

# JUSTIN YOON

Engineering Undergraduate Student at The University of British Columbia

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## SKILLS & ABILITIES

| CAD             | Programming           | Software         | Certifications/training  |
|-----------------|-----------------------|------------------|--------------------------|
| SolidWorks      | Siemen's PLCs LAD/FBD | TiaPortal        | CSWA                     |
| Creo Parametric | R, C/C#               | OpenPose         | WHMIS                    |
| AutoCAD         | MATLAB                | ChimeraX         | Standard First Aid       |
| Inventor        | Java                  | Simulink         | Class 5 Drivers license  |
| Fusion 360      | Arduino IDE           | Microsoft Office | Machine shop/fabrication |

## WORK EXPERIENCE

### Mechanical Design Engineering Intern – CDR Systems

May 2026 – Present

- Designed and developed medical equipment from concept to launch.
- Responsible for the design cycle, from research, prototyping, testing, and iterating, to procurement of the product from overseas manufacturers.
- Designed and implemented new manufacturing equipment involving high fluctuations in temperature, applying thermodynamics and material expansion to ensure design success.

### Manufacturing & Automation Engineering Intern– Dometic Marine

Sept. 2025 – April 2026

- Designed and developed manufacturing equipment to support production of hydraulic, electronic, and combustion-based products.
- Performed 3D modeling, prototyping, tolerance analysis, and performance testing to design parts that were implemented onto the factory floor.
- Integrated SCADA systems, PLCs, and HMIs to reduce human error and semi-automate production of electric linear actuators and heaters.
- Supported and developed manufacturing processes for a new electric actuator product entering its early stages of production.

## ENGINEERING DESIGN TEAMS

### Team Lead – MCR Fuselage | UBC AeroDesign

May. 2026 – Present

- Onboarding, training, and mentoring new members for the upcoming competition cycle starting in September.
- Managing summer research projects for new design concepts, materials, and manufacturing processes to inform the next-generation aircraft.
- Organizing project timelines, assign research tasks, and facilitate communication within the team and across various subsystems.

### Team Member – MCR Fuselage | UBC AeroDesign

Sept. 2023 – April 2026

- Led the tail design for UBC AeroDesign's Micro Class competition aircraft: Romeo (2024), Barbie (2025), and Toothless (2026).
- Competed in SAE Aero West 2024, SAE Aero East 2025, and SAE Aero West 2026 competition, placed 2<sup>nd</sup> internationally.
- Optimized the empennage by iterating volume coefficients and aspect ratios using Gudmundsson's equations.

- Designed the tail section for the MCR plane in SolidWorks, researched and developed solutions to maximize strength against bending and torsion while minimizing weight. Performed FEA and validated results to make sure the tail met performance criteria.
- Manufactured the tail section using carbon fiber, Kevlar, plywood, and balsa, using techniques such as 3D printing, laser cutting, waterjet cutting, vacuum forming, and jig assembly.

#### **Team Member – Water Systems | UBC Sustaingineering**

Sept. 2024 – Aug. 2025

- Optimized flow of various water system configurations by developing spreadsheets to perform technical calculations.
- Designed, modeled, and manufactured specialized components needed by the sub team for the rainwater harvesting system.
- Performed structural analysis of the tiny home frame to ensure load-bearing compatibility with integrated water systems.

## **EDUCATION**

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### **Bachelor of Applied Science – University of British Columbia**

*Biomedical Engineering - Biomechanics/Mechanics Specialization*

April 2027

## **PROJECTS**

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### **Adaptive Footpad Injury Prevention Wheelchair Attachment**

Jan. 2025 – Apr. 2025

- Developed a non-restraining wheelchair footrest to reduce lower-limb injuries in elderly Alzheimer's patients.
- Worked directly with clients at the Hilltop House Staff in Squamish to define design specifications based on stakeholder requirements.
- Designed and modeled the wheelchair attachment in SolidWorks, prototyped and tested the device under simulated use.

### **Helmet Impact Biomechanics – Effect of Helmet Fit on Head Injury Risk**

Jan. 2025 – Apr. 2025

- Conducted a biomechanics research study with ICORD to assess how helmet misfit affects head kinematics and injury risk in motorcycle crash scenarios.
- Simulated impacts using a drop tower and helmeted ATD embedded with 9 accelerometers under various misalignment conditions.
- Analyzed acceleration data in MATLAB using Butterworth filtering and vector math to compare linear and rotational forces across fit conditions.

### **Soft Tissue Mechanical Testing – Characterization of Synthetic Skin**

Jan. 2024 – Apr. 2024

- Conducted tensile testing experiments on synthetic skin samples to characterize mechanical and viscoelastic material properties.
- Designed a controlled loading protocol including ramp, hold, and unloading phases to evaluate time-dependent deformation using a benchtop testing system.
- Processed experimental force displacement data in MATLAB, converting results to stress-strain curves to analyze elastic behavior, hysteresis, and failure characteristics to interpret toe region, linear elastic region, and viscoelastic relaxation.

## **ADDITIONAL EXPERIENCE**

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### **UBC Thunderbird Mascot – The University of British Columbia**

Sept. 2022 - Present

- Attended hundreds of sports games and events as “Thunder”, the mascot for UBC Vancouver.
- Riled up thousands of attendees by engaging with fans, leading chants, and performing stunts, while representing the school and its values.
- Managed my schedule to maintain work-life balance, including this work itself, engineering school, internships, competitions, and design teams.

References available upon request.