Charles Henville

henvillecharles@gmail.com | +1 647 640-2442 | linkedin.com/in/charleshenville
github.com/charleshenville | cmhenville.tech

Education

University of Toronto **CGPA: 3.73/4.0** 09/22 - 04/27
Bachelor of Applied Science in Computer Engineering *C, C++, Verilog, MATLAB, Assembly, Python*
Relevant Courses: Operating Systems, Algorithms & Data Structures, Digital Systems, Linear Algebra, Signals & Systems, Computer Organization, Software Communication & Design, Control Systems, Probability & Applications, Calculus I-III

Experience

aUToronto 10/23 - Present
Vehicle Interface and Electrical Lead *Python, ROS, C++, Git, Ubuntu Linux, CAN bus, V2X, PCB Design*

- Leader in the development of an autonomous vehicle participating in GM/SAE's AutoDrive challenge, specializing in Embedded Software and integrating/transforming control signals from diverse sensor arrays and **ROS** pipelines.
- Led development of **C++ and Python ROS** Nodes meant to inform other systems of vehicle and sensor states.
- Designed/Reviewed 4+ PCBs and developed **C++** firmware to drive traffic & safety lights and sensor power based on the autonomy status of the Vehicle through a custom PCB. This directly dictated passing of safety inspections and the competition victories that followed.

Toronto Police Service - Information Technology Services (ITS) 05/24 - 08/24
Network and Data Acquisition Intern *Python, Drupal, Docker, SQL, CISCO Device Configuration*

- Engineered a standalone Windows application with **Python/SQL** to facilitate inventory consolidation within ITS, resulting in data representing $50 Million+ worth of inventory being consolidated into a single CMDB.
- Facilitated the migration of a legacy **Drupal** Portal to a centralized, modern CMS.
- Remotely configured 10+ Network Devices (Switches/Routers) to be commissioned at 5+ Police Divisions.

Hubio Technology 06/23 - 09/23
Data Engineering Intern *Python, SQL, Git, GitHub, PosgreSQL, Microsoft SQL Server, AWS*

- Engineered efficient **Python** utility scripts for automatic and holistic comparison between remote **SQL** databases and **AWS s3** Buckets, flagging and visualizing discrepancies in tables with upwards of several million records/entries.
- Developed automated **Python** parsers for client data formatting, accommodating over ten distinct configurations.
- Designed and modified a Custom Data Visualization/Profiling application in **Python** with **Matplotlib, NumPy, Pandas, and SQL**, cumulatively highlighting 1000+ outlier and invalid records in client-provided **AWS s3** datasets.
- Implemented a predictive model using **PyTorch and Scikit-Learn** to profile and analyze legacy datasets for forecasting potential outlier frequency and future distributions.

Projects & Initiatives

University of Toronto Creative Computing Association 07/24 - Present
Founder & Director *C, Python, JavaScript, ESP32, C++, PCB Design*

- Founded a student association with 20+ members to develop skills within the student body through creative projects.
- Lead the development of the association's website (http://utcca.org) and an interactive display involving a **WebGL/three.js** React-based game simulation and a custom ESP32 enabled device to interact with the simulation through **BLE** and a **Flask** Interface.
- Lead the planning of **Unity** Game Development workshops for the community.

Embedded Physics Engine 03/24 - 04/24
Proprietor *C, ARM Assembly, FPGAs*

- Designed a SPH-based fluid simulator and a rigid body physics engine in embedded-C for an ARM9 processor.
- Developed an interrupt-based PS/2 mouse driver and double-buffer VGA driver to interact with the engine.
- Optimized engine performance to run simulations at 60 frames per second on a 200MHz Processor.

Skills

Languages:
Python, C, C++, C#, JavaScript, TypeScript, HTML, CSS, Java, SQL, Bash, Go, Verilog, Assembly, MATLAB

Technologies & Tools:
Flask, Reactjs, Git, Linux, HTTP, Docker, AWS, Google Cloud, Figma, PostgreSQL, MSSQL, ROS, Figma