

Isabel Moreira de Oliveira

PHD CANDIDATE · PRINCETON UNIVERSITY

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Education

Princeton University (PU)

Princeton, NJ, USA

Ph.D. in Civil and Environmental Engineering

2020 - June 2025 (expected)

- Advisor: Prof. Sigrid Adriaenssens
- Certificates:
 - Graduate Certificate in Computational Science and Engineering (enrolled)
 - Teaching Transcript Program (enrolled)

M.A. in Civil and Environmental Engineering

2022

University of São Paulo (USP)

São Paulo, SP, Brazil

M.Sc. in Structural Engineering

2016 - 2019

- Advisor: Prof. Ruy Pauletti

Pontifical Catholic University of Rio de Janeiro (PUC-Rio)

Rio de Janeiro, RJ, Brazil

B.Sc. in Civil Engineering

2010 - 2015

- Academic year abroad at **Cornell University**, 2013
- Senior thesis advisor: Prof. Elisa Sotelino

Research Appointments

Princeton University – Department of Civil and Environmental Engineering

Princeton, NJ, USA

Graduate Research Assistant

2021 - present

- Funding: NSF-OAC #2118201 – Institute for Data Driven Dynamical Design (ID4).

University of Tokyo – Department of Architecture

Tokyo, Japan

Short-Term Visiting Researcher

Feb. 2024

- Hosted by Prof. Tomohiro Tachi. Funding: ROBELARCH/Princeton University.

West Virginia University – Department of Mechanical and Aerospace Engineering

Morgantown, WV, USA

Short-Term Visiting Researcher

Nov. 2022

- Hosted by Dr. Eduardo M. Sosa. Funding: NSF-OAC #2118201 (ID4).

Princeton University – Department of Civil and Environmental Engineering

Princeton, NJ, USA

Graduate Teaching Assistant

Fall 2021

- Mechanics of Solids. Responsibilities: Hold weekly precepts (Pset class), office hours and grade. Funding: Princeton University

Princeton University – Department of Civil and Environmental Engineering

Princeton, NJ, USA

Short-Term Visiting Researcher

May 2019

- Hosted by Prof. Sigrid Adriaenssens. Funding: *University of São Paulo & Princeton University Partnership.*

PUC-Rio – Department of Civil and Environmental Engineering

Rio de Janeiro, RJ, Brazil

Undergraduate Research Assistant

2011-2012

- Advised by Prof. Pedricto Rocha Filho. Funding: PETROBRAS, # I.C. 6000.0067396.11.4.

Professional Appointments

Arup Brazil

Structural Engineer

Rio de Janeiro, RJ, Brazil

2015 - 2016

- Responsibilities: post-tensioned concrete beam design for Zaha Hadid Architects building and structural design reviews.

Arup Brazil

Project Management Intern

Rio de Janeiro, RJ, Brazil

2014 - 2015

- Responsibilities: team and document management, design review document translation, and writing project proposals.

Todd Zwigard Architects

Architecture Intern

Skaneateles, NY, USA

Summer 2013

- Responsibilities: development of CAD drawings of architectural projects and foundation design.

Awards, Fellowships, & Grants

2024 **Graduate Student Excellence Award**, NSF's Institute for Data Driven Dynamical Design USA
Forge Prize, American Institute of Steel Construction (AISC) USA
3rd place academic poster competition, Simula Americas User Conference USA
Conference Travel Award, SEAS, Princeton University USA

2023 **Conference Travel Award**, SEAS & CEE, Princeton University USA

2022 **Conference Travel Award**, SEAS & CEE, Princeton University USA

2020 **University Fellowship**, Princeton University USA

2018 **Conference Travel Award**, PROAP/CAPES/Brazilian Government Brazil

2017 **M.Sc. Research Fellowship**, CAPES/Brazilian Government Brazil
Conference Travel Award, PROAP/CAPES/Brazilian Government Brazil

2013 **Science Without Borders Undergraduate Fellowship**, CAPES/Brazilian Government Brazil/USA

2011 **Undergraduate Research Fellowship**, PETROBRAS Brazil

Teaching Experience

Fall 2021 **Mechanics of Solids**, Graduate Teaching Assistant PU
Fall 2021 **Form-Finding Staircases With COMPAS CEM**, Co-led Conference Workshop ACADIA 2021
Spring 2018 **Structures in Architecture III: Reticulated Systems**, Graduate Teaching Assistant USP
Spring 2014 **Materials Resistance I**, Undergraduate Teaching Assistant PUC-Rio

Publications

REFEREED JOURNAL ARTICLES

I.M. de Oliveira, E.M. Sosa, E. Baker, S. Adriaenssens, Experimental and numerical investigation of a rotational kirigami system, Thin-Walled Structures 192 (2023) 111123. [10.1016/j.tws.2023.111123](https://doi.org/10.1016/j.tws.2023.111123).

I.M. de Oliveira, R.M.O. Pauletti, and L.C. Meneghetti, Connection system for gridshell structures using parametric modeling and digital fabrication, Automation in Construction 109 (2020) 102996. [j.autcon.2019.102996](https://doi.org/10.1016/j.autcon.2019.102996).

CONFERENCE PROCEEDINGS

I.M. de Oliveira, E. Baker, S. Adriaenssens, The effect of geometric tiling parameters on the stiffness of a rotational kirigami system, in: IASS 2024: Redefining the Art of Structural Design, Zurich, 2024.

