

Juan M. Rosales

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Education

Embry-Riddle Aeronautical University
Master of Science, Aerospace Engineering
Area of Concentration: Airplane Dynamics & Control
Bachelor of Science, Aerospace Engineering
Area of Concentration: Aeronautics

Daytona Beach, FL
May 2019
GPA: 4.0
December 2016
GPA: 3.99

Flight Safety Academy & Phoenix East Aviation
FAA Commercial Pilot ASEL Part 141

Daytona Beach, FL
180+ flight hours

Energy Storage Short Course (Batteries) – **Purdue University Online**

August 2020

Work Experience (Full-Time)

The Boeing Company

Primary Flight Controls Engineer

Everett, WA
April 2022 - Present

- ✓ Flight Controls Design and Analysis Tools (FCDAT) Lead
 - Created algorithm to automate access validation for GITLAB groups based on export compliance for a wide range of users: U.S. Person, Foreign National, and users with Export Control License
 - Promoted software tools and increased users from 400 to over 700 active users in one year. Created metrics to recognize the efforts of tool developers and maintainers across the community
 - Manage SQL DB access, optimize Kubernetes resources, and maintain application/web certificates
 - Optimized python scripts for DOORS requirement extraction into SQL DB. Configured multiple GITLAB runners to support continuous integration and continuous development pipelines
 - Improved FCDAT's MATLAB toolbox user experience, and upgraded legacy MATLAB tools in the areas of plotting, data transfer protocols, and GUI interfaces
- ✓ Development, testing, and validation of Primary Flight Controls for 787 with PSIM and C++ scenario creation. Created team guidance for code and documentation standardization and improved debugging
- ✓ Reduced by 90% time spent to generate 787 supplemental documents (SCDs) for suppliers using LaTeX
- ✓ Migrated existing Flight Controls scenario test repository from Concurrent Version System (CVS) to git in GITLAB while keeping its 8000+ commits history
- ✓ Implemented and supported algorithm for GITLAB group based access to BCA Modeling and Simulation (BCAMS) organization and the 787_FCE (787 Flight Control Electronics)
- ✓ Tested flight control law changes in Engineering Cabin (eCAB) and Integrated Test Vehicle (ITV) with sessions that included Flight Test Pilots and hardware in the loop (HIL)

Cummins Inc – Powertrain Integration

Senior Engineer - Powertrain and Electrification Systems and Controls Integration Engineer

Columbus, IN
Jun 2019 – March 2022

- ✓ Design hybrid-electric and conventional architecture simulations for CO₂ analysis and optimization
- ✓ Analyze NO_x emissions for Diesel and Natural Gas engines for EPA and CARB compliance from customer in-service vehicles and MATLAB/Simulink based simulations
- ✓ Simulation and emissions data analysis of Dynamic Skip Fire (DSF) integration on X15 engine
- ✓ Optimal control optimization with CasADi/YOP of nonlinear DSF and hybrid systems
- ✓ Create standardized data logger processing scripts for trucks and test cell data within R&D
- ✓ Powertrain Integration SVN server creator and lead

Skills

Equipment: Data Acquisition (RTDAQ), FaroArm, Oscilloscope, Thermotron Chamber, Tensile and Torsion Strength Tester, CNC Machine (basic), 3D Printer, FLIR Camera, Borescope, Microscope, Thermocouples, Thermistors, Strain Gages

Engineering Software: MATLAB, Simulink, Python, C++, GIT/GITLAB, SVN, OpenShift, Kubernetes, Docker, SQL DB (Developer and Administrator), MongoDB, Flask, FastAPI, HTML, PSIM (Boeing Proprietary), LaTeX, CATIA, DOORS, M.S. Flight Simulator, DATCOM, XFOIL

Work Experience (Internship and Part Time)	Johnson Controls – Core Electronics Product Engineering Intern ✓ Analyzed thermal properties and mechanical design to improve Li-ion battery packs for hybrid cars ✓ Performed fusible link characterization of a simulated short and changed procedure to reduce in half the time to perform tests while maintaining the same accuracy of results	Milwaukee, WI May 2018 – Aug 2018
	Rockwell Collins – Commercial Systems\Flight Control Systems Systems Engineering Intern ✓ Implemented and evaluated simulations of PID control laws for Bombardier’s CS100/300 auto-land system based on control law software requirements and flight performance requirements ✓ Developed support tools on MATLAB/Simulink that converted CS100 flight test data into the simulation variables to validate control law performance during flight test	Cedar Rapids, IA May 2016 – Aug 2016
	Eagle Flight Research Center – ERAU Graduate Research Assistant ✓ Designed a hybrid-electric propulsion system for The Boeing Company’s CAV, HorizonX ✓ Implemented FAR 36 Noise Compliance to hybrid-electric powertrain simulation tool ✓ Develop data acquisition system and performed high c-rate battery discharge testing	Daytona Beach, FL Dec 2016 – May 2019
	VerdeGo Aero - Contract ✓ Created conceptual design calculations for VerdeGo Aero’s Personal Air Taxi 200 ✓ Implemented Pseudo Newton-Raphson to calculate weights, power requirements, and dimensions	Aug 2017 – May 2018
	Undergraduate Research Assistant ✓ Simulated hybrid propulsion systems for GA aircraft to maximize range, reduce CO₂, cost, and noise ✓ Designed Simulink models from experimental data of electric motors and gas turbines	Mar 2015 – Aug 2017
Project Experience	Embry-Riddle Aeronautical University Physics and Chemistry Tutor	Daytona Beach, FL Sept 2014 – Dec 2016
	Velox Volanti – Boeing GoFly Competition (Phase I) – [Aero & Propulsion Co-Lead] ✓ Lead a team of 7 graduate, 3 undergraduate, and 2 faculty ✓ Sized hybrid power train, designed CATIA model, and component weight estimates ✓ Collected funding from College of Engineering to cover for application fees	
	DA 42-L360 Simulink Model [Aero, GNC, Graduate Project] ✓ Created a longitudinal and lateral-directional stability model with linear and nonlinear aerodynamics based on flight test data. Validation of model based on FAR Part 60 criteria ✓ Implemented sensor noise for angular rates and used Extended Kalman Filters to estimate the rolling moment coefficients of the aircraft based on noisy and non-noisy measurements ✓ Implemented Quaternion base attitude system and Health Monitoring for servo failure detection ✓ A pilot-in-the-loop connection with a joystick and an out the window view powered by Flight Gear	
Leadership & Involvement	GOAL - Latino Affinity Resource Group - Event Organizer 2019-2021 SHPE - Society of Hispanic Professional Engineers - Member and former Graduate Ambassador Sigma Gamma Tau - National Honor Society in Aerospace Engineering - Member Tau Beta Pi - Engineering Honor Society - Member and Public Relations Officer Fall 2016	
Awards & Publications	AIAA - Gas-Battery vs. Gas-Only Serial Hybrid Propulsion System Comparison doi:10.2514/6.2019-1673 SHPE Conference Research Poster Competition, 3 rd place, 2017 SHPE “Las Aguilas” chapter Most Up & Coming Award April 2017 Outstanding Academic Achievement by Aerospace Engineering Dept. - Undergraduate Award 2016	
Volunteer Experience	FIRST Robotics Competition Mentor (2019-2020) Mission Trip to Dominican Republic Committee Volunteer at the SHPE Regional Development Leadership Conference R7 2018	