# Zining (Grace) Yu

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## Objective

Diligent university student offering a wide array of technical skills and extensive R&D experience, with a strong interest in optimization and a design-for-assembly-and-maintenance mindset. Currently seeking an engineering internship over the summer of 2025.

## Education

**Rensselaer Polytechnic Institute**, Troy, NY Expected Graduation Date: May 2027

Bachelor of Science in Aeronautical Engineering and Mechanical Engineering, Dean's Honor List, GPA: 3.98.

## Research

**CRC-3 Vertical-Takeoff Fixed-Wing Aircraft** Dec. 2023 to Present

- *Helped to design, manufacture, assemble, and maintain the aircraft, including designing and prototyping a pair of airfoils to convert the quadcopter into a biplane and a lightweight, aerodynamic fuselage.*
- *Worked with both the ground control and the firmware team to try and achieve the full range of autonomous motion in quadcopter mode, through dual-booting Linux and running PX4 controller via QGroundControl.*
- *Built a virtual physics model of the drone to simulate the behavior of the drone in quadcopter mode to aid the development of firmware architecture.*

**Wire Arc Additive Manufacturing and Sintering of YSZ Powders** April 2024 to Present

- *Worked closely with the electrical team, designed and implemented multiple apparatus for temperature control.*
- *Designed the electrical setup for supplying current at 10kV to a pressure-driven YSZ powder sintering apparatus, with the main emphasis being safety.*

**Machine Learning Based Cost Reduction of Airfoil Optimization** July. 2021 to May 2022

- *Researched and attempted to create a cost-effective alternative to computational fluid dynamics for optimizing airfoil and vortex generator geometries using data augmentation. Was able to generate pre-optimized airfoil coordinates according to user inputs, in under 5 seconds.*
- *Won the Gold Excellence Award (Top 10 overall projects) and the NSERC Young Innovator's Award at the 2022 Canada-Wide Science Fair.*

**Student on the Beamline (Canadian Light Source, Synchrotron Accelerator)** Mar. 2021 to Aug. 2022

- *Experimentally assessed the impact of different (x-ray) exposure times at cryogenic and room temperature on Bovine Insulin proteins using the CMCF Bending-Magnet beamline.*

**Damped Oscillation of a Sphere** Sep. 2021 to Dec. 2022

- *Investigated the change in damping effect of aqueous glycerin solutions as a function of viscosity and concentration, on an oscillating, submerged mass-spring system.*

## Relevant Experiences

**Rensselaer Motorsport (Formula SAE, Student-Built Electric Racecar Team)** Sept. 2023 to Present

Chassis- Suspension Manufacturing Lead (Dec. 2023-Jun. 2024), Chassis-Suspension-Tires Lead (Jun. 2024-Present)

- *Designed and manufactured various welding fixtures for chassis manufacturing. Significantly sped up the manufacturing of the spaceframe chassis and reduced tolerances from both human errors and deformations from welding to a targeted +/- 0.015"for all jigged tubes.*
- *Helped to coordinate the construction of corner assemblies and the accumulator, including suspension arms, rods, battery segments, and insulation.*

**FIRST Robotics** Aug. 2016 to May 2023

Technical Director for Entradox Robotics #14316 (2018-2023), FIRST mentor and volunteer (2020-2023), FIRST Tech Challenge Dean's List, British Columbia Finalist in 2022

- *Designed multiple robots by translating theoretical designs that the team put forth into space-efficient packaging solutions – reduced the drivetrain footprint by 34%, then built them using sheet aluminum, 3D printed custom parts, and standardized hardware and produced a detailed maintenance manual.*

## Skills and Relevant Coursework

**Software:** CAD (SolidWorks CSWA Certified), Drafting (GD&T), MATLAB, Simulink, Programming (C++, Python, Java)

**Additional Relevant Skills:** Design and Implementation of Experimental Apparatus, Rapid Prototyping, Machining

**Relevant Coursework:** Thermodynamics, Strength of Materials, Elements of Mechanical Design, Fluid Mechanics

References Available Upon Request