Rhonin Kristoff Dumay Huggay

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EDUCATION

University of California, Berkeley   Berkeley, CA
Bachelor of Science in Mechanical Engineering   Graduated December 2025
Cumulative GPA: 3.86/4.00, *Tau Beta Pi Engineering Honor Society*
Relevant Courses: Design of Planar Machineries, Mechatronics, Manufacturing and Design Communication

SKILLS

Technical: FEA, DFMA, Rapid Prototyping, DOE, GD&T, Mill, Lathe, FDM/SLA/Polyjet 3D printing
Software: Fusion360, SolidWorks, Python, MATLAB, ANSYS Fluent & Mechanical, LabVIEW, Microsoft Office Suite

EXPERIENCE

Gu Research Group   Berkeley, CA
Undergraduate Researcher   Feb 2024 - Dec 2025
- Developed a Python script that automated the 3D model of a propeller blade in Fusion360 to CAD over 50+ propellers with different configurations, eliminating repetitive modeling steps and saving 30 hours of modeling time.
- Performed aerodynamics and acoustic analysis in ANSYS Fluent on a cicada planform propeller configuration, validated by our experimental data; documented procedures to support future acoustic simulations.
- Supervised propeller thrust stand testing to collect and analyze thrust and RPM data from numerous propellers.
- Managed the end-to-end fabrication of 3D printed propeller designs, from CAD model to operating a Stratasys J55 polyjet printer and ensuring that printing quality is maintained after post-processing.

Space Enterprise at Berkeley (SEB)   Berkeley, CA
Aerostructures/Simulations/Manufacturing Member   Jan 2025 - Dec 2025
- Developed a MATLAB script utilizing Classical Laminate Theory (CLT) and the Tsai-Wu failure criterion to analyze stresses induced by thermal and pressure loads, establishing safe temperature limits for the club's latest carbon fiber tank.
- Designed fin mounts to withstand a 5,000N restoring force at a 5° angle of attack, engineering the geometry to facilitate CNC machining, simplify integration, and precise vertical fin alignment after assembly.
- Conducted trade studies on structural adhesives to bond fins to the motor casing, selecting an epoxy that ensured a Safety Factor of 3 against peel strength under peak aerodynamic loads.

Flux Robotics   Enschede, Netherlands
Mechanical/Hardware Engineering Intern   Jun 2024 - Aug 2024
- Enhanced the magnetic flux of the company's second iteration surgical robot by nearly 90% (approx. 2x) by tuning magnetic core and coil size parameters in ANSYS Maxwell to fit a new 23kg mass envelope.
- Presented plots illustrating flux-density outputs across varying geometric parameters to guide the final design selection.
- Optimized a Neodymium magnet's height/radius ratio by validating hand calculations against simulation data, achieving a deviation of less than 5% from hand calculations and defining the optimal range for surgical tasks.

PROJECTS

Custom Linear Actuator for Automated Bulb Handling Robot   Aug 2025 - Dec 2025
- Designed a custom, lead screw-driven linear actuator applying DFMA principles, achieving a compact form factor unavailable in COTS alternatives to ensure seamless integration with the robot arm.
- Drafted 2D drawings and machined all aluminum and acetal components using manual mill and lathe, holding +/- 0.1mm tolerances to ensure proper alignment and smooth sliding fits.
- Conducted a motor trade study based on hand calculations of required linear force and speed, selecting a motor that maximized rpm and torque output within minimal volume and mass.

Experimental Investigation of Strain Response in 3D-printed Origami Hinges   Jan 2025 - May 2025
- Led and conducted experimental analysis of fatigue-induced strain in 3D printed origami hinges under cyclic loading.
- Developed a novel fatigue testing apparatus for small foldable structures by reconfiguring an Ender 3 3D printer to apply precise, equal strain rates for 500+ folding-unfolding cycles on 3D printed multi-material origami structures.