

# JACOB KELLY

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## EDUCATION

### University of Toronto

Toronto, ON

AI Specialist · Computer Science, Math, Stats · *cGPA: 3.91/4 (89%)*

Sep 2017 — Jun 2022

Coursework: Machine Learning (Graduate-Level) · Algorithms & Data Structures (Advanced) ·

C & Systems Programming · Vector Calculus on Manifolds · Mathematical Probability

## EXPERIENCE

### Machine Learning Researcher · Python · JAX

Toronto, ON

Vector Institute for AI · Supervisor: David Duvenaud

Sep 2019 — Present

- Improving efficiency of Neural Ordinary Differential Equations (Neural ODEs).

### Autonomy Engineer · Python

Toronto, ON

aUToronto Self-Driving Car Team

Sep 2019 — Present

- Adapting state-of-the-art deep learning research (SqueezeDet, YOLO) to detect traffic lights and road signs for Level 3 autonomous navigation as part of SAE Autodrive Challenge.

### Computational Biology Researcher · R · Bash · MATLAB

Toronto, ON

Princess Margaret Cancer Research · Supervisor: Benjamin Haibe-Kains

Apr 2019 — Sep 2019

- Developed R package for benchmarking machine learning methods for inferring sample-specific gene regulatory networks from single-cell RNA sequencing (scRNA-Seq) data.
- Trained elastic net regularized regression with pathway-based feature selection to infer drug response of cell lines from gene expression for patients with acute myeloid leukemia (AML).

### Computer Vision Software Developer · SPEL+ (internal C++ wrapper)

Markham, ON

Epson Research and Development Lab

May 2018 — Aug 2018

- Optimized motored stage movements and performed image capture and evaluation asynchronously, supporting researchers by improving speed of data collection by 58%.
- Designed and implemented anchor point based motor-camera calibration method for comparison of 2D object detection and pose estimation algorithm performance on a wide-range of objects.

### Android Developer · Java · Android SDK · Estimote API

Toronto, ON

Cossette Health Lab

Jul 2016 — Aug 2016

- Led two team members in reducing noise in bluetooth beacon signal to improve localization and pathfinding algorithms for indoor navigation system for SickKids Hospital.

## PROJECTS

### Machine Learning for Health · PostgreSQL · Python · pandas · scikit-learn · Keras · NLTK · gensim

- Queried Postgres database and summarized data from over 50,000 admissions of nearly 40,000 patients to Beth Israel Deaconess Medical Center.
- Predicted mortality and hypertension from clinical notes and vital signs data using logistic regression and recurrent neural network (RNN) machine learning models.

### Genomic Sequencing · C++ · Make · Bash

github.com/jacobjinkelly/sequencing

- Implemented Boyer-Moore for genomic sequence alignment with linear time construction of indexes using Z algorithm, achieving 3.5x speedup over naive algorithm.

## AWARDS

Dorothy Helen McRobb Scholarship

2019

David L. Squires Foundation Scholarship

2019

Margaret Ronald & Thomas Paxton Taylor Scholarship in Mathematics

2019

Undergraduate Student Research Award, NSERC Canada (declined)

2019

Certificate of Distinction (Top 15%), National Mathematics Contest, UWaterloo

2017

1st Place, ECOO Programming Contest

2017

## SKILLS

Languages & Frameworks: Python · C/C++ · R · Java · PyTorch · JAX · TensorFlow · NumPy

## INTERESTS

Extracurricular

CS First-Year Learning Community Mentor

Miscellaneous

3Blue1Brown · Nerdwriter · Ted Chiang · Westworld · Rock Climbing · Running