

Dhairya Goel

4th Year Mechanical Engineering Student | Mechatronics Specialization | University of Waterloo

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Portfolio: autowizsec.com/portfolio

Mechanical Engineering undergraduate with 6 internships across automotive, quantum computing, manufacturing, and oil & gas. Experienced in mechanical design, machining, root-cause analysis, automation, and process improvement, with hands-on project experience including the design and fabrication of a 5-DOF robotic arm. Seeking graduate mechanical engineering roles in design, manufacturing, product development, or automation

Technical Skills

Design & Simulation: SolidWorks, Autodesk Inventor, ANSYS, Fusion 360, AutoCAD

Software: Light Flow, MATLAB, C++, AVEVA Edge, VBA

Manufacturing: Machining, Waterjetting, Laser Cutting, 3D Printing, Engineering Drawings and GD&T

Piping & Drafting: Piping Isometrics, P&IDs, Process Flow Diagrams, Corrosion Control Diagrams

Work Experience

Engineering Analyst Intern (Stamping)

May 2026 - Aug 2026

Toyota Motor Manufacturing Canada

Cambridge, ON

- Saved \$250K annually by reducing laser-welding kickouts through TBP/A3 root-cause analysis and tooling improvements.
- Increased clamp life from 6-9 months to 2.5-3 years by upgrading from AISI 1045 to H13 tool steel with nitriding.
- Redesigned pallet tables in SolidWorks, reducing weight by 35% and maintenance time from a full weekend to 1 hour.
- Automated daily Excel/PowerPoint production reporting with VBA, including pivot updates, screenshots, and scheduled execution.
- Coordinated contractors to install compressed-air and electrical services for newly installed milling machine.
- Improved plant safety by going through O. Reg. 851 and O. Reg. 332/12, Andon dashboards in Aveva and lockout documentation
- Investigated recurring scrap jams in stamping dies using GoPro footage and drawings to support root-cause analysis.
- Managed RFQs, vendor quotes, requisitions, and purchase orders for parts, contractor work, and maintenance projects.

Mechanical Designer - Quantum Computing Research

Sep 2025 - Dec 2025

Institute for Quantum Computing (IQC), University of Waterloo

Waterloo, ON

- Assisting the research team by designing, and machining components for trapped-ion quantum computer using Autodesk Inventor
- Developing Optical Circuit Boards (OCBs) on Light Flow to direct Class 3B & 4 UV laser beams for ion communication and cooling.
- Designing mounts and enclosures using copper and Mu-metal to shield sensitive PCBs from stray EM fields.
- Designed & machined beam blockers to prevent leaking laser to scatter around; enclosed large optical circuit boards.
- Machined SS316 posts to stiffen structure around the vacuum chamber reducing vibrations.
- Coordinating with researchers and maintaining detailed documentation of design iterations and experimental results in GitHub.
- Running structural FEA on mechanical components using simulation tools in Inventor and SolidWorks to optimize for mass.

Plant Engineering Intern

Jan 2025 - Apr 2025

HF Sinclair (Petro-Canada Lubricants Inc.)

Mississauga, ON

- Prepared engineering documentation for safe isolation of a decommissioned boiler, supporting risk mitigation efforts.
- Served as Ready for Operations (RFO) personnel during a major Turnaround, verifying flange management on work packages and conducting QA checks, in accordance with ASME PCC-1, to ensure proper assembly and flange integrity.
- Reduced lead times by 20% by obtaining vendor quotations for the preparation of technical packages.
- Assisted to create Approved Manufacturer List, ensuring alignment with ASME B31.3, API standards for piping components.
- Conducted field walk for over 50 piping lines, coordinating with Worley designers to update as-built P&IDs and isometric drawings
- Prepared Minor Plant Modification (MPM), Risk-in-Kind (RiK) packages for 5 major projects, contributing to schedule & efficiency.

Product Engineering Intern

May 2024 - Aug 2024

Slacan Industries Inc

Brantford, ON

- Designed electrical hardware parts and assemblies using SolidWorks PDM and AutoCAD, incorporating DFM/DFA principles to ensure manufacturability, and assembly clearance for internal fabrication.
- Processed ECNs to reflect design changes across engineering, production & quality departments.
- Reduced forging steps for oval eye from 7 to 5 by eliminating cutting and second heat, improving process efficiency by nearly 30%.
- Created fully dimensioned technical drawings with GD&T to support production and product development.
- 3D scanned legacy parts to generate CAD models, which reduced modelling time by 25% and extended the product lifecycle
- Performed tensile and torsion testing on mechanical components and prepared detailed test reports for internal validation.

Mechanical Lab Assistant	Sep 2023 - Dec 2023
<i>P3T Lab- Woodbridge Foam Corporation</i>	<i>Woodbridge, ON</i>
- Conducted mechanical tests (tensile, compressive, fatigue, hardness, etc.) on different automotive parts such as the seats, bolsters, arm rests, headliner in accordance with SAE, ISO, and federal automotive standards. - Performed 3-point and 4-point bend test to validate structural integrity for high-stress zones in passenger vehicle interiors. - Carried out flammability testing on foam and Velcro used in seating and panel systems - Analysed and compiled results from 30+ component trials to support quality assurance reports, contributing to reduction in rework incidents by 12% over the testing cycle.	

Quality Assurance Intern	Jan 2023 - Apr 2023
<i>Almag Aluminum</i>	<i>Brampton, ON</i>
- Prepared and evaluated over 50 aluminum extrusion samples, conducting quality audits across multiple production batches to ensure SOP, dimensional accuracy and surface finish standards. - Defined and validated 25 extrusion dies, using Ascona optical measurement device to verify cross-sectional profiles within 0.003”. - Designed and implemented 5 custom 3D-printed inspection gauges using SolidWorks, reducing manual measurement time on the production line by 30%. - Compiled and submitted PPAP (Production Part Approval Process) packages for OEMs and Tier -1 customers. - Prepared NCRs and conducted bi-weekly yield loss analyses, helping track defect rates.	

Projects

- 5-DOF Robotic Arm: Designed a 5-DOF robotic arm with continuum gripper in SolidWorks, developing custom 3D-printed differential/planetary drives and pulleys and fabricating components through laser cutting, waterjet cutting, milling, and turning
- UW Baja SAE: Assisted in designing, machining, and assembling various components for the team’s off-road vehicle competing in Baja SAE Michigan 2024 & Laval 2024.
- 3D Engine & Brake Assembly Modeling: Created a detailed 3D model of an inline 4-cylinder engine and a disc brake assembly using SolidWorks.
- Farming Robot: Built an autonomous robot using Lego, Tetrix, 3D-printed & laser-cut parts, powered by EV3 brick & programmed in ROBOTC for color-tag based soil plowing and seeding.
- Tech & Automotive Blog (autowizsec.com): Designed a blog website covering engineering, automotive tech & industry trends.

Certifications

ANSYS Certification Course - IIT Kanpur	Aug 2025
Lean Six Sigma White Belt Certification - CSSC	May 2025
Ministry Working at Heights Training - Liftrain Services Inc.	Jan 2025
Mastering Programming with MATLAB - Vanderbilt University	Oct 2023
CAD & Digital Manufacturing Specialization - Autodesk	Aug 2022

Education

Bachelor of Applied Science (BASc) Mechanical Engineering Honours Cumulative GPA - 79.41	
Specialization: Mechatronics Engineering	
University of Waterloo, ON	September 2022 - April 2027
Recipient of the President's Scholarship	