

Roy Bou Abboud

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University of Toronto

BASc in Engineering Science | Robotics Engineering, Artificial Intelligence Minor + PEY Co-op

Expected: Apr. 2028

Major GPA: 3.92

Relevant Courses: Robotics Fundamentals (Kalman/Bayesian/Particle Filters, SLAM), Math for Robotics (State Estimation, Optimization), Dynamics (Forward/Inverse Kinematics), Control Systems, Applied Deep Learning, Learning from Data, Embedded Systems, Electronics for Robotics, Data Structures & Analysis

PROFESSIONAL EXPERIENCE

Honda of Canada Mfg. (Engine Plant)

May 2026 - Present

Mechatronics Engineer *Robot Teaching, Programmable Logic Controller (PLC), Human Machine Interface (HMI), CAD*

- Dual appointment to Die Casting Mass Production & New Model (Hybrid Engine) teams for Civic & CR-V engines.
- Delivered 20 production-line improvements to die casting machines and robots, including 12 Mitsubishi PLC ladder logic + HMI upgrades and 8 custom mechanical parts designed in CATIA V5 and manufactured in-house.
- Eliminated \$180K annual downtime by leading the replacement of paper-tag engine block traceability with automated barcode scanning, custom fixtures, and upgraded PLC logic to flag defective bins before final inspection.
- Saved \$2.5K annually across 2 sand mold machines, and removed a severe sand inhalation hazard, by programming a PLC pre-die-change algorithm that drains the sand reservoir producing 8 extra parts and cycle-stopping the robot.

AtkinsRéalis

May 2025 - Aug. 2025

Engineering Coordinator

Process Instrumentation, Wiring Schematics, CAD, Excel

- Dual appointment to the Instrumentation & Control (I&C) and Mechanical teams working on the Retube, Feeder and Boiler Refurbishments of the Darlington (DNGS) and Pickering (PNGS) Nuclear Generators.
- Revised 40+ Mechanical Engineering Change packages by ensuring design plans, requirement traceability matrices, engineering drawings and associated calculations accurately reflect site conditions, speeding revision timeline by 25%.
- Developed engineering quotation requests and bill of materials for the I&C components of PNGS Units 5/6/7/8, allowing for the installation of precise measures to control the heat moderator within the reactor's 380 feeder pipes.

TRUSTE (Biomed Engineering Startup)

May 2024 - Aug. 2024

Mechatronics Researcher

FDM 3D Printing, Microcontrollers, Data Acquisition, CAD

- Built a microcontroller-driven mechatronic system and custom 3D-printed fixture for a wearable medical device.

EXTRACURRICULARS & PROJECTS

aUToronto (Autonomous Driving Team - Chevrolet Bolt)

Sep. 2025 - Jul. 2026

Vehicle Interface Engineer

CAN (Controller Area Network), Odometry, ROS, Linux/Ubuntu, C++, Python

- Improved localization accuracy by 40% by wiring and programming wheel encoders to collect vehicle position data.
- Diagnosed 20+ autonomy faults by decoding CAN bus traffic and correlating signal plots with vehicle behaviour.
- Verified autonomy compliance by running technical inspections with Vehicle Spy 3 CAN monitoring and diagnostics.

Autonomous Cup Pong Robot

Jan. 2026 - Apr. 2026

Embedded system with LiDAR object detection

C++, I²C, Hardware-in-the-Loop, ESP32, Motor Control

- Achieved 100% target detection and $\pm 2^\circ$ aim accuracy by interfacing TF-Luna LiDAR over 400 kHz I²C with a servo-driven 115° polar scan.
- Reduced integration failures by building 7 isolated PlatformIO test environments in C++ to validate each peripheral (LiDAR, servo, hall sensor, IR beam, motor drivers) before system integration.
- Achieved a 200 cm launch range by generating multi-frequency hardware PWM for dual flywheel and indexer motors, using a staged duty-cycle spin-up profile to overcome static load before firing.

DC Power Supply Build

Sep. 2025 - Dec. 2025

Fully functional power supply built from scratch

PCB Design, Op-amp Filter Design, SPICE, Soldering

- Designed a two op-amp amplifier to convert a 0-2.5 mA sensing current into a functional 0-19V adjustable range.
- Built & tested an op-amp filter using capacitors / inductors in SPICE, reducing large frequency noise (50+ Hz) by 92%.
- Designed a single-via PCB in Eagle with integrated test pins, then fabricated, soldered, and validated it by multimeter and oscilloscope, achieving 99% accuracy against a lab bench supply.

SKILLS

Technical: PLC (GX Works), HMI (GT Designer), CAN/SPI/I²C, CATIA V5, Eagle, SPICE, ROS/ROS2, Linux/Ubuntu

Programming & Presentation: PyTorch, Python, C/C++, MATLAB/Simulink, MS Office (Excel, Word, PowerPoint, Teams)