Bilal Chamseddin

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Technical Skills

Programming: C++, C, Python, Java, C#, Arduino
Mechanical Design: SolidWorks, Fusion 360, 3D Printing, Prototyping, Mechanical Assembly
Electronics: Soldering, Circuit Design, Sensors, Motors, Power Systems
Robotics & Tools: Actuators, Embedded Systems, Unity, Git, AutoCAD

Education

University of Waterloo Sept 2025 – May 2030
Nanotechnology Engineering **GPA: 3.7 / 4.0**
Awards: **Sir Isaac Newton Physics Exam** (66th Canada, 109th World)

Toronto Metropolitan University Sept 2024 – May 2025
Mechatronics Engineering (Transferred) **GPA: 3.8 / 4.0**
Awards: **Dean's List** (Fall & Winter)

Projects

Automatic Pet Feeder 2024
Arduino, 3D Printing, Embedded Systems

- Accomplished automated mechanical dispensing as measured by **scheduled twice-daily feed cycles**, by integrating a servo-driven dispensing mechanism with a 3D-printed housing.
- Accomplished adjustable portion control as measured by **user-selected dispensing durations**, by designing a mechanically repeatable servo actuation system controlled via buttons and an LCD interface.
- Accomplished system robustness as measured by **successful schedule retention after power loss**, by implementing EEPROM-based state storage and validating repeat operation.
- Accomplished mechanical assembly and integration by fabricating, fitting, and assembling **multiple 3D-printed components** to ensure smooth material flow and reliable actuation.

3D-Printed Robotic Arm 2023
Arduino, Servo Control, Mechanical Assembly

- Accomplished multi-degree-of-freedom motion as measured by **independent control of 4 servo-driven joints**, by assembling and wiring a fully 3D-printed robotic arm.
- Accomplished basic pick-and-place functionality as measured by **repeatable end-effector positioning**, by programming coordinated servo motion sequences.

Interactive Hungry Robot 2022
Arduino, Ultrasonic Sensor, Embedded Control

- Accomplished autonomous object detection as measured by a **2–40 cm sensing range**, by integrating an ultrasonic sensor with motor control logic.
- Accomplished responsive mechanical actuation as measured by **sub-second reaction time**, by triggering motor movement upon object detection.
- Accomplished reliable system operation as measured by **continuous demonstration performance**, by correctly wiring and powering sensors, motors, and control electronics.

Experience

Robotics Instructor June 2023 – Present
IntelliBots Academy — Mississauga

- Accomplished hands-on robotics instruction measured by mentoring **50+ students**, by delivering Arduino, Python, CAD, and mechanical design projects.
- Accomplished curriculum execution measured by **10+ completed builds**, by guiding students through wiring, debugging, and iterative prototyping.

Front Desk & Facility Maintenance June 2025 – Present
Hub Climbing — Mississauga

- Accomplished operational safety measured by **100% equipment uptime**, by performing inspections and mechanical troubleshooting on auto-belay systems.