Yizuo Chen

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LinkedIn — GitHub — Portfolio

Profile

Fourth-year Electrical Engineering student at BCIT with strong academic performance and hands-on experience in circuit design, embedded/FPGA systems, and signal processing.
Research interests: *Embedded and FPGA systems, micro and nano electronic devices, computer vision, control and automation, advanced sensors, electronic instruments and equipment for aerospace applications, signal processing, and analog/digital communications.*

Capstone Project (In Progress)

BCIT School of Energy, in collaboration with **UBC Faculty of Medicine – Division of Neurology** and **BC Children's Hospital**
Supervisors: Prof. Julie Robillard, Prof. Craig Hennessey
Developing and integrating advanced features into social robots (Nao Robot) to support research on pediatric anxiety management and pain relief applications.

Education

M.Eng., Electrical and Computer Engineering, The University of British Columbia (Starting Sep 2026)
B.Eng., Electrical Engineering, British Columbia Institute of Technology (2022–2026)
GPA (Cumulative): 90% (4.00/4.00)
Selected relevant coursework: Signal Processing and Filters (95%); Electromagnetic Fundamentals (94%); Advanced Circuit Analysis (82%); Real-Time Embedded Systems (in progress); Digital Image and Video Processing (in progress)

Experience

Junior Control Engineer (Co-op), TKT Innovations Ltd., Langley, BC (May–Aug 2025)

- Optimized Siemens TIA Portal PLC logic for industrial dishwashing systems, improving timing/temperature control and reducing handling errors.
- Standardized control code architecture to align with industrial best practices and regulatory requirements.

Electrical Engineering Intern (Co-op), Canature Processing, Langley, BC (Jun–Sep 2023)

- Diagnosed and resolved production-line logic issues, reducing material waste and improving throughput.
- Executed test plans and authored QA documentation for certification readiness.

Visiting Student, AMPEL (UBC), Vancouver, BC (Jun–Sep 2022)

- Produced Fusion 360 models and 3D-printed components to support graduate-level experimental setups; contributed to laboratory workflow improvements.

Selected Projects

NFC Attendance System on RPi Pico 2W + FreeRTOS (In Progress) — GitHub
Built an NFC-based attendance system using a PN532 reader to detect and validate student UIDs for BCIT junior-level ECE lectures (for Prof. Eduardo Casas). Rewrote and improved the original Raspberry Pi PN532 driver to support Raspberry Pi Pico 2W under FreeRTOS. Implemented real-time UID logging with LED/buzzer feedback, onboard flash storage, and data offload to a laptop via USB connection. System supports wireless deployment, timing pulses for real-time scheduling, and Wi-Fi/Bluetooth attendance display.

Face Detection and Recognition System (MATLAB – Digital Image & Video Processing Project) — (In Progress)
Designed a complete face-detection framework with an offline training phase and an online detection pipeline. Trained RGB+HSV probabilistic skin models using custom reference masks, computed 3D color histograms, tuned log-likelihood thresholds, and generated geometric priors and an averaged face template. Implemented a real-time detector combining skin-likelihood mapping, adaptive morphology, connected-component filtering, template correlation, and a two-pass detection strategy with row-band estimation and duplicate-merge logic. Demonstrated strong multi-face detection performance on classroom datasets with accurate bounding boxes and visualization outputs.

Ultrasonic Radar (HC-SR04) on DE0-Nano-SoC — GitHub
Built an ultrasonic distance-sensing "radar" using HC-SR04 and Altera DE0-Nano-SoC (Cyclone V). Wrote SystemVerilog for sensor timing, servo PWM, and UART; developed a Python visualization for real-time display. Supports automated sweep with thresholds and manual control via joystick/encoder; achieved stable, accurate range reporting.

Industrial Dishwasher PLC Optimization
Enhanced Siemens PLC logic in TIA Portal for a pet-food processing line, tightening timing/temperature control and reducing plate handling faults; improved end-of-line efficiency and reliability.

Remote-Control Pi Car (CV + Targeting)
Designed a custom PCB (motor driver, LEDs, I/O) and enclosure; programmed in C++/OpenCV (tested in Visual Studio, deployed on Raspberry Pi with Code::Blocks). Implemented manual keyboard control via server–client and autonomous mode for target detection and engagement.

Automated Ball-Sorting Machine (C++/OpenCV) — GitHub
Built the mechanical structure and control software to detect and sort colored balls in queue. Added automated, push-button manual, and server–client remote modes; integrated computer vision with servo control for accurate sorting.

Portable DC Power Supply
Designed enclosure in SolidWorks and PCB in KiCad (fabricated and printed by BCIT). Assembled/soldered components and validated adjustable -25–25 V DC output.

Competitions & Activities

BCIT Engineering Competition – Senior Design (Finished)
Served as the Physical Structure Design Engineer for a desert-terrain competition vehicle. Designed a slim, robust, and clean structural frame that maximized stability, protected and concealed all electrical components, and ensured reliable performance under harsh environmental conditions.

Western Engineering Competition – Programming Division (Competitor, Starting Jan 2026, University of Alberta)
Selected to compete in the Programming division at WEC 2026, hosted by the University of Alberta.

BCIT RC Classic 2026 (Competitor)
Participating in the RC Classic competition, focusing on control, embedded systems, and real-time performance tuning of custom RC platforms.

Technical Skills

Programming & Tools: C, C++, Python, MATLAB/Simulink, SystemVerilog, OpenCV, Intel Quartus Prime, VS Code, VS Studio, ModelSim, LabVIEW, Siemens TIA Portal, AutoCAD, SolidWorks, Git, Linux, LaTeX
Embedded & Interfaces: TI MCUs, Raspberry Pi, RPi Pico 2W, Arduino, UART/SPI/I2C, firmware development, troubleshooting & debugging
Hardware & PCB: Schematic capture, KiCad PCB layout, soldering & assembly, 3D printing (G-code)
Controls & DAQ: PLC programming (TIA Portal), automated system design, real-time data acquisition
Math & Analysis: Signal processing, Linear Algebra, Multivariable Calculus, Transform Methods, Probability & Statistics for Engineers
Test & Measurement: Oscilloscope, DMM, Logic Analyzer, Spectrum Analyzer
Documentation: Assembly drawings, user manuals, line diagrams, manufacturing documentation, technical reports

Soft Skills

- Work independently and in collaborative, multidisciplinary teams
- Strong problem-solving and analytical thinking abilities
- Adaptability and quick learning in fast-paced environments