Rodrigo A. Diaz Salazar

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EDUCATION

Northwestern University **Evanston, IL**
Master of Science in Mechanical Engineering, Aerospace Engineering Specialization | GPA: **3.88/4.00** Expected June 2027
Bachelor of Science in Mechanical Engineering, Manufacturing Specialization | GPA: **3.52/4.00** Expected March 2027

PROFESSIONAL & RESEARCH EXPERIENCE

Northwestern University FAST-AM Lab **Evanston, IL**
Undergraduate Researcher March 2026 – Present

- Characterized 50-300 Hz substrate vibration effects on melt-pool oscillation in Wire-Laser DED using high-speed imaging and evaluated grain size and orientation using EBSD, linking vibration frequency to melt-pool dynamics and grain structure
- Engineered and FEA-validated a flexure-guided vibration stage under operating loads including 5 g lateral acceleration, limiting maximum deformation to 0.66 μm with a 2.4 factor of safety.
- Developed a transient ANSYS Fluent VOF model of vibration-assisted Wire-Laser DED incorporating a moving laser heat source, wire feed, phase change, Marangoni flow, and variable-frequency forcing to evaluate how vibration frequency affects melt-pool flow

Tackform **Chicago, IL**
Engineering Design Intern January 2026 – March 2026

- Created 10+ vehicle-mounted components in SolidWorks, including device mounts and fairleads, accounting for automotive vibration, fastener load paths, and vehicle interfaces
- Built parametric CAD architectures to accommodate varying device sizes and mounting configurations, enabling rapid design changes without rebuilding assemblies
- Applied DFMA to components released for third-party manufacturing, refining geometry, fastener interfaces, and assembly features to improve manufacturability and installation robustness

CertainTeed (Saint-Gobain) **Kansas City, KS**
Process Engineering Intern June 2025 – August 2025

- Managed daily operations of the cold-end section of a production line generating over $300K in product value daily; performed root cause analysis on mechanical and pneumatic failures to restore production and maintain product quality
- Diagnosed recurring mechanical failures in date coders; led a placement redesign supported by Onshape layout drawings and coordinated installation across four bagger lines, reducing unplanned downtime by 5% and recovering $2K per day in output
- Supported $2.2M bagger-system upgrades by sourcing components in SAP, developing equipment layouts, and coordinating vendor quotes to improve safety and serviceability

City National Bank of Florida **Miami, FL**
Data Analysis Intern June 2024 – August 2024

- Analyzed and consolidated hundreds of records across multiple data sources using SQL, Excel, and Qlik, producing forecasting and cost models to identify trends and quantify operational drivers across a $16B bank

ACTIVITIES & ENGINEER PROJECTS

NUStars Rocketry Team (NASA Student Launch 2025 and IREC 2026) **Evanston, IL**
Launch Vehicle Engineer August 2024 – Present

- Designed and manufactured a fiberglass airframe and Von Kármán nose cone through vacuum-bagged E-glass layups over a dissolvable 3D-printed mandrel, achieving a 0.079-in layup thickness within ±0.010-in tolerance and 1.5 FOS at 530-lbf peak thrust
- Engineered a 3D-printed camera housing and integrated an onboard camera system while limiting stability loss below 0.1 caliber and validating 1.5 FOS at maximum dynamic pressure; system recorded uninterrupted footage during test and competition flights

NASA L'SPACE Mission Concept Academy **Remote, U.S.**
Lead Systems Engineer August 2026 – Present

- Led multidisciplinary development of a robotic lunar surface mission concept to explore permanently shadowed regions at the lunar south pole, spanning mechanical, electrical, thermal, and computer hardware disciplines
- Integrated subsystem interfaces, science payload requirements, and mission constraints into the vehicle architecture using Siemens NX for CAD, JMARS for lunar remote-sensing analysis, and trade studies to drive hardware selection and system-level configuration

Quadcopter Design & Optimization **Evanston, IL**
Independent Engineering Project June 2026 – September 2026

- Redesigned a baseline quadcopter using nTop CFD to derive aerodynamic loads and ANSYS for structural analysis and topology optimization, reducing structural volume by 33% while maintaining a factor of safety above 2
- Manufactured and flight-tested both baseline and optimized quadcopters, integrating propulsion, flight-control, electrical, and structural systems to validate the analysis-driven redesign

SKILLS

Programming & Analysis: Python, MATLAB, NumPy, R, SciPy, SIMULIA Isight, SQL
CAD & Simulation: ANSYS (CFD/FEA), SolidWorks, Siemens NX, nTop, Onshape, OpenRocket, AutoCAD
Manufacturing: Composite Layup & Vacuum Bagging, 3D Printing, Wire-Laser DED, Binder Jetting, Bridgeport Mill, Waterjet