Samuel Petrina

(778) 792-1015 - samuel.a.petrina@gmail.com – www.samuelpetrina.com

Summary

Driven Mechanical Engineering student at Queen's University, equipped with excellent hands-on skills from work and design-team experience. Demonstrated ability to work effectively both independently and as part of a multidisciplinary team. Skilled in utilizing CAD software, conducting simulations, and writing code to optimize designs. Seeking a co-op role in the field of mechatronics to leverage my practical expertise and passion for mechanical design.

Education

Queen's University | Kingston, ON *Expected Graduation: April 2025 (including co-op term)*
BS Mechanical Engineering – GPA: 4.1/4.3

Work Experience

Hydrogen Technology & Energy Corporation | Vancouver BC
Applications Engineering Co-op *May 2023 – Present*

- Completing high-level preliminary calculations to assess green hydrogen production facility project feasibility
- Assisting with cost-benefit analysis for production facility projects using lifetime rate of return method
- Maintaining and updating project budget and expenditure spreadsheets
- Evaluating possible suppliers and contractors based on project and company needs

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 an ANSYS thermoelectric simulation and electrical calculations completed in Python
- Wrote technical documentation for the tensile stage project to allow for project funding applications

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

- Supported carpenters in a wide range of areas, including concrete work, finish carpentry, framing, and roofing
- Selected and purchased materials as needed on site

Kettle River Timberworks | Burnaby BC
Labourer *Summer 2018, 2019 & 2020*

- Assisted in the installation of heavy timber in high-end residential and commercial construction
- Helped with preparation for remote construction projects including packing tools and purchasing material

Extracurricular Experience

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

Vehicle Dynamics Team Lead

- Led the design of the suspension, steering, and brakes system for an open-wheel race car with a total budget of over $60,000
- Ran meetings, allocated tasks, and managed training for the vehicle dynamics sub-team
- Coordinated with other section leads to ensure proper integration between subsystems, adherence to deadlines, and rules compliance
- Worked with machine shop staff and faculty manager to ensure work on the car was completed in a safe manner
- Developed and implemented Solidworks best practices focusing on editability and software performance

Vehicle Dynamics Team Member

- Led suspension and steering kinematic design successfully reducing turning radius by 24% while optimizing for manufacturing simplicity
- Designed a unique bevel-gearbox actuated steering system to enable complete flexibility of steering geometry
- Redesigned suspension wishbones, allowing machining time to be reduced by 80% through the elimination of tight-tolerance features and total milling setups
- Wrote a suspension load MATLAB script to simplify the structural analysis process for suspension parts
- Manufactured a variety of suspension and steering components using both manual and CNC machines

Kitsilano Secondary *September 2018 – June 2020*

Peer tutor

- Tutored students who needed extra help, specifically focusing on math, physics, and chemistry
- Provided in-class instructional help for grade 8 math students

Awards

- Received The McLean Family Award in Student Design valued at $5,000 *June 2023*
- Dean's Scholar - Awarded to students with a GPA above 3.5 *1st, 2nd & 3rd year*
- NSERC Undergraduate Summer Research Grant Recipient *April 2022*
- N.F. Dupuis Prize Scholarship - Awarded for exceptional standings in mathematics *August 2021*
- Queen's University Principal's Entrance Scholarship valued at $2,000 *September 2020*

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**: CNC and manual machining, metal fabrication, MIG welding, carpentry tools

Personal Interests

• Outdoor recreation including skiing, climbing, and hiking • Woodworking • Motorsports • Cooking