

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.
- Built a new end-to-end data collection, training, & inference pipeline for Auto Highbeam; experimented with network pruning and hyperparameter
- Ported C++ object-detection logic and vision processing GPU kernels to work with both NVIDIA and ARM hardware.
- Coordinated with several other teams to homologate AutoHighbeam.

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APR 2018

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.

Bloomberg LP AUG 2017



Software Engineering | Research Discoverability

- Developed and tuned Latent Dirchlet 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.



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.

Web Development Projects



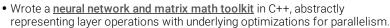
- Wrote many webapps and websites in Angular, React, NodeJS, PHP, etc.
- Cofounded VitaeDev, a **student-run startup** creating websites for local businesses and nonprofits.
- WUSTL Chemistry Tournament, Math Club Website & Tournament Platform, Vocative, Science Bowl Database, LexSciBowl.

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.





 Implemented backpropagation, genetic learning, and a predator-prey coevolution simulation.



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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

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

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







