

Eric Petersen

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Education

B.A.Sc., Engineering Physics, University of British Columbia

2026 April graduation

Studying applied physics in the context of mechanical/electrical/software engineering

UTP Early Entrance Scholarship - admitted to UBC age 15

Skills

Mechanical

CAD, CFD Analysis, Physics Modelling, DFM/A, Machining, Rapid Prototyping, FEA Analysis, Drafting, GD&T

3DX (CATIA V6), MATLAB, Python, Ansys Fluent, COMSOL

Electrical

Circuit Debugging, Embedded Programming, Control Loops, Soldering, PCB Design (Altium, KiCAD)

Experience

Industrial Energy Storage Thermals Intern, Tesla

09/2024 – 12/2024

- Found and fixed critical errors in internal MATLAB coolant pressure drop model, validated against established tools
- Using fixed model, diagnosed pressure drop issues in new parts, conceptualized bypass designs in 3DX CAD, and informed detailed design of new coolant manifolding to meet flow requirements for heat rejection
- Designed new injection molded plastic fitting to split coolant flow in 3DX for better assembly and testability, used tolerance stackup in dimensioning, verified low pressure drop in MATLAB
- Spec'd threshold pressure and built coolant test circuit to de-risk Megapack pressurization, designed and sent out drawing for machined aluminum sensor block to this end; worked with EE team to analyze results and inform DFMEA

R&D Target & Ion Sources Intern, TRIUMF

05/2024 – 08/2024

- Reduced max temp of a water-cooled electron beam converter heatsink by 40°C on a 10kW test case, scripted Ansys Fluent + Mechanical with Python to perform Particle Swarm Optimization on a coupled thermal-CFD problem
- Conceptualized, prototyped and tested inductive detection of a travelling irradiation target; improvised wire coil by 3D printing and lathe, then ran tests to build an induction-parameters-to-voltage model with oscilloscope
- Went from breadboarding to designing PCB in KiCAD for inductive target detection

Engineering R&D/Operations Intern, Accelovant Technologies

01/2023 – 04/2023

- Designed an automated test jig to test precision temperature sensors without the use of an oil bath, able to simulate up from -50°C to 400°C overnight within an accuracy of 1°C more than 5x faster than the oil bath solution

Projects

Advanced Airfoils Team Lead, UBC AeroDesign

09/2021 – present

- Led 9-person team to design and build a 120" span aircraft's wing + tail for SAE competition to lift 35lbs of payload
- Oversaw design cycle of the wing and tail, from SolidWorks CAD, to manufacturing by laser cutting/3D printing/composite layup, to test flight performance and validation
- Sized wing spar (main structural member) for landing impact using Solidworks Simulation FEA - ran parametric design study for target safety factor - validated by spreadsheet calculations and beam deflection testing in workspace
- Analyzed plane stability, control, and wing efficiency in VLM software, spreadsheets and Python / MATLAB, then verified results through CFD sim in COMSOL Multiphysics and SolidWorks Flow - improved wing lift by 22%

Autonomous Racing Robot, UBC Engineering Physics

07/2023 – 08/2023

- Led electronics and programming for an autonomous racing robot designed for speed and an off-road shortcut, included black tape following and gyroscopic angular navigation, using IR sensors and an IMU talking to STM32
- Integrated electronics with mechanical design: solved issues such as tape sensor board hitting the ground, gyroscope vibrating during normal operation and on heavy landing, and quality of wire harness connection
- Lathed/milled aluminum parts, waterjet cut the chassis, 3D printed circuit mounts and soldered circuit components