



Update: December 1st, 2024

PROFILE

Structural Engineer with emphasis in:

- 🔧 design of buildings, bridges, and non-building structures;
- 🔧 structural reliability and retrofit of existing buildings; and
- 🔧 construction of buildings.

ABOUT

I hold both a **Doctor of Philosophy** and a **Master of Science** degree in Civil Engineering with an emphasis in Structural Engineering from Purdue University, and a **Bachelor of Science** degree in Civil Engineering from Universidad del Norte, Colombia. My doctoral research at Purdue focused on the development of efficient spectral-chaos methods for uncertainty quantification in long-time response of stochastic dynamical systems.

Presently, I am an Assistant Professor in the Department of Civil and Environmental Engineering, Universidad de la Costa, and also a licensed professional engineer in Colombia with 15+ years of experience designing buildings and bridges. Since graduation, all my structures have been designed to be code-compliant with well-established building codes, such as: NSR, CCP (Colombian building codes), ASCE 7, ACI 318, AISC 360/341, AISI S100/S400, TMS 402/602, AASHTO LRFD, and ASCE 41 (American building codes).

My expertise and areas of interest include: * design of structures with a focus on buildings and bridges using structural concrete and structural steel, * uncertainty quantification of dynamical systems, * performance-based design of tall buildings and bridges, and * construction of low- and high-rise buildings in northwestern Colombia.

CONTACT INFO

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EXPERIENCE

7. Assistant Professor • Universidad de la Costa

Barranquilla, Colombia

Aug 2021 — Present

A lecturer and a researcher in the Department of Civil and Environmental Engineering. My research areas are: nonlinear structural analysis, uncertainty quantification, and performance-based design.

7. Lead Structural Engineer • Estructuras del Norte

Barranquilla, Colombia

Jul 2021 —

Responsibilities: Structural design of buildings and bridges, and construction of low- and high-rise buildings in northwestern Colombia.

6. Purdue University • Lyles School of Civil and Construction Engineering (formerly, Lyles School of Civil Engineering)

West Lafayette, IN, USA

Jul 2015 — Jun 2021

PhD Student & Researcher ◦ Jan 2017 — Jun 2021

Lyles Teaching Assistant ◦ Course: Basic Mechanics (CE-297/298) ◦ Aug 2020 — May 2021

Lyles Teaching Assistant ◦ Course: Basic Mechanics (CE-297/298) ◦ Aug 2019 — May 2020

Lyles Teaching Assistant ◦ Course: Basic Mechanics (CE-297/298) ◦ Aug 2018 — May 2019

Teaching Assistant ◦ Course: Structural Analysis II (CE-474) ◦ Jan 2018 — May 2018

Teaching Assistant ◦ Course: Structural Analysis II (CE-474) ◦ Jan 2017 — May 2017

MSc Student ◦ Jul 2015 — Dec 2016

5. Structural Engineer • Puccini Theran

Barranquilla, Colombia

Oct 2012 — Jun 2015

Relevant structural designs: Three 17-story buildings (residential); three 15-story buildings (residential); a 100-m-long parabolic bridge; two 2-story luxury houses; a 4-story building (laboratory); and a 2-story building (library).

Relevant nonlinear analyses for code-compliant structural designs: A large storage warehouse; a missile-resistant wall for the Colombian army; and a wharf.

Designed a total of 21 projects.

4. Structural Engineer • GM Proyectos

Barranquilla, Colombia

Sep 2011 — Sep 2012

Designed (mostly) building structures for residential use; a total of 12 projects.



3. Junior Structural Engineer & Researcher • Universidad del Norte

Barranquilla, Colombia

Jan 2011 — Aug 2011

Co-designed some structures on behalf of the CCS (Centro de Consultoría y Servicios), Universidad del Norte; and worked as a researcher in the following topics:

- Seismic response of two RC building structures designed for high seismic hazard;
- Performance study of a 10-story RC building structure via an incremental dynamic analysis.

2. Colciencias Young Researcher • Universidad del Norte

Barranquilla, Colombia

Jan 2010 — Dec 2010

Studied the nonlinear structural response of two RC building structures designed with the Colombian Building Code Provisions (NSR-10) and subjected to realistic scenarios of high-seismic hazard demand. Study awarded by Colciencias under Call 496.

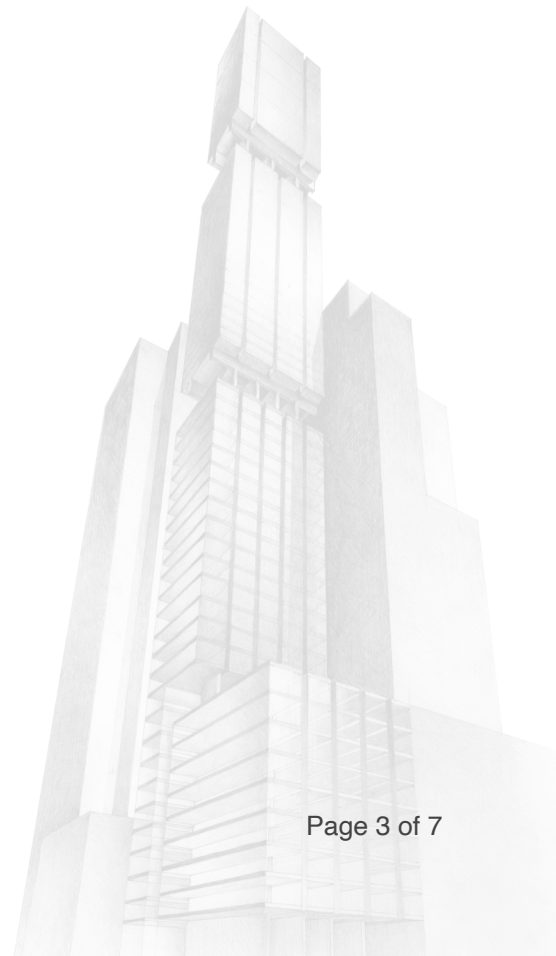
1. Junior Structural Engineer & Researcher • Universidad del Norte

Barranquilla, Colombia

Jan 2009 — Dec 2009

Co-designed some structures on behalf of the CCS (Centro de Consultoría y Servicios), Universidad del Norte; and worked as a researcher in the following topic:

- Performance study of a 10-story RC building structure via a pushover analysis.





