Lucian Cheng

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Education

McMaster University **Sep 2021 - Apr 2026**

Bachelor of Engineering Mechatronics and Biomedical Engineering Co-op *Hamilton, ON*

- **Awards**: Provost Honour Roll x 2 - Top 1% of Engineering Cohort - **GPA: 4.0**
- **Courses**: Data Structures & Algorithms, Software Architecture, Embedded Systems, System Design, Operating Systems

Professional Experience

Bluewrist Inc. **May 2024 - Present**

Software Engineer Intern *Markham, ON*

- Implemented **4** seperate 2D ML Anomaly Detection models with a accuracy of accuracy of **98%** using **PyTorch**
- Led the development of a full-stack ML application in a team of 5 by designing software architecture UML diagrams, testing, and large-scale deployment using **Visual Basic**, **Python**, and Agile principle
- Built a **Python** and .NET CLR server interface for communication between 3 main software family products to a scalable machine learning backend using TCP/IP communication protocol
- Developed a back-end REST API for HTTP requests and server architecture using **Flask** and **Python** to allow for cloud-based ML operations across 3 software products and supporting 4 models on **AWS Lambda**

McMaster EcoCAR **Oct 2022 - Present**

CAVs Software Team (Connected Automated Vehicles) *Hamilton, ON*

- Integrated vehicle self-driving **SAE level 2 autonomy** in a team of **35** members using sensors, computer vision, and trajectory planning into a production 2024 Cadillac LYRIQ
- Generated 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
- Coordinated Software-in-the-Loop (SIL) testing for the custom simulation driving environment

Bluewrist Inc. **May 2023 - Aug 2023**

Software Engineer Intern *Markham, ON*

- 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**
- Optimized runtime by **86.4% (38.1s)** per **250k** points by producing a **C++** inference program with LibTorch & CMake using CUDA and CPU memory, leading to an accuracy of >**98%**
- Created a WinForms front-end 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 of >**600** samples

Projects

Jaylolfadez.com - Startup | *In Development / Testing*

- Created a full-stack social media/scheduling web application platform leading to **$300** in profit by using **ReactJS**, **NodeJS**, **ExpressJS**, **TailwindCSS**, and **MongoDB**
- Developed a RESTful API to handle requests of **30 monthly users**, using Google OAuth2 authentication tokens, Google Calendar API, and Meta Instagram Graph API
- Followed the software development lifecycle, including testing/validation, maintenance, requirements/design, and architecture of the application and deployment using with **AWS EC2**, **AWS S3**, and **NGINX**

Embedded Systems Design Project | *Demo/Code*

- Use **SPI** communication protocol to integrate multiplexing of **16** actuators using an external shift register and RTOS, using MUTEX and Semaphore, to integrate low-level memory management
- Drafted high-level firmware architecture for firmware runtime environement and programming hardware components of embedded development in C++
- Implemented key characteristics of the firmware build infrastructure, to increase code deployment and resource managment efficiency across hardware components by **30%**

Technical Skills

Programming: Python, C, C++, HTML, CSS, JavaScript, Visual Basic, Swift

Technologies: PyTorch, Pandas, NumPy, ReactJS, NodeJS, ExpressJS, MongoDB, TailwindCSS, .NET, CUDA, OpenCV

Tools and Platforms: Git, GitHub, SVN, Linux, JIRA, AWS (EC2, S3), GCP, RESTful API