

Cameron Bauman

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EDUCATION

Bachelor Of Engineering | Engineering Systems and Computing (Co-op)

2022 – 2027 | Guelph, ON

University Of Guelph

EXPERIENCE

Machine Vision Designer

Jan 2025 – Aug 2025 | Cambridge, ON

ATS Corporation

- Prototyped and deployed machine vision systems by integrating camera hardware and custom **inspection algorithms** for defect detection and robotic guidance in high-speed, tight-tolerance medical device manufacturing cells.
- Developed vision **inspection code** in Cognex Suite capable of maintaining **99.999%** accuracy at 320 ppm in production tests.
- Deployed SICK 3D vision systems for robotic tray picking, achieving precise pattern matching and part localization.
- Diagnosed and tested faulty vision hardware, using oscilloscopes and multimeters to **isolate root causes** in camera circuitry.
- Trained and deployed **deep neural network** models with **99.98%** accuracy; documented and evaluated future project use.

Control Systems Specialist

May 2024 – Sep 2024 | Barrie, ON

Prodomax Automation Ltd.

- Programmed **FANUC** robots in Roboguide and on the cell floor, refining motion paths to meet cycle time requirements.
- Designed and tested HMI programs in FactoryTalk and Studio 5000 with **PLC code** to support automated robotic cells.
- Conducted dry cycle tests and **optimized robot paths**, reducing cycle time and validating process flow and **weld quality**.
- Configured and **flashed firmware** in PLCs, Ethernet switches, and safety devices to ensure seamless cell communication.
- Integrated hydraulic and pneumatic control systems with **Allen-Bradley** PLCs using **TCP/IP** and DHCP networking protocols.

Electrical & Firmware - Team Lead

Sep 2022 – present | Guelph, ON

University Of Guelph Robotics Team

- Led a team of 20+ members in designing **electrical systems** for the Canadian International Rover Competition.
- Integrated **STM32** microcontrollers onto control boards, enabling reliable **CAN** communication to rover subsystems.
- Oversaw **firmware development** and hardware validation, using **oscilloscopes** and multimeters to verify system function.
- Implemented CAN message parsing for **encoder feedback** and tuned PID controls to achieve precise actuator performance.
- Designed and fabricated multiple **PCBs** using **KiCAD**, including a breakout for **NVIDIA** Jetson I/O, power management boards, drive boards, and light board.

PROJECTS

Quadruped Robotic Dog 📄

May 2024 – Sep 2024

ROS2, Gazebo, Python, SolidWorks, Ubuntu, Git

- Designed and assembled a quadruped robot, integrating **custom electronics** with sensors, actuators, and power systems.
- Programmed stable walking gaits using inverse kinematics, simulating motion paths in RViz before physical deployment.
- Incorporated an FPV camera, **ultrasonic sensors**, a gyroscope, and LCD over **I2C protocol** for real-time feedback control.
- Developed ROS2 Humble nodes to streamline sensor fusion, motor control, and system diagnostics.
- Featured on [University Of Guelph School Of Engineering website](#) 📄 and [Guelph News](#). 📄

Wireless Robotic Hand 📄

May 2023 – Aug 2023

Arduino, C++, Solidworks, Fritzing

- Designed and built a wireless, gesture-controlled robotic hand with a wearable glove controller for intuitive operation.
- Designed and assembled **custom PCBs** integrating 3 microcontrollers with error handling using **SPI protocol**.
- Established wireless communication between Arduino Nanos and NRF24L01 **transceivers** for real-time responsiveness.
- Featured on [University Of Guelph School Of Engineering website](#) 📄

SKILLS

Programming: C/C++, Java, Python, VHDL, Verilog, MATLAB, PLC (Ladder Logic), FANUC & ABB TP

CAD/Simulation: SolidWorks, Ansys, CFD, AutoCAD, RoboGuide, Studio 5000, Cognex Vision Suite, Cadence Virtuoso, SPICE

Circuit Design: Altium, KiCAD, Soldering, Oscilloscope, Multimeter, Logic Analyzers | I2C, SPI, UART, CAN Protocols | RTOS

Tools/Frameworks: Linux, Git, Github, ROS2, SVN, Vim, Jira, NI LabVIEW, FPGA Development, Gazebo Robotics Simulator