Alicia Pan

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Skills

Hardware: STM32, Arduino, nRF, oscilloscope, signal generator, soldering, JTAG/SWD
PCBs & Design: KiCAD, Altium, Cadence, LTspice, SolidWorks, AutoCAD
Coding & Tools: C/C++, MATLAB, Python, JavaScript, mySQL, Git, Microsoft Azure DevOps, VSCode, Atlassian Suite

Experience

Electrical Engineering Co-op | Hyivy Health | Kitchener, ON | *Jan – Aug 2023*
- Prepared pelvic rehabilitation devices for clinical trials by diagnosing and correcting grounding/heat dissipation issues
- Decreased UX testing time by designing and bringing up debugger module PCB to consolidate finnicky connectors
- Reduced damaged boards by redesigning temperature sensor PCB in Altium for better mechanical fit and sensor protection
- Implemented firmware in C to clean temperature sensor data and investigated alternative testing setups to minimize noise

Embedded Systems Developer | onsemi (ON Semiconductor) | Waterloo, ON | *May – Aug 2022*
- Implemented firmware updates for a low-power Bluetooth-enabled SoC designed for wearable health tech applications
- Used oscilloscope, J-Link debugger, and FPGA prototyping kit to test bug fixes for clock, memory, and voltage trim functions
- Created detailed documentation for code change decisions and technical reference material for new hires

Hardware & Embedded Systems Intern | CleanSlateUV | Toronto, ON | *Sept - Dec 2021*
- Led a photodiode sensor project to design a UV-C light dosage testing device and signal processing circuit
  - Characterized sensors with an oscilloscope to compare options for a device that saves and displays readings
- Worked with I2C and UART communication in STM32CubeIDE using FreeRTOS for ARM Cortex-M3 core
  - Created firmware tests to analyze hardware/data frame configuration responses for ballast functions
  - Developed workflow for PID control of two synchronized motors
- Independently researched noise attenuation and assembled EMC filters from a kit-of-parts

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 session schedules

Projects

Menopatch: Wearable Cooling Patch (Capstone) | KiCad, STM32 Nucleo, Biometric Sensors | *2023 – 2024*
- Analyzed datasheets and MCU documentation to select compatible and cost-effective biometric sensors
- Iterated through several electrical system designs for small form factor and smooth integration with mechanical/firmware systems
- Conducted user research to understand quality of life impact and biological mechanisms of hot flashes

Autonomous Search & Rescue Robot | Arduino UNO, STM32 Nucleo, Adafruit TOFs, PID Control | *2022*
- Designed and built an autonomous robot that navigates an obstacle course using TOF proximity sensors
- Acted as electrical lead to select components, manage battery and wiring, solder circuitry, and test sensors
- Took initiative as project manager to schedule tasks, facilitate check-ins, and ensure that requirements were met

Modeling & Analysis Course Projects | MATLAB, C++ | *2021*
- Created MATLAB model of 3D heat equation for thermodynamic analysis
- Used C++ to process raw ISS data for use in a MATLAB spacecraft simulation to analyze velocity and position
- Used MATLAB's Control System Toolbox to create bode plots for a low-pass filter

Education

Honours Mechatronics Engineering, Computing Option – BASc, University of Waterloo (Sept 2019 – Apr 2024)
Graduated with Distinction | Class Representative & Engineering Ambassador
Courses: Biomedical Signal Processing, Data Fusion, Transistor Circuit Design, Real-Time Systems, Controls, User-Centered Design

Software Engineering – Diploma, BrainStation (Jul 2024 – Sept 2024)
Cumulative Average: 95%