TATIANA A. GUTIERREZ M.

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EDUCATION

- **Embry-Riddle Aeronautical University**
  Ph.D in Aerospace Engineering (Dynamics and Controls) *Aug'21 - May'25*
- **Embry-Riddle Aeronautical University**
  MSc in Aerospace Engineering [thesis]; GPA: 4.00/4.00 *Jan'21 - Dec'22*
- **Universidad del Norte**
  Bachelor of Civil Engineering; GPA: 4.00/5.00 *Aug'12 - Sept'17*

EXPERIENCE

- **Advanced Dynamics and Control Lab (ADCL) Embry-Riddle Aeronautical University**
  Graduate Research Fellow *Jan'21-Present*
  - Analyzed and designed adaptive and optimal control systems for quadcopters and spacecraft.
  - Developed 6-DOF dynamics simulation models for testing GNC algorithms (Matlab/Simulink).
  - Interpreted ODEs, state space, S-domain, Z-domain and frequency response system representations.
  - Performed system identification by using least squares methods and multiple model adaptive estimation.
  - Analyzed and processed sensor's response using frequency domain analysis and filter design.
  - Flight tested quadcopter systems and test-bed spacecraft to validate GNC algorithms.
  - Programmed code in MATLAB and Python.
  - Mentored undergrad and master students in control theory concepts.

- **Insitu Inc. a Boeing Company**
  Software Development Intern *May'23-Aug'23*
  - Improved UAV simulation models in Matlab/Simulink by converting configurable to variant subsystems.
  - Tested complex embedded software and debugged code to perform bugfixes.
  - Implemented a GPS degradation feature and control buttons in User Interface using C++ and C#.
  - Compiled code using Visual Studio IDE and managed files using Version Control Systems.

- **Universidad del Norte**
  Analyst Engineer *Jan'20-Dec '20*
  - Used Geographic Information System (GIS) software to process remote sensing data and satellite imagery.
  - Performed statistical analyses over data: regression, least squares.

- **Royal Consulting Services - Internship**
  Assistant Engineer *Jan'19 - Aug'19*
  - Performed Geographic Information System (GIS) analyses and engineering calculations.
  - Performed commercial flights with DJI Phantom Drone to gather aerial data.

RESEARCH EXPERIENCE

- **NASA Jet Propulsion Laboratory (JPL) and ERAU Collaboration**
  Graduate Researcher *May'22 - May'23*
  - Applied a data-driven fault detection framework for a multi-spacecraft formation flying mission in LEO. Numerical simulations in Matlab/Simulink and Python were used to demonstrate the performance and capabilities of this architecture.[paper]

- **Federal Aviation Administration (FAA) and ERAU Collaboration**
  Graduate Researcher *Jan'21 - May'22*
  - Assisted in the design, integration, and implementation of a simulation environment to support validation and verification of guidance, navigation, and control strategies applied to unmanned system operations during GPS denied scenarios in Urban Environments. [paper 1,paper 2]

PUBLICATIONS

1. Robotic Spacecraft Testbed for Validation and Verification of AI-Attitude Controllers. (Pending publication)
   Leon, S., **Gutierrez, T**., Moncayo, H. *AIAA SciTech.* 2024.
2. Distributed Health Management for Resilient Multi-agent Collaborative Spacecraft Inspection. [paper]
   Gutierrez, T., Coulter, N., Moncayo, H., Nakka, Y., Choi, C., Rahmani, A. and Gupta, A. *AIAA SciTech.* 2023.
3. Modeling of GPS Degradation Conditions for Risk Assessment of UAS Operations in Urban Environments. [paper]
   Cuenca, A., **Gutierrez, T**., Morillo, E., Steinfeldt, B. and Moncayo, H. *AIAA SciTech*. 2023.
4. Development of a Simulation Environment for Validation and Verification of Small UAS Operations. [paper]
   Gutierrez, T., Cuenca, A., Coulter, N., Moncayo, H. and Steinfeldt, B. *AIAA SciTech*. 2022.
5. Distributed Intelligent Adaptive Controller for Disturbance Rejection in Multiagent Systems. [paper]
   D.F., Moncayo, H., Aoun, C. and **Gutierrez, T**. *Journal of Aerospace Information Systems.* 2022.
6. Comparison of an Adaptive-Immunized and an Adversarial Deep Learning Control Laws to Increase Resiliency in Distributed Cyber-Physical Systems. [paper]
   D. F., Moncayo, H., Aoun, C. and **Gutierrez, T**. *AIAA SciTech*. 2022.

PROGRAMMING SKILLS

- **Languages:** MATLAB (Advanced), Python (Intermediate), C++ (Basic), C# (Basic), HTML (Basic)
- **Software:** MATLAB, Simulink, Visual Studio, GIS, LaTex, GIT, SourceTree, Bitbucket, Jira
- **Operating Systems:** Linux, Windows

PROFESSIONAL ACTIVITIES

- **Journal Reviewing:**

  Journal of Aerospace Science and Technology, 2023
- **Course Teaching Assistant:**

  Spacecraft Control AE 434 (Fall'22), Experimental Dynamics and Control Lab AE 443 (Spring'21)
- **Memberships:**

  American Institute of Aeronautics and Astronautics (AIAA)

  Society of Women Engineers (SWE)

ACHIEVEMENTS

- Travel Scholarship for General Electric Aerospace Diversity Summit. Awarded to top 50 applicants nationwide. (Jul'23)
- Travel Scholarship for visiting research center NASA Jet Propulsion Laboratory. Awarded to top 20 applicants at ERAU. (May'23)
- Graduate Research Fellowship (GAANN). Awarded by U.S Department of Education. (Aug'22-Present)
- Obtained Remote Pilot License Part 107- FAA. (Jun'19)
- Obtained the Engineer in Training E.T Certification. Awarded by NCEES. (Dec'18)
- Honorable Mention in Latin American Astronomy and Astronautics Olympiad held in Brazil (Nov'11)