

Janiel David Montero Ramírez

Civil Engineer | PhD Researcher in Mechanical Engineering | Structural Dynamics & Offshore Structures

INSA Rouen Normandie · Laboratoire de Mécanique de Normandie (LMN) · France

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PROFESSIONAL PROFILE

Civil Engineer and PhD Researcher in Mechanical Engineering at INSA Rouen Normandie, specializing in structural dynamics and active vibration control of offshore structures. Background combining practical structural engineering experience with computational mechanics and numerical modelling. Current research focuses on jacket-supported offshore wind turbines, complemented by work in fluid–structure interaction, structural fatigue and surrogate modelling.

RESEARCH EXPERIENCE

PhD Researcher in Mechanical Engineering

Dec. 2024 – 2027
(expected)

INSA Rouen Normandie · Laboratoire de Mécanique de Normandie (LMN), France

PhD thesis: *Atténuation des vibrations d'une fondation, de type jacket, d'une éolienne marine par amortissement actif.*

- Develop structural finite element models and ANSYS APDL–MATLAB co-simulation workflows for the NREL 5-MW offshore wind turbine with OC4 jacket substructure.
- Investigate active vibration control using a Twin Rotor Damper (TRD) and discrete LQR control, combining reduced-order models for controller development with full-order transient structural simulations.
- Automate simulation campaigns and post-processing in Python and MATLAB, supporting systematic evaluation of structural response under environmental loading and control configurations.
- Extend the research toward structural fatigue, reliability-oriented analysis and Gaussian-process/Kriging surrogate modelling for computationally intensive offshore simulations.

Research Intern – Fluid–Structure Interaction & Offshore Wind Engineering

Mar. 2024 – Sep. 2024

Laboratoire Ondes et Milieux Complexes (LOMC) · Université Le Havre Normandie, France

Master's research topic: Evaluation and selection of an FSI method for modelling the Fécamp offshore wind turbine mast.

- Evaluated numerical fluid–structure interaction approaches for modelling wave loading and wave–mast interaction on the Fécamp offshore wind turbine mast, including representative cyclic and impulsive loading cases.
- Used OpenFOAM-based numerical modelling to generate hydrodynamic loads and assess structural response quantities including pressures, displacements and global forces.

EDUCATION

PhD in Mechanical Engineering

2024 – 2027 (expected)

INSA Rouen Normandie · Saint-Étienne-du-Rouvray, France

Research focus: Structural dynamics and active vibration control of jacket-supported offshore wind turbine structures.

Master 2 (M2) in Design Engineering – Mechanical Reliability and Optimization

2023 – 2024

INSA Rouen Normandie, France

Master 1 (M1) in Civil Engineering

2022 – 2023

Universidad Autónoma de Santo Domingo (UASD) / INSA Rouen Normandie

Civil Engineering – Civil Engineer degree

2013 – 2020

Universidad Autónoma de Santo Domingo (UASD), Dominican Republic

STRUCTURAL ENGINEERING EXPERIENCE

Structural Site Supervisor · CONST-VITAR

Nov. 2022 – Mar. 2023

Santo Domingo, Dominican Republic

- Supervised structural works for the Juliette I and Juliette II residential towers.
- Verified on-site execution against structural drawings and technical requirements, coordinating structural issues with construction teams.

Structural Design Engineer · Independent Engineering Practice

Jan. 2021 – Feb. 2023

Dominican Republic

- Produced structural models, design calculations, drawings and construction documentation for residential, commercial, industrial and bridge projects.
- Designed and supervised structural solutions for projects including the Vicente Noble Bridge, Ramírez and ProfiCare industrial warehouses, the Pablo I shopping centre, and housing developments in Azua, Higüey and El Cercado.
- Coordinated structural requirements with architectural and construction constraints and provided technical support during project execution.

Junior Structural Designer · CATDIC

Sep. 2019 – Feb. 2020

Santo Domingo, Dominican Republic

- Developed structural analysis models and engineering calculations, prepared structural drawings and technical documentation, and checked consistency between models and drawings under senior-engineer supervision.

SCIENTIFIC COMMUNICATION

8th European Conference on Structural Control (ECSC 2026) · Oral Presentation

2026

Lyon, France

Vibration attenuation in offshore wind turbines with jacket-type foundation using an active rotary damper with eccentric masses.

RESEARCH & TECHNICAL EXPERTISE

Core research: Structural dynamics; structural control; active vibration control; computational structural mechanics; offshore structures.

Additional areas: Finite element analysis; fluid–structure interaction; wave–structure interaction; structural fatigue; reliability analysis; surrogate modelling; Gaussian Processes / Kriging.

Scientific computing: ANSYS APDL; MATLAB; Python; OpenFAST; OpenFOAM; Simulink.

Structural engineering: ETABS; SAP2000; CSI Bridge; AutoCAD; structural modelling, design documentation and site supervision.

LANGUAGES

Spanish – Native · **English** – B2 (Upper-intermediate) · **French** – B2 (Upper-intermediate)