Alex Pacheco

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Skills

- **Engineering Skills:** CAD, Fluid systems design, P&ID development, Design and assembly of high-pressure systems, Test procedures, Lab experience
- **Software & Tools:** ASPEN, SolidWorks, AutoCAD, Microsoft Office Suite
- **Programming:** Python, Java
- **Languages:** English, French

Experience

Operations Lead, Waterloo Rocketry — Sep 2024 – Present

- Developed P&IDs for 1000-psi oxidizer systems, enabling safe high-pressure operations
- Directed propulsion test campaigns by authoring procedures and coordinating 10–20 personnel, cutting test duration by 30% with zero safety incidents
- Led aerodynamic fin redesign for the *Aurora* liquid rocket, contributing to an apogee increase of 19,000 ft while improving flight stability

Scientific Affairs Intern, Loblaw Companies Limited — Sep 2025 – Dec 2025

- Enabled development of a pilot program for nutritionally improved poultry by building the scientific evidence base used by product and regulatory teams
- Enabled evidence-based product decisions by distilling scientific literature into concise technical summaries, helping guide strategy on issues such as livestock antibiotic use and nutritional impacts of regenerative agricultural practices
- Shaped long-term health and nutrition strategy by conducting large-scale environmental and policy scans across international retail and CPG sectors

CAPMoN Laboratory Assistant, Environment and Climate Change Canada — Jan 2025 – May 2025

- Supported Canada's national atmospheric monitoring network by preparing and distributing air-filter sampling packs to 15+ sites, ensuring consistent data collection across the country
- Maintained high-quality laboratory data by processing returned filters under strict contamination-control workflows, contributing to federal air-quality measurements
- Enabled accurate chemical-species analysis by preparing calibrated solutions for Ion Chromatography and FIA systems, directly supporting federal reporting on air-quality indicators

Projects

Coaxial Injector Valves, Waterloo Rocketry

- Designed coaxial injector valves, expanding flow area by 50% while simultaneously reducing mass by 60%
- Reduced pressure drop to under 15 psi, boosting engine combustion performance
- Performed force balance and stress analysis using hand calculations to ensure safe and reliable valve operation

Quick Disconnect Arm, Waterloo Rocketry

- Designed, manufactured, and validated a rapidly reusable quick-disconnect arm mechanism, controlling the release of oxidizer fill plumbing from the rocket
- Implemented a modular design, validated through effective usage in three different configurations

Education

University of Waterloo, Candidate for BASc in Chemical Engineering — Sep 2024 – Apr 2029

- GPA: 93%