

Experience

PRESENT



SEP 2018

Tesla, Inc. Autopilot Vision Infrastructure

- **Proposed, designed, and built** a web-based labeling system demoed to Elon Musk and the Autopilot team, and used to train **hundreds of labelers**.
- Took over a **data collection & training pipeline** project for a new vision task, now experimenting with **model architectures and hyperparameters**.
- Ported **C++ object-detection logic** and **vision processing GPU kernels** to work with both NVIDIA and ARM hardware.
- Coordinating with several other teams to homologate AutoHighbeam.

APR 2018



JAN 2018

Bloomberg LP Software Engineering | Trading Solutions

- Trained and tuned **XGBoost** boosted decision tree models in Python for anomaly detection in **millions** of automated stateful processes.
- **Pitched, demonstrated, and deployed** my project to clients with cumulatively **over USD\$1 trillion AUM**, with highly positive feedback.
- Rewrote training pipeline, speeding up training **over 350%**
- Corrected methodological bugs, boosting accuracy **from 60% to 99%**
- Implemented an experimental **Apache Spark** distributed model training pipeline using PySpark and MLlib on a Spark/HDFS cluster.

AUG 2017



MAY 2017

Bloomberg LP Software Engineering | Research Discoverability

- Developed and tuned **Latent Dirichlet Allocation** topic model on a large document corpus using gensim, sklearn, and Jupyter.
- Rewrote Python document-caching service into C++, and refactored and documented existing C++ codebase.
- **Featured on the Bloomberg Careers Blog**.

Projects

PRESENT



JAN 2017

Waterloo Hyperloop Team (teamwaterloop.ca) Technical Lead, former Software Lead

- Leading and managing a growing team of **over 70 students** representing Canada in the 2019 [SpaceX Hyperloop Competition](#).
- Coordinated and integrated design and prototyping work across the team, culminating in a [131-page final design package](#).
- Established near-daily meetings across all subteams, partnerships with business, university, and government (**raising \$100k and counting**), and new branding, website, outreach programs, and team governance.
- In 2017, designed, implemented, and tested pod [control system](#) with a team of 5, including WebSockets/UART telemetry, C++ embedded, and React dashboard. Placed **15th out of over 150** in the 2017 Competition.

PRESENT



JUN 2014

Web Development Projects

- Wrote **many webapps and websites** in Angular, React, NodeJS, PHP, etc.
- Cofounded VitaeDev, a **student-run startup** creating websites for local businesses and nonprofits.
- [WUSTL Chemistry Tournament](#), [Math Club Website & Tournament Platform](#), [Vocative](#), [Science Bowl Database](#), [LexSciBowl](#).

PRESENT



FEB 2016

Amazon EC2 Server Suite

- [Server instrumentation and maintenance tools](#) in NodeJS, Go, Bash, and other languages, used in production on a server running **10+ websites**.
- Deploys a new NodeJS webapp from source [in a single command](#) to a process-managed server behind an SSL-secured reverse proxy, with live log monitoring via a [Facebook Messenger bot](#).

PRESENT



FEB 2015

C++ Neural Networks

- Wrote a [neural network and matrix math toolkit](#) in C++, abstractly representing layer operations with underlying optimizations for parallelism.
- Implemented backpropagation, genetic learning, and a predator-prey coevolution simulation.



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Awards

Score of 32 (rank 326/4640)
Putnam Mathematical Competition

1st Place
[McGill Hacks 2017: "Signbot"](#)

Best Hardware Hack
[ECHacks 2016: "Sandwich-O-Matic"](#)

2nd Place
[Bloomberg Code B 2017](#)

1st Place
Google Games Waterloo 2017

Platinum Division
US Computing Olympiad 2016

Silver Medalist
US Physics Olympiad 2016

Toolkit

Native speaker:
C++, Python, NodeJS, HTML5, CSS3, JavaScript (ES6), Git

Conversationally fluent:
PyTorch, CUDA, OpenCL, Scikit-Learn, XGBoost, Go, Matlab, Bash, Linux

Curious tourist:
AWS, MongoDB, Docker, R, TensorFlow, Keras, Nginx, Spark & MLlib, Slurm

Education

University of Waterloo Software Engineering, Co-op
Sept. 2016 - Present

Intended Minors: Statistics and Physics (7 courses per term)

Research assistant at the Center for Pattern Analysis and Machine Intelligence, under Prof. Fakhri Karray

Activities: [The Water Boys A Cappella](#), Christian fellowship, Data Science Club

Scholarships: Carl A. Pollock Engineering Scholarship, Ontario Professional Engineers Foundation Scholarship, President's Scholarship