Alicia Pan

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Hardware: STM32, Arduino, DMM, oscilloscope, signal generator, soldering, breadboard prototyping
PCBs & Design: DipTrace, LTspice, SnapEDA, TinkerCAD, SolidWorks, AutoCAD, GD&T
Programming: C/C++, Python, MATLAB, Java, VHDL, PLC ladders, Assembly (Nios II), Visual Studio, NetBeans, GitHub

Experience

Embedded Systems Engineering Intern | CleanSlateUV | Toronto, ON | *Sept - Dec 2021*

- Led a **photodiode sensor** project to design a UV-C light dosage testing device
  - Determined scope, requirements, and stakeholder needs to produce a project plan and detailed documentation
  - Used an **oscilloscope** to characterize and compare sensors for selection
  - Designed a signal processing circuit to save and display sensor readings (ADC, ATmega328P microcontroller)
- Worked with **I2C** and **UART** communication in **STM32CubeIDE** using **FreeRTOS (C)** for **ARM Cortex-M3 core**
  - Created firmware tests to analyze hardware/data frame configuration responses
  - Defined workflow for new ballast function requests
  - Developed pseudocode for **PID** control of two synchronized motors
- Independently researched noise attenuation and soldered **EMC filters** from a kit-of-parts
- Investigated authentication protocols (TLS, PEAP), AT commands, IoT devices (wifi/GSM chips) to write articles

Linear Circuits & Electromagnetism Teaching Assistant | University of Waterloo | Waterloo, ON | *Jan - Apr 2021*

- Stress-tested labs involving op-amps, capacitors, and AC signals with simulations
- Reliably met deadlines to grade 100+ student submissions every week
- Communicated effectively with instructors, first-year students, and admin staff to coordinate scheduling

Robotics Team Lead | Team 6070 Gryphon Machine | Mississauga, ON | Sept *2016 - Apr 2019*

- Prototyped, machined, and assembled parts to build industrial-sized robots
- Worked with **solenoids, double-acting cylinders, encoders,** and **motor controllers**
- **Coordinated 20+ people** to collect data and develop successful match strategies
- Led a drive team of 5 people during high-pressure playoffs to win 1st place in 2017 and 2019 district competitions

Girls In STEM Council Member | FIRST Robotics | Toronto, ON | *Aug 2018 - Aug 2019*

- Planned a national overnight conference with **100+ attendees** to promote equality and diversity in STEM
- Interviewed industry professionals and wrote an article published by FIRST Canada
- Taught **80+ students ages 5-12** basic robotics and programming as a youth mentor at the Ontario Science Centre

Projects

555 Timer LED Flasher PCB | DipTrace, LTspice, SnapEDA, TinkerCAD | *2021*

- Created block diagram, circuit schematic, and simulation to capture **NE 555 IC** behaviour
- **Analyzed datasheets** to select compatible and cost-effective components
- Determined suitable range of component values for desired LED flash frequency
- Iterated through several layouts and routing options during design reviews

Autonomous Line-Following Car | Arduino & DC Motors | *2019*

- Programmed an **Arduino**-controlled car to poll **infrared sensors** and autonomously complete a designated course
- Developed performance tests for vehicle mobility and maximum drivable incline
- Resolved sensor accuracy edge cases by calibrating angle adjustment on difficult turns

Education

University of Waterloo – Mechatronics Engineering Class of 2024
Class Representative & Engineering Ambassador
Courses: Microprocessors & Digital Logic, Sensors & Instrumentation, Real-Time Systems, Actuators & Power Electronics

Awards

1st Place Designathon | 2021
UW Medical & Biological Engineering Student Society
Norman Esch Award | 2020
Student Entrepreneurship Scholarship

Interests

Concert Violinist Mississauga Symphony Youth Orchestra
Volleyball Competitively trained, playing for 10 years
(and still overcoming the height challenge)