# Gabriel Rodriguez

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## Education

*Embry-Riddle Aeronautical University,* Daytona Beach, FL, Aug 2020 – Exp. May 2025
B.S. Aerospace Engineering, Aeronautics
B.S. Engineering Physics, Spacecraft Systems
Minor: Applied Mathematics
GPA: 4.00/4.00
Student Athlete, Varsity Baseball (2020-2022)

## Research Interests

- *Control Techniques:* Developing control schemes that seamlessly transition from theory to real-time control implementation on robotic systems in dynamic environments. Interested in optimal control techniques such as model predictive control (MPC).
- *Embodied Artificial Intelligence (AI):* Experienced in deploying low-latency, real-time AI inference for maximum performance of robotic systems.
- *Robotics:* Passionate about harnessing the utility of robotic systems to benefit society, allowing humans to automate repetitive but necessary tasks.

## Research Experience

*Undergraduate Research Intern, Engineering Physics Propulsion Laboratory, Embry-Riddle Aeronautical University, Physical Sciences Department, Daytona Beach, FL*
January 2025 – Present
Research Advisor: Dr. Sergey Drakunov

- Received $15,000 in funding for developing an autonomous, AI-powered system capable of conducting power plant diagnostics and reports using a Unitree Go2 EDU quadruped, added sensors, and Jetson devices.
- Developed a ROS2 workspace for deploying low-level (locomotion) and high-level (navigation) control policies with Python and C++ packages, training all policies through massively parallel reinforcement learning with Isaac Lab.
- Collaborated with team members to implement Nav2 using LiDAR and camera data, for autonomous 2D navigation.
- Created lab LinkedIn, website, and GitHub Organization for project demonstration and public visibility.

*Undergraduate Research Intern, Engineering Physics Propulsion Laboratory, Embry-Riddle Aeronautical University, Physical Sciences Department, Daytona Beach, FL*
May 2023 – August 2023
Research Advisor: Dr. John Hughes

- Developed an autonomous, AI-powered, omnidirectional vehicle leveraging low-latency inference on the Jetson Nano and low-cost hardware.
- Authored a PID control algorithm in Python to maneuver the vehicle based on input from the AI object detection system to successfully capture a free-falling object, solely using image data.
- Conceived, modeled, and 3D printed various parts and mechanisms to house hardware and object capture systems.

**Industry Experience**

*Mechanical Engineering Co-Op, Texton Systems, Wilmington, MA*
September 2023 – December 2023

- Developed detailed 3D models of mechanical components using Siemens NX, focusing on Product Manufacturing Information (PMI) and Geometric Dimensioning and Tolerancing (GD&T).
- Strengthened proficiency in ANSYS through hands-on experience with linear static analysis. Gained exposure to nonlinear analysis, enhancing my understanding of material behavior under complex loads.
- Transitioned legacy 2D drawings to modern 3D models, updating outdated specifications and integrating current engineering standards. Developed engineering intuition regarding material tolerances and welding practices.

*Boeing Career Mentorship Program Mentee, The Boeing Company, Daytona Beach, FL*
May 2022 – November 2022

- Participated in the Boeing Career Mentorship Program, enabled connections with multiple Boeing employees in interested fields.
- Developed professional skills like conducting informational interviews, networking, and communicating effectively.
- Deepened understanding of professional development and industry trends.

**University Service and/or Community Service**

*Academic Chair, Society of Hispanic Professional Engineers Las Aguilas Chapter, Daytona Beach, FL*
May 2023 – May 2024

- Lead educational research meetings, introducing members to research opportunities for undergraduates.
- Planned and managed various events to provide supplementary instruction to members in MATLAB and 3D printing.

**Laboratory and Technical Skills**

ROS2, Linux, Inventor, Siemens NX, MATLAB, ANSYS, Femap, Python, Git, Simulink, CATIA v5, Unitree Go2, SolidWorks, C/C++ (intermediate proficiency), Nav2, Isaac Lab/Gym

**Professional Memberships**

Society of Hispanic Professional Engineers, April 2023 – Present

**Selected Honors and Awards**

Dean's List, Embry-Riddle Aeronautical University, All Semesters
Scholar-Athlete Award, Embry-Riddle Aeronautical University, 2022
Sunshine State Conference Commissioner's Honor Roll 2021, 2022
Diamond Eagle Scholarship, Embry-Riddle Aeronautical University, 2020