Michael Marques Goncalves

in goncalvm

Email: goncalvm@my.erau.edu
Mobile: +1 (386) 333-2094
My Portfolio: flyaeroacoustics.com

Education

Universidade Federal de Minas Gerais, Brazil. *B.S., Aerospace Engineering.* May 2025
Embry-Riddle, College of Engineering. *M.S., Aerospace Engineering.* **GPA:** 3.9/4.0 July 2021
Embry-Riddle, College of Engineering. *M.S., Aerospace Engineering.* **GPA:** 4.0/4.0 May 2025

- **Activities:** Treasurer of the Graduate Student Council and Fundraising Chair of the Brazilian Student Association.
- **Coursework:** Student Member of AIAA and Student Member of Vertical Flight Society (VFS)

Skills

Technologies: OpenFOAM, Tecplot, MATLAB, Pointwise, CATIA, Simulink.

Programming Languages: Python, Bash, Fortran, Latex.

Experience

Research Granted by NASA University Leadership Initiative Daytona Beach, FL
Graduate Research Assistant *Aug 2023 - May 2025*

- Built a rotorcraft noise prediction framework integrating BEMT with PSU-WOPWOP, achieving accurate predictions of steady loading and thickness noise at blade-passing frequencies.
- Designed a broadband self-noise model using UCD-QuietFly, BEMT, XFOIL, and 2D airfoil CFD simulations to study noise trends across varying flight conditions.
- Created a converter tool linking OpenFOAM CFD output to PSU-WOPWOP, enabling reliable high-fidelity aeroacoustic analysis.
- Investigated ground-effect influences on rotor noise through DES, contributing to improved rotorcraft noise modeling near reflective surfaces and offered a methodology to predict ground-effect impact on acoustic using isolated simulations and method-of-images.

Joby Aviation Santa Cruz, CA
Aeroacoustics Intern *June - Aug, 2024*

- Contributed to broadband acoustic prediction tools by evaluating simulation methodologies, developing noise models, and running CHARM and UCD-QuietFly simulations. Results were validated with experimental measurements from NASA NFAC wind-tunnel facilities.
- Integrated boundary layer data from 2D airfoil RANS simulations using multiple turbulence models to enhance noise prediction accuracy.
- Delivered weekly technical presentations and collaborated across teams, strengthening communication skills and technical reporting. Internship culminated in a paper presentation at AIAA SciTech 2025.

Research Granted by Office of Naval Research Daytona Beach, FL
Graduate Research Assistant *January - July, 2023*

- Proposed a novel unsteady excitation strategy for jet noise reduction and evaluated its effectiveness using DES simulations.
- Developed an in-house solver for the Ffowcs Williams–Hawkings equation using Farassat's 1A time-domain formulation for permeable surfaces; validated results against experimental jet noise data.

GE Transportation Brazil
Lean Management Intern *June - Aug, 2018*

- Designed a plan to reduce labor hours in the metal fabrication process by improving the logistics of laser cutting and metal folding workflows.
- Participated in a Lean manufacturing immersion program with Shingijutsu Global Consulting, applying Toyota Production System principles to real-world operations.

Publications

- Noise Reduction Using Synthetic Microjet Excitation in Supersonic Rectangular Jets. Michael Marques, Surabhi Singh, Anastasios Lyrintzis and Vladimir Golubev. In *Journal of Applied Sciences MPDI*, 2025. DOI: 10.3390/app15031180
- Evaluating Ground Effect on eVTOL Rotor Noise. Michael Marques, Vladimir Golubev, Anastasios Lyrintzis and Reda Mankbadi. In *AIAA SciTech Forum*, January 2025. DOI: 10.2514/6.2025-1242
- Assessment of Self-Noise Models Using NFAC Measurements of the Joby Aviation Propeller. Nikos Trembois, Michael Marques, Austin Thai and Jeremy Bain. In *AIAA SciTech Forum*, January 2025. DOI: 10.2514/6.2025-1045
- Acoustic Analysis of Noise Control of Rectangular Jet Using Micro-Jet Excitation. Michael Marques, Vladimir Golubev and Anastasios Lyrintzis. In *30th AIAA/CEAS Aeroacoustics Conference*, May 2024. DOI: 10.2514/6.2024-3308
- High-Fidelity Simulations of Vertiport Ground Effects on eVTOL Rotor Noise. Michael Marques, Vladimir Golubev, Anastasios Lyrintzis and Reda Mankbadi. In *30th AIAA/CEAS Aeroacoustics Conference*, May 2024. DOI: 10.2514/6.2024-3333
- Analysis of e-VTOL Rotor Noise Predictions. Michael Marques, Vladimir Golubev and Anastasios Lyrintzis. In *AIAA SciTech Forum*, January 2024. DOI: 10.2514/6.2024-2809
- High-Fidelity Simulations of Rectangular Jet Noise Control Using Micro-Jet Excitation. Michael Marques, Surabhi Singh, Sam Salehian, Vladimir Golubev and Anastasios Lyrintzis. In *AIAA SciTech Forum*, January 2024. DOI: 10.2514/6.2024-2306
- Comparative High-Fidelity Studies of Supersonic Rectangular and Round Jet Nozzle Flow. Michael Marques, Sam Salehian, Surabhi Singh, Vladimir Golubev, Anastasios Lyrintzis and Reda Mankbadi. In *AIAA Aviation Forum*, June 2023. DOI: 10.2514/6.2023-4517
- High Fidelity Simulations of Active Control of Coherent Structures in Axisymmetric Jet. Michael Marques, Vladimir Golubev, Sam Salehian and Reda Mankbadi. In *AIAA SciTech Forum*, January 2023. DOI: 10.2514/6.2023-0025
- Active Control of Coherent Structures on an Axisymmetric Jet. Michael Marques, Sam Salehian, Vladimir Golubev and Reda Mankbadi. In *AIAA SciTech Forum*, January 2022. DOI: 10.2514/6.2022-0123
- Active Control of Coherent Structures in an Axisymmetric Jet. Michael Marques. *Master's Theses*, August 2021. https://commons.erau.edu/edt/601/