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Avery Chiu

MECHATRONICS ENGINEERING STUDENT

PROGRAMMING

- C/C++
- Python
- SQL
- MATLAB
- ROS
- Java
- LabVIEW
- Git
- AWS
- GCP
- Linux

HARDWARE

- Altium Designer
- SMD Soldering
- Digital Multimeter
- Oscilloscope
- Power Analyzer
- ARM
- STM32
- ESP32
- Raspberry Pi
- Arduino
- SOLIDWORKS

PROJECT MANAGEMENT

- Confluence
- Jira
- Agile

HOBBIES

- Bass player for the University of Waterloo Jazz Ensemble and University of Waterloo Orchestra
- Double bassist for the Toronto Symphony Youth Orchestra 2018/2019 season
- Young Hercules Weightlifting Competition silver medal in the 77kg weight category

EDUCATION

University of Waterloo
Candidate for BASc in Mechatronics Engineering
(Sept 2019 - April 2024)
GPA: **3.97**
Important Courses: Algorithms and Data Structures, Microprocessors and Digital Logic

WORK EXPERIENCE

Firmware Development Co-op

Ford Motor Company (Jan 2021 - Apr 2021)

- Developed **C** code for the bootloader and kernel of Qualcomm Snapdragon chips which are used on the telematics control unit (TCU) of Ford vehicles
- Implemented image versioning and signing for secure firmware updates
- Designed device tree files to configure voltage regulator and **GPIO** settings

Automotive R&D Intern

Geotab (May 2020 - Aug 2020)

- Analyzed vehicle and sales data using **Google BigQuery** and prepared dashboards to display visualizations with **Python**
- Designed a PCB used for testing keyless vehicle technology with **Altium** and created the schematic, PCB layout, BOM, and Gerber files for manufacturing

Telemetry/CAN Interface Manager

WATonomous (Dec 2020 - Present)

- Lead a small team of 4 people to develop the telemetry system and **CAN** interface to monitor and control a self-driving Chevrolet Bolt EV for the SAE Autodrive Challenge
- Constructed **Python** scripts that would receive commands from the path-planning team through the **ROS** interface and convert those commands into **CAN** messages to control features such as the steering and braking

Firmware Project Lead

Midnight Sun Solar Car Team (Sept 2019 - Present)

- Designed the telemetry system with **Python** to read **CAN** messages, store data in **DynamoDB**, and send these messages to the cloud using **MQTT** through **WiFi** and **LTE**
- Created the backend for the driver display that receives **CAN** messages through **WebSockets** and displays data, such as speed, on the vehicle dashboard
- Programmed firmware in **C** on an **STM32** for the steering stalk, allowing the user to control features such as the cruise control and high beams
- Developed a driver to monitor the temperature of the battery management system (**BMS**) of the solar car

PROJECTS

STM32F103C8 Drivers

(Aug 2020)

- Wrote bare-metal **GPIO**, **SPI**, **UART**, and **I2C** drivers for an **STM32F103C8** with an **ARM Cortex-M3** processor in **C**
- Configured peripheral clocks, registers, and interrupts according to the memory map and vector table from the datasheets