Kelvin Cao

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Education

University of Toronto — Toronto, ON
BASc in Mechanical Engineering, Mechatronics and Solids Stream. cGPA: 3.89/4.0 — Sept 2021 – Apr 2026

Experience

Safran Landing Systems — Ajax, ON
Performance and Dynamics Intern (https://kelvincao.ca/portfolio/experience/safran-landing-systems) — Aug 2024 – Aug 2025

- Conducted lock link stability analyses for the **MV-75** landing gear program using **ADAMS multibody dynamics**
- Performed **ground load calculations** (ground handling & landing conditions) and delivered **technical documentation** used to inform structural design and stress teams.
- Designed and implemented a **Python automation tool** to streamline **load-analysis pre- and post-processing**, reducing manual engineering effort and **cutting workflow time by 60%.**
- Validated and enhanced legacy engineering tools (e.g., **gas spring models**), increasing reliability and standardization across the Performance & Dynamics group.
- Drove continuous improvement by **submitting 21 IP (Improve) initiatives**, exceeding the annual target by 7×; one submission was **nominated for Idea of the Month** at the site level.

University of Toronto Formula SAE Racing — Toronto, ON
Drivetrain Team Lead (https://kelvincao.ca/portfolio/FSAE) — Sept 2022 – Present

- **Led a team of nine** in developing the drivetrain system and **successfully integrated** with other sections of the car, resulting in **1st, 5th, and 6th place victories** in **Formula SAE competitions** in New Hampshire, Michigan, and the Czech Republic.
- Designed and **optimized** mechanical components, such as sprockets and mounts, using both hand calculations and **ANSYS Finite Element Analysis** to achieve **mass reductions** of **over 40%**
- Conducted **DFMEA** on various components, such as driveshafts and sprockets, resulting in **harmonic and fatigue analysis** to ensure the reliability and durability of the components.
- Designed a compact **planetary gearbox** for hub-motor integration, including **gear-ratio optimization, bearing selection, and spline design** using **KISSsoft** and **ANSYS**.
- Utilized **analytical methods** and first principles to determine **heat loads and dissipation**, developing a **MATLAB** cooling simulation and **STAR-CCM+ heat-transfer model** to optimize thermal performance.
- Analyzed **real-life testing data** to provide feedback for **Transient lap simulations** and force load cases, enhancing MATLAB simulink model accuracy to less than 7% error.

Nanz Pharma — Pickering, ON
Mechanical Engineering Co-op Student (https://kelvincao.ca/portfolio/experience/nanz-pharma) — Jun 2023 – Sept 2023

- Maintained and created **design qualifications and installation qualifications** for Air Handling Units (AHU) and Rooftop Units (RTU), ensuring compliance with **Good Manufacturing Practice (GMP)** standards from governmental agencies in a pharmaceutical context, to be submitted to the government for review.
- Employed **AutoCAD** to create technical **mechanical and electrical drawings**, resulting in increased accuracy of engineering drawings and improved efficiency of the Regulatory Affairs **(**RA) department's validation process for the manufacturing plant.
- Demonstrated expertise in dealing with various standards, including **ISO**, **ASTM**, and **NEMA** by integrating them into company-wide Standard Operating Procedures (SOPs) and preventative maintenance documentation using QT9 quality management system (QMS) software.
- Contributed to the design of a **large scale pharmaceutical manufacturing product** by **sourcing and specifying** various parts, including a high shear pump, that enabled the **first ever production batch** of povidone iodine at the company.

Certifications

Certified SOLIDWORKS Professional in Mechanical Design | Dassault Systèmes — Dec 2022