

Lucian Cheng

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Education

McMaster University

Sep 2021 – Exp. Apr 2026

Bachelor of Mechatronics and Biomedical Engineering Co-op — CGPA: 4.0

Hamilton, ON

Courses: Data Structures & Algorithms, SW Development, Embedded Systems, Signals & Systems, Analog & Digital Circuits

Work Experience

Bluewrist Inc.

May 2024 – Present

Incoming Software Engineering Intern

Markham, ON

Bluewrist Inc.

May 2023 – Aug 2023

Software Engineering Intern

Markham, ON

- Independently implemented the PointNet++ **Deep Learning ML Artificial Intelligence model** in PyTorch for part segmentation of computer vision from 3D point cloud data, resulting in a **4-week** time reduction across **10 people**
- Utilized robots for scanned data collection, conducted & supervised ML process, achieving a testing accuracy of **>98%**
- Optimized runtime of a DLL by **86.4% (38.1s)** per **250k** points by producing a **C++** inference program with LibTorch & CMake using CUDA/GPU and CPU memory
- Created a WinForms UI in **VB.NET** to streamline machine learning for other engineers, emphasizing user experience, with a **Python** and **C++** PyTorch back-end to display relevant input/output data and manage **>600** samples
- Conducted regression testing of an SQL database software for product releases, identifying **8** bugs in the process

McMaster University

Sep 2023 – Dec 2023

Computational Mechanics Teaching Assistant

Hamilton, ON

- Mentored **8-9** students bi-weekly on challenging statics concepts, elevating their grades to **>90%** through lab tests

Projects

Embedded Systems Design Project | [Demo/Code](#)

- Utilized the **I2C** communication protocol in **C++** with an EEPROM to achieve non volatile data stores
- Used the **SPI** communication protocol to integrate multiplexing of **16** actuators using an external shift register and RTOS

Pacemaker Project | [Demo/Code](#)

- Directed a group of **5** to develop a safety critical system of a pacemaker made with **Simulink** and a **Python** UI through active communication, interpersonal skills, following software development life cycle via the agile software development
- Designed a UI using Figma and developed it in **Python** using Tkinter while implementing **10** functional pacing modes, encrypted **10** local user data stores, sensor readings from **2** heart chambers, and patient history reports
- Deployed serial communication between UI and device with Pyserial for data transfer of **25** parameters and verification
- Generated technical documentation highlighting requirements and design specifications, the development cycle, verification and validation of requirements through test cases, and safety and hazard analysis using the GSN notation

Cart Centering Genetic Programming | [Demo/Code](#)

- Created binary trees and stacks in **C++** to represent equations for fitness calculations and algorithms to modify and mutate select trees over generations to implement reinforcement learning for the best result in the **186th generation**
- Reduced the size and depth of the best tree of the example program by **70.4%** and **50%** through mutation optimization

Extracurricular Activities

McMaster EcoCAR EV Challenge

Oct 2022 – Present

Connected Automated Vehicles Team Member

Hamilton, ON

- Developed algorithms for lead vehicle identification in **Python** for the CACC feature of ADAS, testing **>100** concurrent generated vehicles along with visualization of simulation and verification of code using Pytest
- Implemented advanced simulation test metrics for vehicle jerk and time-to-collision of lead vehicle with **<3%** error

Technical Skills

Languages: Python, C, C++, Embedded C++, VB.NET, HTML, CSS, Javascript

Technologies: PyTorch, Raspberry Pi, Embedded Systems, .NET, CMake, Pytest, ReactJS, MongoDB, AWS, NumPy

Software Skills: AutoDesk Inventor, MATLAB, Simulink, Multisim, Linux, Windows, MacOS, JIRA, Git