

GABRIEL RODRIGUEZ

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EDUCATION

Embry-Riddle Aeronautical University (ERAU), Daytona Beach, FL Aug 2020 – Exp. May 2025
BS in Aerospace Engineering (Aeronautics) GPA: 3.95/4.00
BS in Engineering Physics (Spacecraft Systems)
Minor in Applied Mathematics
Student-Athlete, Varsity Baseball (2020-2022)

EXPERIENCE

Engineering Physics Propulsion Lab, Daytona Beach, FL Jan 2024 – Present
Undergraduate Researcher under Dr. Sergey Drakunov

- Developed ROS2 workspace to deploy RL policies on a Unitree Go2, training them in custom Isaac Lab environments.
- Authored an anomaly search controller using time-varying probability distributions based on sensor information.
- Assisted in integration of Nav2 for autonomous 2D navigation using the Jetson AGX Orin, LiDAR, and stereo cameras.
- Built and maintained lab's LinkedIn, Website, and GitHub for public outreach, recruitment, and organization.

Textron Systems, Wilmington, MA Sep 2023 – Dec 2023
Mechanical Engineering Co-Op

- Devised testing mechanisms in Siemens NX with GD&T and PMI for the Sentinel (GBSD) program.
- Conducted static linear and nonlinear structural analysis in ANSYS for various load cases on the testing mechanism.

Physical Sciences Dept., ERAU, Daytona Beach, FL May 2023 – Aug 2023
Undergraduate Researcher under Dr. Sergey Drakunov and Dr. John Hughes

- Constructed an autonomous, mecanum-wheeled, omnidirectional vehicle with real-time AI object detection inference.
- Authored and implemented a PID control system to capture free-falling objects based on camera data.
- Designed and 3D printed components for hardware and systems integration.

PROJECTS

ToppleBot, Daytona Beach, FL Aug 2024 - Present
Software and Communications Engineer

- Developed the software system for the ToppleBot, a reaction wheel-driven balancing and toppling cube robot.
- Implemented wireless communication with micro-ROS over WiFi for real-time data exchange and visualization.

VerdeCommute VC-1, Daytona Beach, FL Aug 2024 - Dec 2024
Principal Investigator

- Led the preliminary design phase of the VerdeCommute VC-1, a hybrid-electric STOL aircraft.
- Developed MATLAB scripts to optimize high-lift propeller design, positioning, and thrust modeling.
- Defined the systems integration of electric motors, batteries, and turbo-generator for hybrid propulsion.

Adjustable Throat Area De Laval Nozzle, Daytona Beach, FL Jan 2024 - May 2024
Controls Engineer

- Created a mathematical model to dynamically control the nozzle's throat area for optimal aerodynamic performance.
- Fabricated a 3D-printed prototype with PLA and TPU, integrating a pitot-static probe for performance validation.

INVOLVEMENT

Society of Hispanic Professional Engineers (SHPE), Daytona Beach, FL May 2023 - May 2024
Academic Chair

- Established a research initiative to engage Hispanic undergraduate engineers in research opportunities.
- Planned and managed various events to provide supplementary instruction to members in MATLAB and 3D printing.

SKILLS

Languages: English (Fluent), Spanish (Full Professional Proficiency)

Proficient In: MATLAB, Simulink, Python, C/C++, ROS2, Micro-ROS, Isaac Lab, Git, Inventor, Siemens NX, MS Excel

Familiar With: Femap with NASTRAN, CATIA v5, STK, SolidWorks, Javascript, Isaac Gym, Nav2, Docker, FreeRTOS