Sungmin Choi

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Education

University of British Columbia Vancouver, BC

Bachelor of Applied Sciences – Electrical Engineering *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*

- Collaborated in a student design team developing an autonomous sailboat for oceanic data collection.
- Designed breakout board to integrate sensors with NUCLEO-U575ZI-Q board and CAN bus.
- Developed electrical schematics connecting CAN transceiver, board connector, bidirectional voltage level translator, 12V–5V buck converter, and NUCLEO board.

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 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

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

- Individually designing a video-capable quadcopter using the STM32F405
- Developing custom flight controller PCB integrating microcontroller, power distribution, buck converter, low-dropout regulator, and IMU

Self-Balancing RC Robot | C++, BLE Communication, Microcontroller, PID Control

- Collaborated in a four-member group to program a remote-controlled self-balancing robot using the Arduino Nano 33 BLE Sense
- Developed C++ algorithms to fuse data from a 6-axis IMU (BMI270) 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-Detecting RC Car | C, Circuit Design, Microcontrollers

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