

# JACOB KELLY

jacobjinkelly.github.io · jacob.kelly@mail.utoronto.ca · github.com/jacobjinkelly

## EDUCATION

### University of Toronto

Toronto, ON

Computer Science, Mathematics, Statistics *cGPA:3.91/4 (89%)*

Sep 2017 — May 2021

Graduate/Cross-Listed: Machine Learning · Neural Networks · Probabilistic Graphical Models ·

Machine Learning Methods for Health

Math (Enriched): Differential Equations · Vector Calculus & Differential Geometry · Linear Algebra

CS: Algorithms · Data Structures (Enriched) · C & Systems Programming · Software Design

## SKILLS

**Languages:** Python · R · C/C++ · Bash · Java · MATLAB ·  $\text{\LaTeX}$

**Full Stack:** Git · Unix · PostgreSQL · HTML · CSS · JavaScript · jQuery · Android SDK

**Machine Learning:** NumPy · scikit-learn · pandas · PyTorch · TensorFlow · Keras · NLTK · gensim

## EXPERIENCE

### Machine Learning Researcher · R

Toronto, ON

*Princess Margaret Cancer Research & Vector Institute*

April 2019 — Present

- Implemented and benchmarked machine learning methods for inferring sample-specific gene regulatory networks from single-cell RNA sequencing (scRNA-Seq) data.
- Evaluated methods for automatically discovering gene signatures for acute myeloid leukemia (AML) using Cox model and survival analysis.

### 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 motor-camera calibration method using anchor points, creating a common baseline allowing for consistent comparison of 2D object detection and pose estimation algorithm performance on different objects.

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

Toronto, ON

*Cossette Health Lab*

Jul 2016 — Aug 2016

- Developed indoor wayfinding Android application, Pocket Guide, designed to guide visitors through SickKids Hospital using Estimote Beacons.
- Led two team members in design and development of UI/UX, improvement of localization via bluetooth signal noise reduction, and pathfinding algorithms.

## PROJECTS

### ClinicalML · PostgreSQL · Python · pandas · scikit-learn · Keras · NLTK · gensim

- Wrote SQL queries for calculating patient statistics from PostgreSQL database of Medical Information Mart for Intensive Care (MIMIC) dataset from Beth Israel Deaconess Medical Center.
- Trained and tuned performance of machine learning models for topic modelling (latent dirichlet allocation), predicting mortality (logistic regression and bag-of-words) and hypertension (long short-term memory recurrent network) from clinical notes and vital signs data.

## AWARDS

### Certificate of Distinction, Euclid Mathematics Contest, University of Waterloo

Apr 2017

Finished in top 15% of 17,000 participants in national math competition.

### 1st Place, ECOO Programming Contest

Mar 2017

Achieved highest score among over 60 teams from across Peel Region, completing 5 algorithmic problems in 3 hours. Went on to place Top 10 in Central Ontario.

## INTERESTS

### Extracurricular

Computer Science First-Year Learning Community Mentor

### Miscellaneous

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