Winnie Xu

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Education

University of Toronto 2017–2020, 2021–2022
BASc Candidate in Computer Science, Statistics, Math
Focus in Artificial Intelligence (present): Machine learning & Deep Learning (graduate-level), Stochastic Processes (graduate-level), Advanced Algorithms & Data Structures, Discrete Mathematics, Calculus, Linear Algebra
Pre-medicine (2017 – 2018): Evolutionary Biology, Physical/Organic Chemistry, Molecular Biology, Genetics

Experiences

Brain Team, **Google** Mountain View, CA, USA
Research Engineering Intern 2020-05 – 2020-08
Actualize state of the art pre-/post-hoc pruning methods for easy experimentation and efficient hardware computation.
Topics: sparsity, gradient-based optimization, Tensorflow Model Optimization Toolkit (author)

Vector Institute & **University of Toronto** Toronto, ON, Canada
Undergraduate Researcher with Prof. David Duvenaud 2020-01 – Present
Improve generalization and robustness of Neural Ordinary Differential Equations by modelling uncertainty.
Topics: Bayesian neural networks, latent SDEs, neural ODEs, variational inference

FOR.ai Toronto, ON, Canada
Machine Learning Researcher 2019-07 – Present
Explore sparsity techniques to train heavily parameterized and performant neural language models.
Topics: progressive growth neural networks, reinforcement learning

Cloud Team, **Google** Waterloo, ON, Canada
Software Engineering Intern 2019-05 – 2019-08
Integrate remote build execution pipelines on Google Cloud Registry for Docker and Bazel users worldwide.
Topics: remote build, cloud infrastructure tooling, rules-docker (author)

Princess Margaret Cancer Research, **Machine Learning for Health** Toronto, ON, Canada
Computational Biology Researcher with Prof. Michael Hoffman 2018-05 – 2018-09
Develop annotation pipelines and unsupervised learning techniques to predict 20+ cancer-linked epigenetic factors.
Topics: next-generation sequencing (ChIP-seq,-exo, RNA-seq), hidden markov models, transcription factor binding

Publications

[1] **Winnie Xu**, Ricky T.Q. Chen, and David Duvenaud, "Continuous-depth bayesian neural networks", *Uncertainty and Robustness in Deep Learning, International Conference on Machine Learning (ICML)* 2020.

Honors, Awards, and Grants

Undergraduate Student Research Award, NSERC [*declined*] 2020
1st Place Award, Hack the North Canada 2019
1st Place Award, Global Engineering Week 2019
Trinity College Scholarship, University of Toronto 2019
Axelrad Research Award (Best Project), Princess Margaret Cancer Research 2018
Computer Science Research Fellowship, University of Toronto 2018
Top 15% Distinction, Canadian National Mathematics Contest 2015, 2016, 2017
1st Place Honours, Sanofi Biogenius Canada 2017
Silver Medal (Top 20), Canada-Wide Science Fair 2017

Projects

aUToronto, **University of Toronto** 2019-09 – 2020-05
Computer vision researcher for self-driving design team (1st Place SAE Autodrive Competition) in object detection.
HiRide Inc. (acquired by Facedrive) 2019-06 – 2020-01
Full stack developer, chatbot and mobile development.

Skills

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