

Bowen Yuan

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Education

University of British Columbia – BASc in Engineering Physics – 4.0 Expected May 2028
Coursework: Applied Solid State Physics, Quantum Mechanics, Statistical Mechanics, Electricity and Magnetism, Heat and Thermodynamics, Analog CMOS IC Design, Signals and Systems, Applied Linear Algebra

Experience

Undergraduate Research Assistant, UBC Radio Science Lab Jan 2025 – Apr 2025
Dynamic Channel Emulator Project CCECE59415.2024.10667238

- Automated GTEM cell S-parameter measurements via MATLAB routines controlling vector network analyzer and linear positioning stage, improving data acquisition repeatability and accuracy
 - Processed RF datasets in Python (pandas, Matplotlib) to characterize frequency response and uniformity of gain
 - Built a real-time signal-processing chain with PlutoSDR to receive and retransmit signals with modeled distortions; verified fidelity with spectrum analyzer measurements
 - Simulated Doppler shift and free space path loss in MATLAB to recreate realistic orbital pass conditions

Projects

ALEASAT RF Communications Systems Engineer

Altium, LTspice, MATLAB ubcorbit.com/projects

- Designed and validated antenna deployer PCB in Altium and LTspice; verified survivability via thermal vacuum and vibration test campaigns at ESA test facilities
 - Investigated antenna gains and circuit losses in RF chain to ensure a 3 dB margin above required signal-to-noise ratio at carrier for satellite link budget
 - Performed root-cause and FMEA analysis to identify critical communications failure modes, and presented results to ESA Fly Your Satellite! advisors
 - Modeled orbital access windows in MATLAB to maximize reliable ground-station data transfer

CSDCMS CanSat Challenge

C++, Python, Onshape github.com/ryanziyue/cansat

- Won Best Science Mission Award at 2023 CSDCMS CanSat Challenge—applying Fourier analysis and noise-filtering constants to remotely acquire seismological data upon landing a deployable sensor
 - Developed critical design review documentation, pre-launch reports, and presented science mission findings
 - Designed 3D-printed shell for payload and developed testing procedures to verify payload survival of 50 N force and 20 g acceleration

Autonomous Search and Rescue Robot

C++, Python, FreeRTOS, HTML, JavaScript, Onshape github.com/ryanziyue/enph253

- Implemented YOLO computer vision on Raspberry Pi 5 for real-time decision-making at 15 FPS
 - Integrated vision with ESP32 motor controller via UART; PID navigation and motor control under FreeRTOS
 - Developed Wi-Fi interface for over-the-air PID tuning and sensor monitoring enabling real-time debugging without reflashing firmware for rapid performance evaluation,
 - Prototyped chassis and manipulator arm using Onshape; 3D printed and laser-cut components for rapid iteration and hardware testing

Skills

Software: Python, MATLAB, C++, Rust

Laboratory Equipment: Vector Network Analyzers, Spectrum Analyzers, Oscilloscopes, Logic Analyzers

Fabrication Tools: Altium, LTspice, SolidWorks, Onshape, 3D Printing, Laser Cutting