Matthew Frak

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Education

University of Waterloo Waterloo, ON
Bachelor of Applied Science in Mechanical Engineering, Honours, Co-op *Sept 2023 – Apr 2028*
- President's Scholarship of Distinction, International Experience Award

Experience

Chassis Controls SIE Intern Aug 2026 – Present
Tesla, Inc. *Palo Alto, CA, USA*
- Designed and vehicle-validated a CATIA/3DX fixture to hold the Cybercab steering column at nominal position during lever replacement, a repair identified after driving root cause analysis on 12 failed columns
- Led a root cause investigation into 8 damaged Cybertruck steering gears, implementing a new end-of-line fixture that eliminated repeat failures at the supplier, saving Tesla an estimated $6,000 per week
- Built a Python analytics dashboard that processes 1,100+ quality records and 6,500+ chargebacks into automated reports, giving the Chassis team instant visibility into cost and performance trends across 73 suppliers

Multibody Dynamics Intern, Predictive Engineering Jan 2026 – Apr 2026
Bombardier Recreational Products (BRP) *Valcourt, QC*
- Built a failure analysis model using Python and nCode to analyze testing across 5 unique vehicle platforms, guiding the physical testing team through the season with custom metrics and weekly feedback
- Developed a vehicle dynamics drop test model with Altair MotionView on Can-Am platforms, calculating driver g-forces to optimize suspension configuration for optimal driving experience
- Executed vehicle failure testing and data collection across multiple test tracks, supporting new product development

Manufacturing Engineering Intern May 2025 – Aug 2025
Toyota *Cambridge, ON*
- Proactively reworked the plant-wide steam system, implementing a maintenance schedule and replacing units projected to save $27,000 annually and eliminate 144 tons of CO2 emissions
- Supported production of Lexus RX, Lexus NX, and Toyota RAV4 models by managing utilities and water treatment systems essential to maintaining operations across all sections of the factory
- Optimized electrical generator runtime scheduling, cutting carbon emissions and reducing energy costs

Quality Engineering Intern Sept 2024 – Dec 2024
Linamar Gear *Guelph, ON*
- Designed a custom Keyence laser mount in SolidWorks to improve user functionality and measurement accuracy
- Updated control plans and FMEAs in Relyence, refining communication between production and management
- Conducted gear inspections using CMM technology to verify profile, lead, and crown, ensuring conformance

Extracurriculars / Projects

UW Formula Electric – Chassis Simulation & Structural Testing Lead Jan 2024 – Present
- Owned and led a live torsional stiffness (TS) test, designing and fabricating the test rig via SolidWorks, milling, and welding, while validating Ansys simulations within 4.1% of measured chassis stiffness
- Identified weight savings through an Ansys torsional stiffness study, saving 470g with minimal 0.5% loss in TS
- Competing in Formula SAE (FSAE) engineering competition, designing and building a race car from the ground up

Formula Null Hackathon | *SolidWorks, 3D Printing (Bambu Studio), Electronics Integration* May 2025
- Designed and fabricated a chassis, motor mounts, and steering mechanism in SolidWorks for a remote-control car built entirely from recycled electronics, while optimizing for structural stability
- Engineered and 3D printed custom wheel adapters to utilize salvaged motors, completing the build within 48 hours and placing 5th out of 16 contestants at the Grand Prix

Technical Skills

Mechanical: 3D CAD, GD&T, Finite Element Analysis (FEA), 3D Printing, Machining & Fabrication
Software: Ansys, 3DExperience (3DX), CATIA, Altair, SolidWorks, AutoCAD, C++, nCode, Claude Code, Python
Professional: Root Cause Analysis, Collaboration, Public Speaking, Tech-Savvy, Self-Sufficient