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

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