

Sungmin Choi

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EDUCATION

University of British Columbia

Bachelor of Applied Sciences – Electrical Engineering

Vancouver, BC

Expected May 2027

Coursework: Circuit Analysis | Electric Energy Systems, Energy Conversion, and Transmission | Electronic Circuits, Materials, and Devices | Signals, Systems, and Control | Technical Communication

SKILLS

Communication: Jira, Office (Excel, PowerPoint, Word), Outlook, Teams

Hardware: Circuit Design, FPGA, Microcontroller, Multimeter, Oscilloscope, Waveform Generator

Programming Language: Assembly, C/C++, Python, SystemVerilog/Verilog

Software: Altium, Arduino IDE, AutoCAD, GitHub, LTspice, MATLAB, ModelSim, Quartus, Simulink, SolidWorks

EXPERIENCE

UBC Sailbot

Jan 2024 – Apr 2024

Electrical Communication Systems Subteam Member

Vancouver, BC

- Designed breakout boards enabling integration of sensor communication protocols such as RS-232 and I2C with the CAN FD bus
- Created electrical schematical schematics of the breakout boards and a 12V-5V buck converter using Altium Designer.

Eighth United States Army

Sep 2021 – Mar 2023

Korean Augmentation to the United States Army (KATUSA) Member

Daegu, South Korea

- Supervised a six-member squad for eight months as Senior Sergeant, delegating tasks and maintaining operational readiness through organized team management.
- Drafted and maintained weekly schedules, progress logs, and memorandum reports for both US and Korean commanders, ensuring accurate, up-to-date progress tracking.
- Prepared and delivered monthly presentations on significant Korean events to over 30 US personnel, demonstrating strong written and verbal communication skills.
- Led and documented squad meetings with the Command Sergeant Major, reporting team status and escalating concerns to support strategic decision-making.

PROJECTS

Quadcopter | C++, Embedded System, Microcontroller, PCB Design

- Individually designing a quadcopter using the STM32F405; integrating the ArduPilot firmware for flight capabilities.
- Developing a custom flight controller PCB integrating the microcontroller, power distribution, buck and LDO voltage regulators, and IMU.

Remote-Controlled Self-Balancing Robot | C++, BLE, Microcontroller, PID Algorithm

- Led a four-member group in programming a two-wheeled self-balancing robot using the Arduino Nano 33 BLE.
- Developed C++ algorithms to fuse data from a 6-axis IMU (BMI270/BMM150) using complementary filtering and applied tuned PID control for tilt correction; achieved stable control within ± 4 cm.
- Implemented BLE-based wireless communication for directional control via differential PWM signals; refined control logic to maintain balance during dynamic movements.
- Routinely tested battery voltage using a multimeter and monitored motor driver I/O signals with an oscilloscope to ensure stable power delivery and system behavior.

Metal Detector Robot | C, Circuit Design, Microcontrollers

- Collaborated with a six-member team to build a remote-controlled metal-detecting robot using dual microcontrollers (STM32L051 and EFM8LB12).
- Implemented two-way wireless communication using RF transceivers to transmit PWM signals to H-bridge motor drivers.
- Designed and optimized frequency-varying metal detection circuit using passive components and CMOS inverters.
- Documented the complete system design in a detailed technical report covering hardware schematics, signal processing logic, and engineering calculations.