

Augusto Delavald Marques

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EDUCATION

PhD in Mechanical Engineering, GPA: 3.96 University of Central Florida - Orlando, FL	Aug 2022 - Expected 2027
M.Sc. in Mechanical Engineering, GPA: 4.0 UFRGS - Universidade Federal do Rio Grande do Sul - Porto Alegre, Brazil	Mar 2020 - Mar 2022
Master 2 in Eco Activités et Énergies IMT Mines Albi - École des Mines d'Albi-Carmaux - Albi, France	Sep 2017 - Aug 2018
B.Sc. in Mechanical Engineering UFRGS - Universidade Federal do Rio Grande do Sul - Porto Alegre, Brazil	Jan 2014 - Jan 2020

PROFESSIONAL EXPERIENCE

Center for Advanced Turbomachinery and Energy Research (CATER) Graduate Research Assistant	May 2025 - Present Orlando, FL
<ul style="list-style-type: none">Developing Python code for thermodynamic cycle analysis using molten salt for steam generation, and for molten salt coupled with a supercritical CO₂ cycle.	
Computational Biomechanics Lab (CBL) Graduate Research Assistant	Feb 2023 - May 2025 Orlando, FL
<ul style="list-style-type: none">Built physics-informed neural networks in PyTorch to solve 2D Navier-Stokes equations for an AWS-funded project.Applied a custom U-Net model for anatomically guided image segmentation.Modeled patient-specific hearts using a Gaussian Process in MRI to compute cardiac strain.	
Thermal and Aerodynamic Testing Laboratory Graduate Research Assistant	Mar 2020 - Mar 2022 Porto Alegre, Brazil
<ul style="list-style-type: none">Developed a multi-fidelity steam generator model based on a Gaussian Process of the PECHEM power plant, combining real data and a thermodynamic model.Applied Latin Hypercube sampling for design of experiments.Estimated uncertainty propagation through the Monte Carlo method.Conducted model sensitivity analysis using the Sobol-Index method.Optimized steam generator performance using a genetic algorithm (NSGA-II).	
Albioma SA Project Engineering Intern	Mar 2018 - Aug 2018 Paris, France
<ul style="list-style-type: none">Modeled and simulated thermoelectric power plants (Le Gol A, Le Moule) to support the conversion of coal-fired boilers to biomass using wood pellets.	

RELEVANT SKILLS

- Languages:** Fluent in Portuguese, French, and English
- Programming:** Python (Pytorch, NumPy, SciPy), MATLAB
- Modeling & Simulation:** Physics-informed neural networks, image segmentation, thermodynamic cycles, uncertainty quantification
- Tools:** EES, Ebsilon, Thermoflex, Linux environments
- Data Analysis:** Gaussian Processes, Monte Carlo methods, Sobol sensitivity analysis, genetic algorithms