Samuel Petrina

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Education

Queen's University | Kingston, ON *Expected Graduation: April 2025 (including co-op term)*
B.S. Mechanical Engineering – GPA: 4.1

Experience

Queen's University – Reactor Materials Test Laboratory | Kingston ON
Research Assistant *May 2022 – August 2022*

- Designed a miniature tensile-testing stage weighing under 1 kg for use inside an X-ray diffraction machine
- Prepared an accurate and complete Solidworks CAD assembly of tensile stage to ensure manufacturability and mass constraints were met
- Completed a variety of FEA simulations in ANSYS to ensure total load-frame deflection remained under 0.5% of sample gauge-length allowing for accurate sample elongation
- Proved feasibility of joule-heating system capable of temperatures up to 600° C using ANSYS and MATLAB
- Wrote technical documentation for the tensile stage project to allow for project funding applications

Queen's Formula SAE Design Team *September 2020 – Present*
Vehicle Dynamics Team Lead

- Leading the design of the suspension, steering and brakes system for an open-wheel race car with a total budget over $50,000
- Running meetings, allocating tasks, and managing training for the vehicle dynamics sub-team
- Working with machine shop staff and faculty manager to ensure work on the car is completed in a safe manner
- Coordinating with other section leads to ensure proper integration between subsystems, adherence to deadlines, and rules compliance
- Developed and implemented Solidworks best practices focusing on editability and software performance

Vehicle Dynamics Team Member

- Leading suspension and steering kinematic design with goal of decreasing turning radius by 24% and optimizing for manufacturing simplicity
- Designed a unique bevel-gearbox actuated steering system to enable complete flexibility of steering geometry
- Redesigned A-arms, reducing machining time by 80% by eliminating tight-tolerance features and total milling setups
- Wrote a suspension load MATLAB script to simplify the structural analysis process for control arms and uprights
- Developed a Simulink simulation of dynamic suspension behaviour (quarter-car model) allowing for an improved understanding of suspension dynamics

Solaris Properties | Vancouver BC
Carpenter Helper *May 2021 – August 2021*

- Worked independently and with a team to complete a variety of carpentry tasks for high-end homes

Awards

- NSERC Undergraduate Summer Research Award Recipient *April 2022*
- N.F. Dupuis Prize for standings in Mathematics *August 2021*

Skills

- **Software**: Solidworks, PDM, ANSYS, Simulink, GitHub, MS Office
- **Programming**: Python, NumPy, Matplotlib, SciPy, Pandas, MATLAB, C++, Java
- **Electronics**: Arduino, soldering, implementation of digital and analog sensors
- **Manufacturing**: Machining, metal fabrication, MIG welding, carpentry tools

Personal Interests: • Skiing, climbing, sailing, and hiking • Woodworking • Automotive design • Cooking