

## EXPERIENCE

- Stanford University, Stanford AI Lab** Toronto, Canada  
Visiting Research Scholar with Stefano Ermon 2021-06 – Present  
Improve likelihood and sample quality of score-based generative models through general and efficient SDE optimization.  
*Topics: Score-based generative models, SDEs, EBM, diffusion probabilistic models, latent variable models*
- Cohere & Oxford University, Machine Learning Research** Toronto, Canada  
Machine Learning Researcher with Nick Frost, Aidan Gomez, and Yarin Gal 2021-01 – 2021-06  
Develop data efficient algorithms to improve training cost and personalization of billion parameter language models.  
*Topics: Transformers, attention, distillation, curriculum learning, uncertainty*
- Nvidia, Simulations & Robotics Team** Toronto, Canada  
Deep Learning Research Intern with Gavriel State and Animesh Garg 2020-08 – 2020-12  
Build performant GPU-accelerated environments towards time / resource efficient reinforcement learning for robotics.  
*Topics: Omniverse, IsaacGym, robotics, reinforcement learning*
- Google, Brain Team** Mountain View, CA, USA  
Software Engineering Intern 2020-05 – 2020-08  
Actualize state of the art pre-/post-hoc pruning methods for easy experimentation and efficient hardware computation.  
*Topics: lottery tickets, dynamic sparsity, Tensorflow Model Optimization Toolkit (top contributor)*
- Vector Institute & University of Toronto** Toronto, Canada  
Undergraduate Researcher with Prof. David Duvenaud 2020-01 – Present  
Improve generalization and robustness of Neural Ordinary Differential Equations by modelling uncertainty with SDEs.  
*Topics: ordinary/stochastic differential equations, Bayesian neural networks, variational inference, JAX*
- FOR.ai** Toronto, Canada  
Machine Learning Research Lead 2019-07 – Present  
Explore sparsity and low-rank parameterizations to efficiently train heavily parameterized neural language models.  
*Topics: progressive growth neural networks, low-rank factors, efficient network architectures*

## EDUCATION

- University of Toronto** 2017–2020, 2021–2022  
**BASc Candidate in Computer Science, Statistics, Math** *Dean's List Scholar*  
Coursework (graduate-level): NLP, deep learning, probabilistic reasoning, stochastic processes  
Teaching Assistant: CSC258 (Intro. Computer Systems)

## PUBLICATIONS

- [2] Sören Mindermann\*, Muhammed Razzak\*, **Winnie Xu\***, Andreas Kirsch, Mrinank Sharma, Adrien Morisot, Aidan N. Gomez, Sebastian Farquhar, Jan Brauner, and Yarin Gal, “Prioritized training on points that are learnable, worth learning, and not yet learned”, *Workshop in Subset Selection in ML*, ICML 2021.
- [1] **Winnie Xu**, Ricky T.Q. Chen, Xuechen Li, and David Duvenaud, “Infinitely deep bayesian neural networks with stochastic differential equations”, *Workshop in Bayesian Deep Learning*, NeurIPS 2020.

## HONORS, AWARDS, AND GRANTS

- Undergraduate Student Research Award**, NSERC [*declined*] 2020  
**Axelrad Research Award (Best Project)**, Princess Margaret Cancer Research 2018  
**Summer Undergraduate Research Award**, University of Toronto 2018  
**Top 15% Distinction**, Canadian National Mathematics Contest 2015, 2016, 2017  
**1st Place Sanofi Biogenius & Silver Medal Canada-Wide Science Fair**, Science Fairs Canada 2017

## PROJECTS

- Computational Biology Research**, Princess Margaret Cancer Research 2018-05 – 2018-09  
**HiRide Inc. (acquired by Facedrive)** 2019-06 – 2020-01

## SKILLS

Languages: Python, Golang, C/C++, Bash, Java, Javascript, R,  $\text{\LaTeX}$   
Tools: JAX, TensorFlow, Pytorch, Numpy, Linux, Docker, React, Google Cloud Platform, Slurm