winning Tickets from Random Initialization: Aligning Masks for Sparse Training.” Presented at the *UniReps: 2nd Edition of the Workshop on Unifying Representations in Neural Models*. co-located with NeurIPS 2024. Vancouver, Canada ([link](#)).

**Sharma E.**, Kwok D., Denton T., Roy D.M., Rolnick D., Dziugaite G. K. “Simultaneous linear connectivity of neural networks modulo permutation.” Presented at the *Conference on Parsimony and Learning*, Spotlight Track 2024. Hong Kong, China ([link](#)).

Singh D., **Sharma E.**, Roy D. M., Dziugaite G.K. “Flat minima can fail to transfer to downstream tasks.” Presented at the *PAC-Bayes meets Interactive Learning Workshop* co-located with ICML 2023. Hawaii, USA ([link](#)).

**Sharma E.**, Roy D. M.. “Approximations in Probabilistic Programs: a Compositional Nonasymptotic analysis of Nested MCMC” Presented at the *ProbProg 2020* Cambridge, Massachusetts, USA ([poster](#), [talk](#)).

**Sharma E.**, Roy D. M.. “Auxiliary variables in probabilistic programs.” Presented at the *Probabilistic Programming Systems Workshop (PPS 2018)* co-located with POPL2018. Los Angeles, California, USA. ([slides](#))

Erdman L, **Sharma E.**,Unternahrer E., Dass S.H., ODonnell K., Mostafavi S., Edgar R., Kobor M., Gaudreau H., Meaney M. and Goldenberg A.. “Modeling trajectories of mental health: challenges and opportunities.” Presented at the *In NeurIPS Workshop Machine Learning for Health 2016*, Barcelona, Spain ([link](#)).

## TECHNICAL REPORTS

**Sharma E.**, Roy D. M.. “Approximations in Probabilistic Programs.” *arXiv preprint [arXiv:1912.06791](#)*. ([poster](#))

Veitch, V., **Sharma, E.**, Naulet, Z., Roy, D. M. (2017). “Exchangeable modelling of relational data: checking sparsity, train-test splitting, and sparse exchangeable Poisson matrix factorization.” *arXiv preprint [arXiv:1712.02311](#)*. ([slides](#))

## PROFESSIONAL EXPERIENCE

**Amazon.com**, Edinburgh, UK

*Applied Scientist Intern*

*Winter 2021*

Sponsored Display (Ads team)

- Developed counterfactual analysis tools for analysing policies for Ad selection.
- Developed A/B tests to compare UCB algorithm against baselines at Amazon.

**Altera Corp.**, Toronto, ON, Canada

*Software Engineering Intern*

*Fall 2014, Winter 2015*

Detailed Placement Team

- Modeled bidirectional long wire congestion on the chip to get better wire use estimate during placement.
- Parallelized code segments in *Versatile Place and Route* to improve compile time.

**Microsoft Corp.**, Redmond, WA, USA

*Software Development Engineering Intern*

*Summer 2014*

Azure Redis Cache Team

- Developed Redis output-cache provider feature for ASP.NET developers.
- Developed a command line prompt to access Redis Cache on Azure Portal.

## UNDERGRADUATE RESEARCH PROJECTS

**Autonomous Wing Assembly Process**

*Multidisciplinary Capstone Project*

- Client: **Bombardier Aerospace**, North York, ON
- Adviser: Prof. Jonathan Kelly
- Designed and built a functioning prototype of an autonomous robot to join two wing halves for Global Express 7000/8000 series of business jets.

**Efficient implementation of a graphical model for identifying disease mechanisms in complex human diseases**

- Adviser: Prof. Anna Goldenberg
- Implemented a graphical model that combines multiple sources of genetic and genomic data to identify sets of genes that could explain the presence of a disease in a larger number of patients.
- Changed the structure of graphical model that resulted in 40% run-time savings.

**Extending the user-space implementation of online filesystem consistency checker using Linux KVM**

- Adviser: Prof. Ashvin Goel
- Worked on RECON, an online filesystem consistency checker.
- Extended the user-space implementation of RECON to use Linux KVM.

AWARDS AND HONORS	Vector Research Grant	<i>2018-2024</i>
	Department of Computer Science 50th Anniversary Graduate Scholarship	<i>2017</i>
	University of Toronto Excellence Award	<i>2013, 2015</i>
	Dean's Honors List	<i>2011-2016</i>
TEACHING ASSISTANTSHIP	Machine Learning (CSC2515)	<i>Fall 2019, Fall 2021, Fall 2022</i>
	Data Structures and Analysis (CSC263)	<i>Fall 2018</i>
	Enriched Theory of Computation (CSC240)	<i>Winter 2018</i>
	Theory of Computation (CSC236)	<i>Winter 2019, Winter 2017, Fall 2016</i>
RELEVANT COURSEWORK	Statistical Learning Theory; Graphs, Matrices, and Optimization; Algorithms for Private Data Analysis; Monte Carlo Methods; Computability and Logic; Compilers and Interpreters; Computational Neuroscience; Machine Learning; Inference Algorithms; Random Processes; Neural Networks; Robot Modeling and Control.	