MUNHIB AHMED

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EDUCATION

BESc, Mechatronic Systems Engineering + Artificial Intelligence Expected Apr 2030
Western University | *London, ON* | *5-year dual degree, Year 2*
Coursework: Algorithms & Data Structures (Java), Applied Probability & Statistics, Mechanics of Materials, Thermodynamics I

TECHNICAL SKILLS

CAD & Simulation: SOLIDWORKS, Onshape, Autodesk Inventor, AutoCAD
Programming: C/C++ (Arduino, ESP32, VEXcode), Python (OpenCV), Java, Git/GitHub
Embedded & Controls: ESP32, Arduino Mega, stepper drivers (A4988), proportional servo control, serial communication
Fabrication: FDM 3D printing, carbon fibre composite finishing, mechanical assembly of gear, chain and timing-belt drives
Certifications: Certified SOLIDWORKS Associate (CSWA, 98%, Oct 2026), Onshape Assembly & Part Design

DESIGN TEAM

Western Formula Racing (FSAE) | *GLV Electrical (Brake Bias) & Composites Member* Sep 2026 – Present

- Designing an electromechanical brake-bias adjuster for the WFR27 car: a motor replaces the cockpit knob and turns the existing Tilton cable, driven by steering-wheel buttons over CAN.
- Wrote the Phase 1 requirements record: 12 functional and packaging requirements, each traced to its source with a verification test; measured pedal-box clearances in SOLIDWORKS to package the actuator.
- Translated 2027 FSAE rules (brake-by-wire ban, Critical Fastener rules, 2000 N pedal load) into failsafe requirements: bias holds on power or firmware loss, and adjustment locks out while braking.
- Caught two issues in the team's brake-bias template (an out-of-range setting and an inconsistent bias-per-turn figure); held motor sizing until on-car torque measurements.

PROJECTS

Recycled Plastic Pelletizer | *ES 1050 Design (team of 5)* | github.com/Munhib-Ahmed/pelletizer-controller Winter 2026

- Designed a single-motor pelletizer that cuts recycled filament into 3 mm pellets; two GT2 belts drive the feed wheel and a Forstner-bit cutter at a 7:1 ratio, keeping feed and cut mechanically synchronized.
- Developed ESP32 firmware (C++, AccelStepper) with a debounced start/stop switch, potentiometer speed control from 6 to 120 RPM, and an IR beam-break sensor that runs the motor only while filament is present.
- Tested a gear-drive prototype: 3 mm/s feed rate and under 50 dB noise; traced cutter jams to poor chip clearance.
- Selected the design from 7 concepts via a weighted decision matrix; produced the Onshape CAD assembly and BOM.

Computer Vision Face-Tracking Turret | *Personal* | github.com/Munhib-Ahmed/face-tracking-camera-turret Aug 2026

- Built a single-axis face-tracking camera turret: Python and OpenCV (Haar cascades) detect a face on a USB webcam and stream pan angles over serial to an Arduino Mega driving the servo.
- Eliminated servo oscillation by tuning a proportional controller (Kp 0.05 to 0.035 deg/px) and adding a 15-pixel deadzone.

VEX Robotics | *Robotics course, Iroquois Ridge HS* 2025

- Built a robot from raw VEX metal: designed it in Inventor, then 3D-printed, assembled and coded (VEXcode C++) it.
- Designed a 6-motor crab drive: 4 wheel motors (left and right pairs synced in code for tank turns) plus 2 frame-mounted motors that steer the wheel pods through gears and a chain drive so the robot can strafe.
- Iterated 3D-printed ring tensioners to take up steering-chain slack until the wheel pods held position.

WORK EXPERIENCE

Dollarama | *Store Associate (new store opening)* | *Oakville, ON* May – Aug 2026

BTRMLK | *Cook* | *Oakville, ON* May – Aug 2026

McDonald's | *Crew Member & Cashier* | *Oakville, ON* Oct 2023 – Aug 2025

- Handled 100+ transactions and $1,500+ in sales per shift; coordinated with a 10-person team at peak rushes.

LEADERSHIP

IRHS Investment Club | *Founder & President* 2024 – 2025

- Founded and ran weekly market-analysis sessions for 30+ members; grew the club's Instagram to 1,000+ followers.