

William Millard

North Vancouver, BC | [William Millard Portfolio](#)

604-445-3497 | william_millard@icloud.com | LinkedIn: <http://www.linkedin.com/in/williamjmillard>

EDUCATION

University of Alberta | Edmonton AB

Bachelor of Applied Science (BASc) Mechanical Engineering - Minor in Economics | (September 2025 – Graduation Expected 2029)

- Honors and Athletics: First Class Standing, Academic All Canadian | Varsity Track and Field for Pole Vault

Handsworth Secondary School | North Vancouver, BC

High School Diploma – Graduated with Honors | (September 2020 – June 2025)

- Awards: All-Around Top Graduate Award, Superintendent's Award for Leadership

TECHNICAL SKILLS

CAD and Simulations: SolidWorks, Technical Drawings, Computational Fluid Dynamics, Finite Element Analysis

Software and Programming: Python (NumPy, SciPy), JavaScript, HTML/CSS, Arduino IDE

Fabrication and Manufacturing: Chemical PCB Etching, Precision Soldering, Woodworking Power Tools, Component Prototyping, 3D Printing

ENGINEERING DESIGN PROJECTS

Coronagraph Optical Signal Simulation | U of A

- Engineered a Python simulation using `numpy.fft` to model light propagation and stellar suppression in space optics.
- Reconstructed high-fidelity images from raw wavefront phase and amplitude data via complex number manipulation
- Programmed data-scaling and normalization logic within bounds `[0, 1]` to map simulation results to physical detector bounds.

Electric Off-Road Go-Kart Design | Handsworth

- Designed and fabricated an electric kart chassis featuring a rigid live-axle rear drivetrain for off-road performance.
- Integrated Ackermann Steering Geometry into the front steering linkage, optimizing tie-rod and steering knuckle angles to drastically reduce tire scrubbing during sharp cornering.

Kinematic Payload Lifter | U of A

- Developed a high-efficiency, variable-leverage mechanical lifting assembly to hoist a 250g payload under severe motor power limitations.
- Optimized shifting-fulcrum geometry in SolidWorks, validating clearances and torques prior to fabrication.
- Integrated 3D-printed components to prototype custom linkage joints.
- Bypassed inefficient gear-reduction systems and secured perfect performance score using pure geometric optimization.

CO2 - Powered Drag Racer | Handsworth

- Modeled an aerodynamic dragster chassis using SolidWorks, refining structural profiles based on iterative CFD airflow analysis. Fabricated from wood using power tools and including hand carved sections.
- Contoured the vehicle undercarriage to exploit ground-effect aerodynamics, creating localized pressure drops to stabilize the chassis while noticeably reducing wheel-to-track friction.
- Won 1st place in a competitive design challenge tournament while breaking the standing track record by 0.5x the time.

LEADERSHIP and EXPERIENCE

Robotics Team – President | October 2021 – June 2025

- Directed a 20-member student team through comprehensive 1-year design, coding, and build cycles for competitive robotics.
- Mentored local youth on robotics and programming logic to build a pipeline for youth STEM participation.

Student Council – President | September 2020 – June 2025

- Elected President for the 2024/25 academic year, managed a 30-student executive team and organized large-scale community outreach events and charity campaigns.

NVRC | Lifeguard and Swim Instructor | July 2023 – Present

- Enforced safety regulations and performed continuous risk assessment to ensure a safe aquatic environment for 150+ patrons.
- Delivered instructional swimming programs to diverse age groups, adapting communication styles to ensure clear skill acquisition and safety compliance.

ATHLETIC ACHIEVEMENTS

Athletics Canada - High Performance Pole Vault | 2013 – Present

- Balanced a rigorous 25-hour weekly high-performance training regimen with a full-time engineering courseload while preserving Academic All-Canadian honors.
- **Key Finishes:** Bronze Medalist at the 2025 U24 Canada Summer Games; Two-time Bronze Medalist at the Youth National Track & Field Championships (2022, 2024).

AWARDS

- **Awards:** Civic Youth Leadership Award (District of North Vancouver), Athlete of the Year Finalist (North Shore Sports Council, 2025), 1st Place - UBC Physics Olympics (Quizics Event)