

# ROBIN YUAN

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## Education

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**University of British Columbia**

**September 2019 – Present**

*Bachelor of Applied Science in Electrical Engineering with Minor in Honours Math*  
CGPA:3.70

*Vancouver, BC*

## Technical Skills

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**Languages:** C/Embedded C, Verilog/SystemVerilog, ARM/8051 Assembly, Java, HTML/CSS, JavaScript,  $\text{\LaTeX}$

**Development Environments:** MATLAB/Simulink, Quartus Prime, ModelSim, Cadence Encounter/Virtuoso/Innovus, SolidWorks, SimulationX, Altium Designer, IntelliJ IDEA, Visual Studio, Synopsys Synplify, LTspice

**Hardware Skills and Tools:** PCB Assembly, Digital/Analog Oscilloscope, Arbitrary Waveform Generator, Multimeter

## Work Experience

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**General Fusion**

**September 2022 – Current**

*Co-op Diagnostic Engineer*

- Designed the FPGA system on a digitizer with an optical transceiver using SystemVerilog for driving 16CH of ADCs @ 1 MSPS, QPI memory @ 80MHz, SerDes and SFP @ 400Mb/s while communicating with the RaspberryPi via GPIO.
- Create Linux kernel modules (gpio edge-triggered) for high-speed communication and firmware for data logging in C, MATLAB scripts for data analysis and SDC files for FPGA timing constraints

**The University of British Columbia**

**May 2022 – September 2022**

*Co-op FPGA Engineer*

- Designed a half-duplex ultraviolet-optical wireless transceiver using DE1-SoC with a bandwidth of 1.2kbps for the Department of National Defense.
- Implemented pulse-position modulation and used LDPC and FIR filter IP cores for error-correcting and noise-filtering.
- Engineered a SerDes module with clock-recovery and synchronization module to extract data from the received frame.
- Developed a C Linux Kernel timer ISR Module using FPGA interval timer via memory mapped registers using AXI bus.

## Projects

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**Document Analyzer and Text Miner** | *IntelliJ, Java, Google Cloud API, JSON*

**May 2022**

- Designed a Java program to parse documents and intelligently extract text-based metrics.
- Implemented an information radius-based plagiarism checking algorithm using Jensen-Shannon Divergence based on the word usage of each document.
- Integrated Google's Natural Language Processing API to predict compile sentence level sentiments.

**Portable Metal Detector** | *Embedded C, LTspice*

**April 2021**

- Designed a metal detector with dual-LCD display using PIC32  $\mu$ -controller with SPI external memory .
- Used human-voice to indicate the result and incorporated capacitance-and-inductance meter function into the system.
- Included an ISR for remote controlling following NEC protocol as well as a conventional push-button navigation system.

## Extracurricular

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**UBC Open Robotics** | *Arduino, MATLAB, Simulink, Altium Designer, Git*

**September 2021 – Present**

*Drivetrain Co-Lead*

- Organize introductory tutorials for new members on tools such as Altium, MATLAB & SIMULINK, git, and LTSPICE.
- Provide team members with guidance and necessary help during firmware and circuit design.
- Implemented an Agile project management to help with the timeline planning and team communication.
- Collaborated with the software team to determine the top-level design and Integrated ROS serial into the firmware.

*Project: 4-layer 36V Power Distribution PCB and Drivetrain Firmware*

- Used polygons, a split power plane and stitching vias for achieving 10A current delivery for the stepper motors.
- Implemented a power kill-switch using optocoupler and power relays with fly-back diodes.
- Designed a buck converter to step down to 5V using a MC34063 with reduced ripple using LC filters, ferrite beads, decoupling capacitors, and RC filter with a capacitance multiplier.
- Developed the C firmware for controlling the speed of stepper motors using two timer ISRs.
- Created an LTI simulation model in Simulink for PID-parameter verification (Previous DC motor design).

## Awards

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**UBC Outstanding International Student Award**

**2019**

*Vancouver Campus*

**UBC Dean's Honour List**

**2022**

*Vancouver Campus - The Faculty of Applied Science*