Michelle Li

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Education

University of British Columbia *Sept. 2018 – May 2024 (expected)*
- Engineering Physics, Bachelor of Applied Science

Skills

Programming Languages/Tools: Python, Java, C++, JavaScript, React, SQL, Arduino, OpenCV, Keras, ROS, Google Cloud
Analysis/Simulations: Kicad, MATLAB, LabVIEW, ANSYS HFSS, Excel, Solidworks, Fusion 360, Simplify3D

Work Experience

Experimental Robotics Engineering Co-op – **A&K Robotics** *Sept. 2021 – Dec. 2021*
- Designed a PCB in **Kicad** to optimize the control and power distribution of LEDs
- Developed firmware to control turn signals in **C++** to improve visual appeal and ridership experience of robot
- Prototyped mechanical and electrical systems using various tools as well as **Fusion 360** and **3D printers**

IC Design and Layout Co-op – **D-Wave Systems Inc** *Jan. 2021 – Apr. 2021*
- Designed layouts for superconducting circuits using **Cadence** to meet the required 30% acceleration of production time
- Simulated components in **ANSYS** to validate process used to determine superconducting materials characteristics and proposed future tests required to further understand their inductance characteristics
- Wrote scripts in **Common Lisp** and **Python** for efficient data analysis and to interface with **Cadence**

Engineering Co-op – **Kodak Canada ULC** *Jan. 2020 – Apr. 2020*
- Developed a jig software in **LabVIEW** while integrating hardware devices to fix and optimize existing calibration methods
- Designed, executed, and documented experiments on the jig program to justify design decisions
- Optimized software to compile over 10000 datasets using **Python**, **MATLAB** and **SQL** improving data analysis efficiency

Project Experience

UBC Supermileage – Electrical Division *Sept. 2021 – Present*
A student team that builds 3 high mileage vehicles, placing 2nd our 2019 and 2022 national competition
- Managed the scope, timeline, budget, and member assignment of 6 projects amongst 9 general members and 6 project leads
- Designed and assembled a **PCB** in **Kicad** to monitor hydrogen fuel cell voltages and to communicate with a safety board
- Developed firmware in **Arduino** to optimize the flow of hydrogen and oxygen resulting in a 20% more efficient operation
- Led the gasoline vehicle's electrical system implementation while teaching 1 new member about electronic design
- Created a wiring plan and designed a **PCB** for our gasoline vehicle resulting in ease of connectivity and reliable usage
- Spearheaded reorganization of workspace resulting in a 50% increase in work efficiency and a 100% increase in space
- Updated the frontend of our website using **HTML**, **CSS** and **JavaScript** to improve outreach and recruitment
- Created promotional videos and material for the team editing with **Camtasia** and **Gimp** viewed by over 1000 people

Simulated Self Driving Car Program *Sept. 2020 – Dec. 2020*
A self driving car program which navigates a **ROS** environment to detect and report license plate values
- Created a **CNN architecture** with a 99% accuracy by using data augmentation to generate over 30,000 training images
- Located 100% of characters on plate by developing a reliable detection algorithm using **Python** and **OpenCV**
- Experimented with line following algorithm techniques such as **PID**, and **Q-learning** to ensure smooth and reliable driving

Recycling Robot *May 2020 – Aug. 2020*
Collaboratively designed autonomous robots in a team of 4 capable of collecting and delivering soda cans to a recycling bin.
- Developed a control algorithm with an array of reflectance sensors for tape-following
- Prepared detailed procedures and electrical schematics with wiring, shielding and connector plans
- Integrated firmware in **C++** on an **STM32** bluepill microcontroller to communicate with sensors and motors

Volunteer Experience

Engineering Physics Student Association *Sept. 2019 – Present*
- Organized social and professional development events to keep 250+ students in the program engaged in the community
- Optimized a coffee chat program known as Fizz Beans, used by over 100 students and alumni, by updating and automating **Python** and **Shell** scripts on a **Google Cloud VM**, integrating with the **Twilio API**, and improving the matching algorithm