FOSTER BEARD

Electrical & Computer Engineering and AI Systems Engineering (Dual Degree) | Graduating April 2027
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SUMMARY

Fifth-year Electrical & Computer Engineering and AI Systems Engineering dual-degree student at Western University with hands-on experience in custom PCB design, embedded firmware, control systems, and machine learning. Has taken projects from concept to working hardware, from an autonomous solar-powered blimp to a tethered window-washing drone, and co-founded a live online marketplace. Seeking full-time engineering roles starting Spring 2027.

EDUCATION

Western University, London, ON **Sept 2022 – April 2027 (expected)**
Bachelor of Engineering Science, Electrical & Computer Engineering and Artificial Intelligence Systems Engineering (Dual Degree)

- Relevant coursework: Real-Time and Embedded Systems, Robotics and Manufacturing Automation, Power Systems, Conventional, Renewable and Nuclear Energy, Data-Driven Control of Cyber-Physical Systems, Communication Theory, Electronics (transistor amplifiers, frequency response, power amplifiers), ECE Capstone Design Project
- Ivey Case Competition participant

I.E. Weldon Secondary School, Lindsay, ON **Completed**

- Honours Certificate (Grades 9–12); Computer Science Award

TECHNICAL SKILLS

Languages: Python, C, C++, Java, Swift (SwiftUI), SQL, MATLAB

Embedded and Hardware: ESP32, Raspberry Pi, Arduino, PCB design (Autodesk Eagle), embedded C/C++ firmware, real-time operating systems (RTOS), real-time scheduling, interrupt-driven programming, motor control, sensor integration and calibration, IoT systems

Controls and Robotics: Control systems, data-driven control, flight control, robot kinematics, PLC programming (ladder logic), industrial and manufacturing automation, MATLAB/Simulink, ROS 2, signal processing

Power and Energy Systems: Three-phase power, power flow analysis, transformers and electric machines, power system protection, power electronics, closed-loop current control, solar charge controllers, conventional, renewable and nuclear generation, renewable energy integration

AI and Machine Learning: PyTorch, TensorFlow, Scikit-Learn, OpenCV, pandas, NumPy, Matplotlib, computer vision, neural network design, Google Cloud (Vertex AI, AutoML), local LLMs (Ollama, LM Studio)

Design and Tools: SolidWorks, SolidWorks Electrical, Fusion 360, Onshape, 3D printing and rapid prototyping, Git/GitHub, Jira and Agile, Xcode, Stripe API, AI-assisted development (Claude Code)

ENGINEERING PROJECTS

Tethered Window-Washing Drone, Capstone Design Project **Sept 2026 – Present**
Flight Controller and Controls Lead, Team of 4 *Western University, London, ON*

- Designing a tethered hexacopter that cleans windows up to 12 storeys, with power and water fed from a generator-powered ground base station so the aircraft carries no battery
- Leading the design of the custom ESP32-based flight controller PCB, its flight control firmware, and the control system
- Developing a computer vision model to classify clean versus dirty glass, supporting an optional Raspberry Pi autonomous mode that detects windows and obstacles
- Defining requirements with an industry partner, Blondie's Window Services

LiftLabs, Autonomous Solar-Powered Blimp **Sept 2024 – Present**
Electrical, Software and Controls Engineer, Team of 5 | liftlabs.ca *London, ON*

- Applied for and secured project funding from the Thompson Engineering Fund
- Designed custom PCBs integrating ESP32 microcontrollers, solar charge controllers, GPS, altimeter, and gyroscope
- Wrote motor control firmware for a thrust-vectoring propulsion system and built aerodynamic models of the airframe
- Produced CAD and electrical schematics in SolidWorks and SolidWorks Electrical, and maintained the project's web documentation

Copyroom, Online Marketplace for Teachers **2025 – Present**
Co-Founder | copyroom.ca *Ontario, Canada*

- Co-founded and launched a Canadian two-sided marketplace where teachers buy and sell classroom resources, live since September 2026
- Built buyer and seller accounts, file uploads, and Stripe Connect split payments with Canadian GST/HST handling
- Use AI-assisted development (Claude Code with parallel agents, Playwright testing) for site redesigns and performance optimization
- Run customer acquisition through Meta ad campaigns with AI-generated video and direct seller outreach

Resistance Spot Welder Power Supply **Jan 2026 – May 2026**

- Designed and built a high-current power supply on a custom PCB with ESP32-based closed-loop current control
- Implemented Hall-effect current sensing with low-pass filtering to provide stable feedback for weld control

Smart Home Automation System **Jan 2026 – April 2026**

- Built a Raspberry Pi 5 home automation hub with integrated sensors and computer vision-based facial recognition using ML models

Motorized Wireless Volume Remote **Sept 2024; redesigned Feb 2026**

- Built a wireless remote that physically turns a surround sound receiver's volume knob using two ESP32s and a stepper motor
- Designed a custom PCB in Autodesk Eagle with a display and low-power C++ firmware, plus a SolidWorks motor mount

Western Engineering Competition, Senior Design **Jan 2024, Nov 2024**

- Placed 2nd as part of a multidisciplinary team; led development of a small-scale robot prototype, creating its electrical design, SolidWorks CAD, and Arduino code

Additional Projects **2026**

- Apple Watch unit converter app written in SwiftUI (Xcode); self-hosted Jellyfin media server running headless on a Raspberry Pi 4

WORK EXPERIENCE

Parks Canada, Trent-Severn Waterway **June 2023 – Present (Seasonal)**
Lock and Bridge Operator *Gamebridge, ON*

- Operate canal locks and swing bridge equipment to move boats safely and efficiently through the Trent-Severn Waterway over four seasons
- Monitor and maintain mechanical and electrical lock equipment to keep operations running smoothly
- Process payments accurately and provide clear, professional customer service to boaters

University of Guelph **June 2022 – June 2023**
Bee Research Technician *Bobcaygeon, ON*

- Fabricated an alternative method for overwintering queens and colonies, improving colony survival rates
- Collected data on bee activity and survival to support a PhD research project

Kawartha Lakes Honey **Jan 2020 – June 2023**
Beekeeper *Bobcaygeon, ON*

- Maintained healthy colonies and built, repaired, and maintained beekeeping equipment in the woodshop, often working independently

LEADERSHIP AND ACTIVITIES

- Olympic Spirit Award, Sturgeon Lake Thunder Minor Hockey Association: awarded to one player across the organization for sportsmanship, perseverance, and leadership
- Team Captain, recreational softball league