EDUCATION

3. Purdue University • Lyles School of Civil and Construction Engineering

West Lafayette, IN, USA

Jan 2017 — May 2021

Degree:

Doctor of Philosophy in Civil Engineering with emphasis in Structural Engineering

Dissertation:

Efficient Spectral-Chaos Methods for Uncertainty Quantification in Long-Time Response of Stochastic Dynamical Systems

GPA: 4.00/4.00

Coursework (6 courses; completed by Fall 2018):

Computational Methods for Nonlinear Structural Mechanics (CE-597)

Introduction to Differential Geometry and Topology (MA-562)

Real Analysis and Measure Theory (MA-544)

Sizing Bridges (CE-597)

Statistical Inference (STAT-517)

Uncertainty Quantification (MA-598)

2. Purdue University • Lyles School of Civil and Construction Engineering

West Lafayette, IN, USA

Aug 2015 — Dec 2016

Degree:

Master of Science in Civil Engineering with emphasis in Structural Engineering

GPA: 4.00/4.00

Coursework (10 courses):

Advanced Reinforced Concrete Design (CE-576)

Advanced Structural Mechanics (CE-570)

Advanced Structural Steel Design (CE-591)

Aerospace Structural Dynamics and Stability (AAE-546)

Earthquake Engineering (CE-571)

Elements of Stochastic Processes (MA-532)

Finite Elements of Elasticity (CE-595)

Prestressed Concrete Design (CE-572)

Probability (MA-416)

Structural Dynamics (CE-573)



1. Universidad del Norte • Department of Civil and Environmental Engineering

Barranquilla, Colombia

Jan 2004 — Jun 2009

Degree:

Bachelor of Science in Civil Engineering with emphasis in Structural Engineering

GPA: 4.18/5.00 (ranked 1st)

Description: A 5-year bachelor's degree in Civil Engineering with emphasis in Structural Engineering.



LICENSES & CERTIFICATIONS

4. Recognition of Doctoral Degree in Colombia

Ministerio de Educación Nacional, Bogotá D.C., Colombia

Oct 2021 — Present

Credential ID: 018774 05 OCT 2021

3. Recognition of Master's Degree in Colombia

Ministerio de Educación Nacional, Bogotá D.C., Colombia

May 2022 — Present

Credential ID: 008260 10 MAY 2022

2. Licensed Professional Engineer in Colombia

COPNIA (Consejo Profesional Nacional de Ingeniería), Bogotá D.C., Colombia

Mar 2010 — Present

Credential ID: 08202-1xxxxx [upon customer request]

1. Open Researcher and Contributor ID

ORCID

Jan 2020 — Present

Credential ID: 0000-0001-7596-4849

HONORS & AWARDS

6. Lyles Teaching Assistantship Award (x6)

Lyles School of Civil and Construction Engineering, West Lafayette, IN, USA

Aug 2018 — May 2021

Six teaching assistantship awards granted by the Lyles School of Civil Engineering for: Fall 2018, Spring 2019, Fall 2019, Spring 2020, Fall 2020, and Spring 2021.

5. John E. Goldberg Fellowship Award

Lyles School of Civil and Construction Engineering, West Lafayette, IN, USA

Jan 2017

A fellowship award granted by the Lyles School of Civil Engineering for Spring 2017.

4. Colciencias PhD Scholarship Award

Colciencias (presently, Minciencias), Bogotá D.C., Colombia

Dec 2014

A scholarship granted by Colciencias and Atlántico Department (Colombia) under Call 673 to pursue a Ph.D. degree in Structural Engineering at Purdue University, West Lafayette, IN, USA.

Ranked 1st in the selection process.



3. Colciencias Young Researcher Award

Colciencias (presently, Minciencias), Bogotá D.C., Colombia
Dec 2009

Awarded project: Structural response of two RC building structures designed with the Colombian Building Code Provisions (NSR-10) and subjected to realistic scenarios of high-seismic hazard demand. Award granted by Colciencias under Call 496.

2. Silver Medal Award for Academic Excellence

Universidad del Norte, Barranquilla, Colombia
Sep 2009

An award granted by Universidad del Norte to the graduating student who obtained the highest academic performance in the program, as a means to reward their effort and constant search of excellence.

Ranked 1st in the Department of Civil and Environmental Engineering, Universidad del Norte.

1. Member of the Dean's High Honor List

Universidad del Norte, Barranquilla, Colombia
Jan 2005 — Dec 2008

A member of the Dean's High Honor List (Faculty of Engineering) from Spring 2005 to Fall 2008.

ORGANIZATIONS

1. Atlantic Society of Engineers (Sociedad de Ingenieros del Atlántico)

Barranquilla, Colombia
Jun 2023 — Present

Member of the Structures and Geotechnics Commission.