Enrique Garcia Rivera

St. Louis, MO | 816-749-9954 | e.garciarivera@wustl.edu | linkedin.com/in/enrique-gr

Education

Washington University in St. Louis, McKelvey School of Engineering – St. Louis, MO *Expected: May 2027*
Bachelor of Science in Mechanical Engineering, Minors in Aerospace Engineering and Mechatronics Cumulative GPA: 3.68/4.00
Relevant Coursework: Mechanical Vibrations, Fluid Mechanics, Solid Mechanics, Thermodynamics, Materials Science, Numerical Methods and Matrix Algebra (MATLAB), Electronic and Electrical Circuits (Arudino IDE), Machine Shop Practicum

Technical Skills

- **Design & Analysis:** CAD Modeling, Simulation, FEA (SolidWorks, Ansys), MATLAB/Simulink, Python, Sensor Fusion
- **Tools & Prototyping:** 3D Printing, CNC Machining, GD&T, Soldering, Wiring, IMU/GPS Integration, Telemetry

Experience

WashU Vertical Takeoff and Landing (VTOL) – *Lead Avionics Engineer*, St. Louis, MO Sep 2025 – Present

- Founding member developing avionics and control architecture for WashU's inaugural autonomous VTOL team competing in the Vertical Flight Society's Design–Build–Vertical Flight Competition.
- Integrated Pixhawk 6C flight controller, IMU, GPS, and telemetry modules with custom power distribution to support autonomous flight operations.
- Supported hardware-in-the-loop testing, flight data collection, and troubleshooting during prototype development to improve system reliability and flight stability.
- Collaborated with electrical and mechanical teammates on instrumentation layout, EMI mitigation, and performance validation during wind-tunnel and field testing.

WashU Design Build Fly (DBF) – *Aerodynamics & Payload Engineer*, St. Louis, MO Sep 2024 – Present

- Designed and optimized NACA-series wings and control surfaces using XFLR5 and CFD (ANSYS CFX) to meet payload, speed, and range competition constraints.
- Conducted structural modeling, 2.5g load analyses, and weight optimization using SolidWorks, Ansys, and analytical methods to ensure safety and efficiency.
- Assisted with fixed-wing flight testing and data logging to evaluate aerodynamic performance and control response.
- Created internal documentation and training materials for new members on aerodynamics, simulation, and test data processing in MATLAB.

Multiplatform Interactive Robotics Lab, UMKC – *Research Intern*, Kansas City, MO May 2025 – Aug 2025

- Developed a real-time sensor-fusion platform on a Teensy 4.0 using Arduino IDE to collect synchronized EMG and 9-axis IMU data at 1 kHz and visualize performance metrics in Python.
- Applied Extended Kalman Filtering in MATLAB for drift minimization and orientation accuracy; validated sensor data through controlled motion capture trials.
- Conducted instrumentation calibration, data synchronization, and troubleshooting to improve system robustness under experimental conditions.
- Presented research findings on multimodal signal integration and system reliability at the IEEE Body Sensor Networks Conference (2025).

Federal Express Corporation – *Material Handler*, Kansas City, MO Jun 2024 – Aug 2024

- Processed 100+ packages/hour with 99.8% accuracy using industrial material handling systems.
- Reduced manual errors by 15% and package defects by 20% through optimized loading patterns and damage prevention.
- Maintained perfect safety compliance while routing over 5,000 daily shipments.
- Assisted team members in workflow organization, improving efficiency and meeting tight daily shipment deadlines.

Projects

Adaptive Cruise Control (ACC) System – MATLAB *Spring 2025*

- Simulated vehicle-following dynamics using Runge–Kutta numerical methods and PID control; tuned gains for stable response and minimal overshoot.
- Modeled sensor latency and control feedback to analyze autonomous spacing performance under variable lead-vehicle motion.

Autonomous Ambulance Navigation System – Arduino *Fall 2024*

- Built an Arduino-based autonomous vehicle prototype with real-time path correction and obstacle detection using ultrasonic sensors.
- Implemented PWM motor control, synchronized LED strobes, and multi-tone siren signaling; validated algorithm performance in a controlled test environment.