# Benjamin Racapé

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CAD | SolidWorks | FEA | ANSYS | Metal Machining | Additive Manufacturing | Mechatronics | Embedded Systems | Control Systems
MATLAB | Python | Excel | Web Dev | LabVIEW | Requirements Management | Atlassian | Agile | Aerospace | Propulsion | AS9100

## EDUCATION

**Vanderbilt University** **Nashville, TN**
*Bachelor of Engineering: Mechanical Engineering, Applied Mathematics* May 2026
Cumulative GPA: 3.99/4.00

## PROFESSIONAL EXPERIENCE

**NASA Jet Propulsion Laboratory** **La Cañada Flintridge, CA**
*Systems Engineering Intern* June 2025–August 2025

- Developed a tool to assess flight-software requirement-set completeness, comparing 20k+ requirements from 15+ JPL missions
- Devised a three-axis taxonomy and built an ITAR-compliant AI-classification pipeline spanning local and cloud-based models
- Created an intuitive web app enabling systems engineers to generate completeness reports and explore coverage metrics

**Whisper Aero** **Nashville, TN**
*Mechanical Engineering Intern* January 2025–May 2025

- Built anechoic-chamber test infrastructure—PAK MKII, wiring, and custom rigs—to enable repeatable acoustic measurements
- Led propulsor test campaigns encompassing acoustic, vibration, modal, and thermal tests, guiding low-noise design
- Designed a rotor magnetic-imbalance tester that maps flux distribution, enabling rapid detection of skewed or weakened poles

**American Bureau of Shipping (ABS)** **Houston, TX**
*Engineering Applications Intern; American Bureau of Shipping Scholarship Recipient* May 2024–August 2024

- Designed and rapidly prototyped innovative methods for digitally delivering ABS Rules content as part of the Digital Rules team
- Leveraged AI tools to analyze Rule text in accordance with International Council on Systems Engineering (INCOSE) standards

**Vanderbilt Department of Mechanical Engineering** **Nashville, TN**
*Teaching Assistant* May 2025–Present

- Developed Fluid Mechanics exams and homework; created rubrics and graded submissions with clear, timely feedback.
- Administered the course LMS (materials, announcements, gradebook); held weekly office hours and led exam-review sessions.

## PROJECT EXPERIENCE

**Vanderbilt Aerospace Design Lab (VADL)** **Nashville, TN**
*Vice President, Simulations Lead, Technical Project Manager* May 2024–Present

- Drove systems design for NASA's Student Launch Initiative with VADL Rocket Team, seven-time national champions
- Developed complex rocket-physics simulations for trajectory, recovery and key events (rail exit, ascent, deployments, landing)
- Led project management for a 25-member team; built a WBS in Jira, managed requirements, and systems integration
- Designed, prototyped, manufactured, and tested a lander-leg deployment system ensuring reliable upright payload landing (2024)
- Co-authored NASA-spec technical reports (~250 pages) and presented findings to NASA review panels, with live Q&A sessions

**Vanderbilt Aerospace Design Lab (VADL)** **Nashville, TN**
*Undergraduate Researcher (Fluids & In-Situ Sensing)* August 2025–Present

- Implemented a resonator viscometer on a diesel lube loop for in-situ engine-oil degradation sensing; built DAQ and test rig
- Calibrated sensor to viscosity; mapped temp/flow/pressure/aeration effects on viscosity; produced curves for engine set points

**Vanderbilt Advanced Robotics and Control Laboratory** **Nashville, TN**
*Undergraduate Researcher* August 2023–May 2024

- Conducted research on the theoretical viability of integrating a variable-stiffness torsional hip exoskeleton to enhance human gait
- Built custom simulations of a bipedal mass pendulum walking model using MATLAB, analyzing dynamics and stability

- **Interests**: Music (Guitar, Piano, Saxophone), Board Games, Camping and Hiking, Recreational Sports, Slow Bike Racing