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 research or a mechanical or aeronautical engineering internship over the spring or 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: 4.00.

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

- *Helped to design, manufacture, assemble, and maintain the aircraft, including designing, optimizing, prototyping, and fabricating a pair of wings to convert the quadcopter into a biplane.*
- *Designed and manufactured a vacuum-formed fuselage to protect the electronics during flight tests.*
- *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.*

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.*
- *Compared the cost of classical computational fluid dynamics and evaluated the accuracy and runtime of various generative machine learning models for airfoil design and optimization.*
- *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 and Suspension Manufacturing Lead (Dec. 2023-Present)

- *Designed and manufactured various welding jigs for manufacturing the chassis and the suspension, including a full set of chassis jigs, suspension mount jigs, and welding fixtures for damper and bellcrank mounts. Significantly sped up the manufacturing of the spaceframe chassis and reduced tolerances from both human errors and warpage from welding.*
- *Helped to coordinate the construction of corner assemblies, including suspension arms, rods, and hardware.*
- *Built the motor test bench for the Drivetrain subsystem by welding together spare tube stocks and adapting the previous year's motor mounts.*

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 and built multiple robots by translating theoretical designs that the team put forth into iterated, space-efficient packaging solutions, detailed lists of standardized hardware, and maintenance manuals.*

Apprentice Mechanic July 2021 to Aug. 2023

- *Learned to diagnose, repair, maintain, and customize consumer vehicles independently and as a small team.*

Skills

Software: SolidWorks (CSWA Certified), Siemens NX, MATLAB, Simulink, Web Development, Microsoft Office, Linux, Git, Visual Studio Code, Python, Java (Intermediate)

Manufacturing: Carpentry, Metal Work, CNC, Soldering, Welding, 3D Printing, Laser Cutting

Additional Relevant Skills: Automotive Repair and Customization, Rapid Prototyping

References available upon request