

ELIAS COLESHILL

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Seeking a four-month engineering co-op: May-August 2027

PROFILE

Third-year dual-degree engineering student with hands-on experience in robotic mechanisms, embedded control, production-equipment upgrades and system integration. WE FIRST president and FRC lead mentor; interested in robotics, product development, embedded systems and mechanical design.

EDUCATION

Western University | Expected graduation: 2029

Dual degree: Mechatronics Systems Engineering and Artificial Intelligence Systems Engineering. Five-year program; currently in third year.

TECHNICAL SKILLS

Programming and controls: C++, Python, Java, 6502 assembly; ESP32, Arduino, RoboRIO; IMU heading control, filtering, non-blocking firmware, ESP-NOW.

Design and fabrication: SolidWorks (CSWA), Onshape, AutoCAD, CAD assemblies, DFM, prototyping, FDM/SLA printing, milling, turning, TIG and woodworking.

Engineering tools: GitHub, VS Code, MATLAB, Simulink and Excel. Assisted with industrial PLC changes and robot teaching in welding cells.

ENGINEERING EXPERIENCE

Production Engineering Co-op | FIO Automotive Canada | May-August 2026

- Observed welding-cell operation and investigated production/quality issues, then developed mechanical upgrade packages in SolidWorks.
- Designed passive cooling chutes with integrated finished-part checking to remove a handling step; developed clamp damping, retention and locating changes to improve equipment behaviour.
- Tested 3D-printed prototypes, iterated designs, arranged fabrication and coordinated maintenance, contractors, tool-room staff and installation teams.
- Assisted contractors with PLC changes and Yaskawa/Panasonic robot teaching and motion improvements; the contractor implemented the highlighted control changes.
- Secured support for expanded 3D-printing capability and designed a fabricated aluminum-extrusion/polycarbonate printer enclosure.

LEADERSHIP AND COMMUNITY

President, WE FIRST / FRC Team 4617 Lead Mentor | 2025-present

- Support student robotics projects, workshops and FRC mentoring; combine technical guidance with team administration and faculty coordination.
- Guide two teams designing 3 lb combat robots while supporting the specific project lead and preserving the teams' design ownership.

After-school VEX IQ Club Organizer | Grades 11 and 12

- Ran an elementary robotics club for 8-11 pupils each year, teaching mechanical concepts, programming and independent problem-solving.

Recognition: Lady Godiva Award (2026), for commitment to the Western Engineering community through robotics teaching and mentoring.

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SELECTED ENGINEERING PROJECTS

Baker Bot | Project Lead and Head Development | April 2026-present

- Lead a 12-person student build of a humanoid teaching tool for Professor Baker, coordinating distributed subteams and system interfaces.
- Independently developed the head: an offset herringbone-gear jaw drive solved mouth-clearance constraints; small servo/paperclip linkages operate the eyelids.
- Wrote limited embedded head-movement methods. Hardware is complete and subsystems work separately; coordinated AI/context-to-motion software remains in integration.

Weather Lights | Solo Design and Build | June-August 2026

- Built an ESP32 LED system that communicates forecast temperature, weather and cloud cover during a scheduled morning wake-up display.
- Designed two colour engines with a scheduler/fader, pausing weather effects during transitions; added connection retries, failure indication and deep-sleep scheduling.
- Designed the prototype-board electronics and printed enclosure, diagnosed startup power instability and installed the lights under my bed for regular use.

Robot in Three Days 2026 | Event Organizer and Mechanical Lead

- Organized the build and led mechanical work, including development of the shooter and indexer. Iterated guiding wedges and wheel/motor mounts to address jamming and ball compression.
- The team completed a prototype demonstrating intake, storage, indexing, shooting and staged field-obstacle traversal by submission.

PID Minibot and 14-week Workshop Series | Prototype Designer

- Designed the reference mechanics, electronics and firmware, with IMU-based heading PID and a downward-facing distance sensor for table-edge detection.
- Built an ESP-NOW remote with live P/I/D adjustment, display and joystick heading input. Non-blocking software kept control responsive; filtering reduced but did not eliminate yaw drift.

6502 Computer and Robotic Arm | Personal Learning Build

- Built Ben Eater's computer design at 1 MHz and added a joystick interface and bit-banged I2C/PWM servo control.
- Independently derived two-link inverse kinematics and implemented arithmetic/trigonometric routines in assembly. The arm operated with unresolved servo jitter.

COMPETITION AND EARLIER ROBOTICS

WEC Senior Design, 2025 - 2nd place: handled all electrical work and software for an autonomous amphibious vehicle; passive wall skids, ultrasonic turnaround sensing, filtering and conditional recovery.

WEC Junior Design, 2024 - 6th place: proposed a crossbow-inspired wooden-flexure launcher; range gains came with weight/presentation tradeoffs.

FRC Team 9580, 2024: rookie-season student captain; developed the under-bumper intake and contributed broad fabrication/electrical work on a KitBot-based robot.

VEX kiwi drive: independently developed the three-wheel layout and movement controls combining translation and rotation; led most of the robot build with a teammate contributing to the catapult.