# Brian Chen

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## EDUCATION

**B.A.Sc in Engineering Science (ECE option)** **University of Toronto** **2020 – 2024**

- Third year B.A.S.c in Engineering Science, Computer Engineering major, Machine Intelligence minor. Dean' list, cGPA 3.65
- **Coursework:** ECE352: Operating Systems, ECE568 Computer Security, ECE444: Software Engineering, ECE358: Foundations of Computing, ECE421: Intro to Machine Learning, CSC473: Advanced Algorithm Design, ECE356: Control Theory

## SKILLS

- **Languages**: c++, python, c, go, rust, lua, javascript, html, css, java, bash, SQL, verilog, MATLAB/simulink, assembly
- **Frameworks & Libraries**: ROS, ROS2, Django, PyTorch, Tensorflow, TensorRT, Android, Jenkins, Docker, PostgreSQL, node.js, vue.js, MongoDB, FPGA, Keras, Cloud Computing, AWS, git
- **Other**: Linux, vim, debugging, CI/CD, Fusion360, badminton, Googling, and clear and concise communication of ideas and technical information

## EXPERIENCE

**Software Engineering Intern** **Open Robotics Software Foundation** **May 2022 – September 2022**

- **Collaborated with NASA** on the VIPER **Lunar rover** project scheduled for launch in 2024; developed **60+ new features and bugfixes** on the ROS2 and Gazebo Simulator packages upon which their ground flight control and autonomy systems are based.
- Co-authored REP2012: Service Introspection **standard**. Designed, built, and deployed **reference implementation** enabling runtime introspection and recording of ROS2 services. This **widely-requested feature** garnered strong community support because it **unblocks tens of thousands of users**, enabling them to use ROS2 services in their robots
- Maintained ROS2 & Gazebo packages; improving the development experience for **800,000+ users** by resolving race conditions in ROS2 client libraries, adding an AsyncParameterClient interface for rclpy, and spearheading an initiative for mypy compliance.

**Software Sub-team Lead** **aUToronto** **September 2020 – June 2023**

- **Led 20+ students** across trajectory motion planning, simulation, automated testing, and deep learning acceleration software sub-teams to build a Level 4 autonomous vehicle as part of aUToronto's entry to the international SAE Autodrive Challenge.
  - **Won 1st place out of 10 teams for five consecutive years**
  - Presented work at 2021 Vector Institute Mobility Symposium & 2021 UofT Robotics Institute AV workshop
- Designed local route planning algorithms to generate kinematically feasible trajectories using hybrid A*
- Accelerated YOLOv5 with TensorRT to **detect objects in real-time** on 4 concurrent video streams with **millisecond latency**
- **Reduced developer testing time by 10x** by developing "aUToTest", an automated simulation integration test framework
- Built AI sensor noise modelling tool on CycleGAN to improve Sim2Real transfer, build test confidence, and **deliver simulation value**

**Fullstack Software Developer** **BC Parks Foundation** **July 2020 – September 2021**

- **Built fullstack 'DiscoverParks' platform** and data collection solution in collaboration with stakeholders; currently in private beta. I was responsible for the internal content management interface, backend, front-end experiences, and liaising with product owners
- Identified and resolved two content management strategy bottlenecks through **data-driven solutions, boosting efficiency by 10x**

**Research Intern** **Intelligent Sensory Microsystems Lab - University of Toronto** **Feb 2021 – September 2021**

- Developed novel 'thresholding' concept which **improves longevity and power consumption** characteristics of neuromorphic memristor crossbar machine learning accelerators during in-situ training by **up to 90%**. **First author paper** pending submission

**Teaching Assistant** **Division of Engineering Science - University of Toronto** **September 2021 - June 2022**

- **Taught** ~**20 undergrads** computer science from 'Hello World' to dynamic programming and Dijkstra's algorithm (ESC180, ESC190)

**GrocerCheck Website; Co-Founder & Developer** **GrocerCheck Foundation** **April 2020 – December 2020**

- Created grocercheck.ca and accompanying LivePopularTimes scraping library, a **full-stack webapp** that aggregates and visualizes grocery story busyness to help users shop more safely for groceries across **15,000+** stores in 10+ major international cities
- Founded GrocerCheck Foundation, a **registered non-profit** to better scale project; secured support, funding, grants, and partnerships valued at **$200,000+**, supporting 20,000+ daily users.

## MORE

- For more project information and demos please visit chenbrian.ca/posts/2021/projects
- ***"butternut"***, a chrome extension implementing gltr to detect AI-generated text. nwHacks bronze, KPMG Data Analysis & Groundswell Salesforce Award. Demo
- ***"the Humerus Bot"***, an applied NLP project to write a bot that can *win* Cards Against Humanity. Demo
- **Teaching**: Review content I wrote for my students, including a custom Jupyter notebook with c kernel for interactive learning
- ***dotfiles***: my extensive Linux user application and neovim configurations with various in-process plugins
- **Badminton**: ClearOne Nationals Team, 2018 Junior Nationals Finalist, Eric Hamber Provincial Team Captain, UTBC Exec
- **Theatre**: Wrote and directed full-length show: *'To Bleach a Pigeon'*. Oversaw actors, crew, set design, and creative process
- **Awards**: Schulich Leadership Scholarship nominee, Bert & Greta Quartermaine Badminton Scholarship Recipient, BC District Scholarship & BC Achievement Scholarship Recipient, Canada Service Corps Student Service Grant, ESROP-UofT