Ryan Lee

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Highlights of Qualifications

- Currently enrolled in level 4 of the 4-year Mechatronics Bachelor of Engineering program at McMaster University
- Experienced in coding in Python, C, C++, and HTML & CSS, while organizing projects using Git, Azure, and MySQL
- Competent with usage of Autodesk Inventor, 3D printing software Cura, circuit analysis tools, and Granta

Projects

Haptic Glove Controlled Robotic Arm

- Designed, manufactured, and assembled a prosthetic robotic arm with clasping mimicked by user inputted glove movements
- Utilized **serial communication** through radio modules to wirelessly transmit input from analog potentiometer readings to output pulse width modulation signals used in controlling servo motors
- Modelled, printed, and prototyped using Inventor **CAD** while considering mechanical designs ideas like fasteners and tolerances

Platform Ball Balancing PID

- Researched and applied **PID controller** concepts to create and build a 2 DOF ball balancer
- Used resistive touch screen as input to a tuned PID algorithm, outputting **PWM** controls to stepper motors using L298N controller. Constructed physical design through vigorous measurements, prototyping, and modelling means

Sequential Logic Digital Design Project

- Developed a finite state machine which displayed digits in sequence using **logic gates**, flip flops, clocks, and 7 segment display
- Employed NI Multisim to efficiently design, create, and test the circuit and visualize data using built-in timing diagrams

Macro Keyboard

- Designed through **wiring & soldering** key switches, programming an Arduino in C++, and **3D modelling** and printing the case

STM32 Microcontroller Projects

- Created a fan controller where digital thermometer triggered motor fan at high temperatures using **OpAmps**, sensors, and filters
- Investigated I2C serial communication protocol using external **EEPROM chip** and real-time clock to store data

Work Experience

Graphics Memory Hub Testing and Verification Engineering Intern, Co-op Student **05/2023 – 05/2024**

Advanced Micro Devices Inc., Markham ON

- Managed 70+ regressions for 6+ IP teams for memory hub team through triaging test results and optimizing cases
- Improved efficiency of regression verification process through data displays, coverage reports, and run logs
- Investigated test outputs by means of **timing diagram verification, Verilog code analysis**, and scripting triage programs

Information and Technology Services, Co-op Student **05/2022 – 09/2022**

Independent Electricity Systems Operator, Mississauga ON

- Automated tasks through Bash and PowerShell scripting with a focus on frequent updates, task schedulers, and audit reports
- Managed 450 Microsoft and **Linux** servers through installations, patches, health checks, and investigations

Education

Pursuing B. Eng Co-op Degree in Mechatronics Engineering **09/2020 – 05/2024**

McMaster University **cGPA: 10.70 (3.71)**

- Studying in the co-op program to develop a strong understanding of high-level robotics courses including **Control Theory**, Data Structures and Algorithms, **Embedded Systems**, Robotics, Object-Oriented Programming, Physics, and Circuitry

Leadership Activities

McMaster Baja Racing Team **10/2022 – 09/2023**

- Manufactured, and assembled off road racing vehicle with a focus on data acquisition, incorporating electronics into design
- Acquired steering column torque data through implementation of **strain gauges** used to optimize user driving capabilities
- Programmed a **dynamometer** used to measure primary/secondary CVT RPM with the aim of fine tuning engine parameters

McMaster Rocketry Team **10/2020 – 02/2022**

- Worked with the ground controls to develop a functional team website along with back-end features such as member login
- Utilized HTML, CSS, React, Flask and chart.js to visualize and present flight censor data
- Leveraged LoRa and Arduino devices to develop a versatile transceiver and receiver system to transfer data on a wide scale