

Pierson Lee

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Education

University of Waterloo

Bachelor of Applied Science in Mechatronics Engineering

Waterloo, ON | September 2024 - Present

GPA: 3.84/4.00

Projects

Three Degree-of-Freedom (DOF) Robotic Crane Arm | *Arduino, SolidWorks, 3D Printing*

May 2026

- Designed and prototyped a 3-DOF robotic crane arm using SolidWorks, SG90 micro servos, 3D-printed PLA components, and an Arduino Mega microcontroller to coordinate multi-axis motion
- Programmed control logic in C++ to map analog joystick inputs to motor position, implementing software joint constraints and rotation limits to prevent mechanical binding and ensure stable operation
- Developed a coordinated control loop to translate user inputs into precise servo actuation for hoist deployment

3D Printer Room Climate System | *JavaScript, HTML/CSS, Node.js, Express.js*

April 2026 - May 2026

- Developed a temperature and humidity monitoring system using an ESP32 to transmit ambient data to a remote dashboard, comparing data against material-specific filament thresholds to generate status alerts
- Integrated a Node.js and Express.js backend server with ngrok tunneling to enable wireless data transmission from the environment sensor, logging sensor readings from the data pipeline to create historical graphs used for climate trend analysis

BMW E46 Front Bumper Mount Holder | *SolidWorks, 3D Printing, FEA*

March 2026

- Designed bumper mount holders for the BMW E46: custom bolt-on application method requiring minimal vehicle modification, modelled and analyzed in SolidWorks
- Defined custom PETG material properties and yield criteria within SolidWorks FEA to simulate stress distribution and deformation under operational loads up to 150 N, validating structural integrity
- Conducted physical stress testing on 3D-printed prototypes to gather empirical data used to optimize the mount by thickness, infill percentage, and gusset features

Experience

Software Quality Analyst | *i4i Inc.*

Toronto, ON | May 2025 - August 2025

- Validated core features of the company's authoring tool by conducting test cases in collaboration with QA and development teams, resolving software functionality issues in JavaScript
- Updated code in legacy JavaScript web applications to resolve syntax compatibility errors during the platform migration to Chromium-based browsers, managing code changes and deployments with Git version control
- Created 25+ software defect reports detailing reproduction steps and severity levels to streamline developer debugging workflows

Mechanical Engineer | *UW Formula Electric*

Waterloo, ON | September 2024 - April 2025

- Machined steel vehicle frame inserts using manual lathes and milling machines, interpreting engineering drawings and applying GD&T principles to achieve precise tolerances
- Implemented rapid prototyping workflows via 3D printing to verify dimensions and assembly fitment for mating parts prior to final production
- Fabricated sheet metal shoulder harness covers using a pan brake, executing precise bends to ensure compliance with chassis mounting points

Skills

Design: SolidWorks, FEA (SolidWorks Simulation, Ansys), Autodesk Fusion 360, GD&T, AutoCAD

Manufacturing: 3D Printing (FDM), Lathe, Milling Machine, Sheet Metal Fabrication

Languages & Embedded: C++, Arduino, ESP32, STM32, MATLAB, JavaScript, HTML/CSS, Git