

Abhishek Raghuwanshi

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EDUCATION

University of British Columbia

Vancouver, BC

Bachelor of Applied Science in Electrical Engineering

Sep. 2022 – May 2027

Awards: Martin Sikes Memorial Award in ECE UBC 2024, Outstanding International Student Award 2022

Activities: VP Student Life @ UBC ECESS, Facilities director + Company relations manager @ UBC EUS

SKILLS

Hardware: System Verilog, Quartus, Testbench+simulation, Modelsim, Altium Designer, Multisim, KiCad, Serial protocols (UART, I2C) microcontroller systems(STM32, ESP32, Nuvoton, EFM8, ATMEGA, XTENSA)

Languages: C, Python, Matlab, Assembly(ARM and 8051), SQL, HTML, Pascal, LaTeX, makefiles

Tools: Matlab, Simulink, Git, VS Code, Visual Studio, PyCharm, IntelliJ, STMCube IDE, Microsoft Office, Google Workspaces, Oscilloscopes, Arduino, Raspberry Pi

Certifications and test scores: First Aid (OFA1), SAT-1530/1600 (Math-800/800, English-730/800), IELTS(8.5/9)

TECHNICAL EXPERIENCE

Electronics team Lead

Sep. 2023 – Present

UBC Subbots

Vancouver, BC

- **Leading a team of 18 students** in designing and implementing electronics systems for an Autonomous Underwater Vehicle (AUV) in the Annual RoboSub Competition, California.
- **Developed electronic speed controllers** to convert PWM signals into three-phase outputs, controlling thruster speed and direction.
- **Designed Power Distributor PCB** using **Altium** improving power and space efficiency by over 25%, integrated a **battery monitor**, and implemented an emergency kill switch for enhanced safety.
- Facilitated excellent project completion with easy to debug **modular design** meeting specifications resulting in team advancing to semifinals of the International RoboSub competition for the first time in team history.

PROJECTS

Metal detecting RC robot | PIC32, ATmega, STM32, C, Python, makefiles

Mar 2024

- Developed two-way **simultaneous UART communication** via JDY40 **Bluetooth (100m range)** to interface robot and remote controller. Programmed PIC/ATmega **microcontrollers** in C to detect magnetic flux (1.41mH–1.43mH), control motor speed/direction through H-bridge and PWM, and transmit data over frequency.
- Built a **software remote** as extra feature using **C for STM32 and Python for UI**, enabling robot control via keyboard ("WASD," "Shift"), tracking position, and plotting frequency data for verifying accuracy.
- Created analog inductance display using a servo motor controlled by timer interrupts on **PIC32** to show metal presence in specified ranges.

Reflow Oven Controller | Nuvoton microcontroller system, 8051 assembly, Python

Feb 2024

- **Designed hardware controls** for selecting reflow profile parameters (soak temperature/time, reflow temperature/time) and oven settings using **N76E003 microcontroller** in **8051 assembly**.
- Developed **Python script** for logging temperature data and displaying animations to improve user awareness.
- **Implemented dual timers in assembly** to track state durations, display time information, and generate PWM for controlling oven power via SSR box.

RISC Machine | System Verilog, ARM assembly, DE1-SOC FPGA

Nov 2023

- Engineered a fully-functioning **32 bit CPU and Datapath** using **System Verilog** that decodes **ARM instructions** and executes them completely on a **DE1-SOC FPGA**.
- Executed extensive coding in System Verilog synthesized in **Quartus** and created extensive **test benches** to verify the functioning of every feature using **RTL simulation waveforms** in the project using **Modelsim**.

EXTRACURRICULAR ACTIVITIES AND INTERESTS

- Organized **NASA International Space Apps 2024** hackathon successfully in Vancouver, with 132 participants.
- **Sports:** UBC Intramurals Tier-1 Basketball Champion, Ultra Iron Person, Captain for ECE and EUS sports teams
- Recreational **electric guitar player**, currently working on a **project to utilise an FPGA board as effects pedal**