

## TL;DR

- Hands-on experience with autonomous vehicles from working with Tesla, WATonomous (an urban self-driving student team) and MIT-PITT-RW (a autonomous racing student team).
- Previously Bachelor of Computer Science, AI Option @ UWaterloo (class of 2020).
- Received an "Outstanding" (highest) evaluation on the University of Waterloo's coop system during all work terms.
- Practical understanding of embedded systems and real-time programming obtained through building a real-time microkernel from scratch in [CS 452](#) (Real-Time Programming, aka "Trains").

## Serious Stuff

### Autopilot Engineer (Intern) @ Tesla Inc.

May. 2022 - Aug. 2022

*"Ben performed at a level commensurate with our best engineers."*

Palo Alto, California

- Designed and implemented a directed acyclic graph (DAG) scheduling algorithm that generates solutions within 3% of optimal and runs 120x faster than the existing SAT-based implementation. This helped speed up the neural network (NN) deployment workflows from hours to 15 minutes.
- Sped up the trace extraction pipeline by 8x by optimizing data structure queries.
- Accelerated next-gen hardware bring-up by tightening the neural network deployment cycle.

### Team Captain @ Waterloo Autonomous Racing, Controls Lead @

#### MIT-PITT-RW

Jul. 2020 - Dec. 2021

*Autonomous vehicles for racing, with a focus on planning and control.*

Waterloo, Ontario, Canada

- Integrated and improved upon a Nonlinear Model Predictive Path Following Controller.
- Set up the infrastructure for communicating with the simulator, racing line optimization, docker-based development environment, website, data pipeline, and the data visualization platform.
- The team placed 4th (out of 18 teams) in the 3rd mini-competition in Jan. 2021.

### Compute Cluster and Path Planning @ WATonomous

Jan. 2020 - present

*Member/Manager: Jan.-Aug. 2020, Advisor: Sep. 2020-present*

Waterloo, Ontario, Canada

- Implemented efficient obstacle avoidance algorithms by generating trajectories in the Frenet frame.
- Implemented yaw-rate PID and Model Predictive Control algorithms.
- Introduced Dockerized development environment to the team. This enabled everyone to work remotely during the pandemic.

### Software Engineer (Intern) @ Apple Inc.

May 2019 - Aug. 2019

*"He is a self-motivated, focused engineer who strives to look at problems in depth..."*




















Cupertino, California

- Implemented network bandwidth prediction infrastructure and bandwidth recording optimizations that improved the time to reach HD and UHD tiers by over 30% in Apple's HTTP Live Streaming video player.
- Created a Media Source Extensions conformance suite to streamline the certification process for external hardware.

Also previously interned at Hive.AI, Yahoo, Kik, and 500px

May 2016 - Apr. 2019

## Languages & Frameworks

 Experienced	 So-so	 Novice
 C	 C++	
 Docker	 Python	
 Javascript	 React	
 Node.js	 ARM asm	
 OCaml	 PHP	
 SQL	 Java	
 Bash	 Go	
 Nix	 Swift	

## Not-So-Serious Stuff

### [Free Sidecar](#)

- Enables Sidecar on Unsupported iPads and Macs running iPadOS 13 and macOS Catalina.
- Received 1.4k stars and 70K downloads on GitHub.

### [Vocode \(Hackathon Project\)](#)

- 100% voice-enabled, Javascript-based text editor. Powered by Nuance's Natural Language Understanding API.
- First place winner of the Nuance API prize at McHacks 2016.

### [Waterloo Warriors Band](#)

- Lead trumpeter
- Deputy Chief Centurion (Vice-president) and Technomancer (Webmaster)