Chathil Rajamanthree

Vancouver, BC

Electrical Engineering Student
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EDUCATION

University of British Columbia   **Expected Graduation: May 2027**
Bachelor of Applied Science - Electrical Engineering (Co-op)   *Vancouver, BC*
CGPA: 82.1% (Dean's Honour List)

Relevant courses: Digital Systems Design, Signals and Systems, Circuit Analysis II

TECHNICAL SKILLS

Software: SystemVerilog, ARMv7/Assembly, C, Python
Technologies: Quartus, ModelSim, Altium, MS Office/Google suite
Laboratory: Soldering, Function generator, Multimeter, Oscilloscope

EXPERIENCE

University of British Columbia, Vancouver, BC   **January 2025 – Present**
Undergraduate Teaching Assistant
- Offered individualized support to students in C programming and Arduino-based microcontroller development
- Debugged code and designed exam questions for APSC 160: Introduction to Computation in Engineering Design

UBC Bionics, University of British Columbia   **September 2023 – Present**
Electrical & Embedded Systems subteam member
- Re-designing the Battery Management System for GRASP (bionic arm) to improve power distribution and optimize space through smaller batteries and efficient power management.
- Designing a USB-C Power Delivery controller to negotiate faster charging speeds.

TECHNICAL PROJECTS

Magnetic Field Detection Coin Picking Robot   **March – April 2025**
- Designed a robot that detects and picks coins using the EFM8 and STM32 microcontrollers in embedded C
- Implemented Colpitts Oscillator to detect changes in the magnetic field for coin detection with **100%** efficiency
- Designed a tank circuit to detect an AC current perimeter with **100%** accuracy
- Programmed a JDY-40 radio to transmit commands from the remote to the robot and display data returned by the robot
- Used optocouplers to isolate noisy motor and servo components from sensitive oscillator circuitry

N76E003 Reflow Oven Controller   **February 2025**
- Designed a Reflow Oven Controller using an N76E003 microcontroller on a breadboard, incorporating an op-amp for thermocouple voltage amplification to achieve a maximum temperature measurement error of **±2°C**
- Developed firmware in 8051 assembly, implementing a finite state machine, interrupt service routines, and timers to interface with components including a buzzer and ADC pushbuttons
- Used Pulse Width Modulation (PWM) to control the amount of power delivered by the oven via a Solid State Relay box
- Used Python to receive temperature data using Serial Peripheral Interface (SPI) and display reflow progress using a strip chart plot on an external device

Reduced Instruction Set Computer (RISC)   **November – December 2024**
- Designed a Turing-complete RISC processor with memory and I/O using SystemVerilog to execute programs written upon a set of instructions similar to ARMv7
- Attempted pipelining to reduce average cycles per instruction through the DE1-SoC FPGA board
- Designed and performed RTL-level and gate-level simulations using testbenches on ModelSim to verify functionality pre-synthesis and post-synthesis

AWARDS

Edward and Aldine Madsen Scholarship	2025
UBC Outstanding International Student (OIS) Award	2023
The United States President's Education Gold Award for Educational Excellence	2023