- I.M. de Oliveira**, R.M.O. Pauletti, A.H. Lara, An Application of Structural Topology Optimization to Creative Staircase Design, in: IASS 2018: Creativity in Structural Design, Boston, 2018.
- P.M. Bolelli, K.B. Rocha, **I.M. de Oliveira**, W.B. Mello, A.H. Haydamus, L.C. Boechat, R.M.O. Pauletti, V.F. Arcaro, Design and construction of a membrane-tensegrity sculpture, in: IASS 2018: Creativity in Structural Design, Boston, 2018.
- I.M. de Oliveira**, R.M.O. Pauletti, A.H. Lara, Application of Structural Topology Optimization to the Design of a UHPC Staircase, in: XXXVIII Iberian-Latin American Congress on Computational Methods in Engineering (CILAMCE), Florianopolis, Brazil, 2017.

UNDER REVIEW

- I.M. de Oliveira***, S. McClellan*, C. Rauch, S. Adriaenssens, J. Greenberg, An exploratory analysis of a crowd-sourcing tool: Building terminological consensus in civil engineering, (2023) *joint first-authors.

IN PREPARATION

- I.M. de Oliveira**, E.P.G. Bruun, E.M. Sosa, S. Adriaenssens, Numerical modeling of kirigami rotational units with point cloud experimental validation (2024).

Patent

- I.M. de Oliveira**, R.M.O. Pauletti, Connection system between nodes and bar elements to build reticulated structures, connecting pieces and method of generating the shape of said connecting pieces, 2020, [BR102020014182](#).

Presentations

* *presenting author(s)*

CONTRIBUTED PRESENTATIONS

- I.M. de Oliveira*** E.M. Sosa, E. Baker, S. Adriaenssens, Numerical modeling of the deployment mechanism of a metallic plate-lattice space frame, *Poster Presentation: Engineering Mechanics Institute Conference and Probabilistic Mechanics & Reliability Conference (EMI/PMC 2024) Chicago, 2024*
- I.M. de Oliveira**, E.M. Sosa*, E. Baker, S. Adriaenssens, From flat sheets to 3D frame units: numerical modeling of customized expanded metal, *Poster Presentation: SIMULIA Americas Users Conference, 2024*
- S. McClellan*, **I.M. de Oliveira***, C. Rauch, S. Adriaenssens, J. Greenberg, Innovating the Standards Process with YAMZ: Yet Another Metadata Zoo and AI Implications, *Oral Presentation: AI-Ready Data: Navigating the Dynamic Frontier of Metadata and Ontologies, Philadelphia, PA, USA*
- S. McClellan*, **I.M. de Oliveira**, C. Rauch, S. Adriaenssens, J. Greenberg, Metadata for the Materials Masses: Exploring Terminological Consensus in Civil Engineering Using YAMZ (Yet Another Metadata Zoo), *Poster Presentation: AI-Ready Data: Navigating the Dynamic Frontier of Metadata and Ontologies, Philadelphia, PA, USA*
- I.M. de Oliveira***, E.M. Sosa, E. Baker, S. Adriaenssens, Design of a Rotational Kirigami System: A numerical and experimental investigation, *Poster Presentation: NSF HDR Ecosystem Conference Denver, 2023*
- I.M. de Oliveira***, E.M. Sosa, E. Baker, S. Adriaenssens, March 2023. Experimental and Numerical Characterization of a Rotational Kirigami System, *Oral presentation: Princeton Advanced Manufacturing Initiative (PAMI) interdepartmental seminar, Princeton, NJ.*
- I.M. de Oliveira***, J. Sato, S. Adriaenssens, Effect of stamped dimples on the stiffness of plates under uniaxial compression, *Oral Presentation, Oral Presentation: Engineering Mechanics Institute Conference (EMI 2023), Atlanta, 2023.*
- I.M. de Oliveira**, E.M. Sosa*, S. Adriaenssens, Characterization of the rotational hinge stiffness for metallic kirigami space frame, *Oral Presentation: International Association for Shell and Spatial Structures (IASS Symposium 2023), Melbourne, 2023.*
- I.M. de Oliveira***, S. Adriaenssens, Out-of-Plane Compressive Stiffness of Spin-Valence Kirigami Units, *Oral Presentation: Engineering Mechanics Institute Conference (EMI 2022), Baltimore, 2022.*
- I.M. de Oliveira***, S. Adriaenssens, Influence of geometric parameters on the deployment space of spin-valence kirigami units, *Oral Presentation: CEE Department Seminar, Princeton, NJ, 2021.*
- I.M. de Oliveira***, S. Adriaenssens, Effect of stamped dimples on the stiffness of plates under uniaxial compression, *Poster Presentation: CEE Department Seminar, Princeton, NJ, 2021*

L.C. Meneghetti*, **I.M. de Oliveira***, Y.T. Trindade*, R.M.O. Pauletti, L.A.G. Bitencourt Jr., “The Use of Lightboard Technique in the Creation of Video-lectures”, *Poster Presentation: 4th Congress of Graduate Courses*, São Paulo, 2018.

I.M. de Oliveira*, P.R. Filho, G. Costa, “An Application of Geoprocessing in the physical-territorial-environmental management of municipalities”, *Poster Presentation: XX Undergraduate Research Seminar*, Rio de Janeiro, 2012.

GUEST LECTURES AND INVITED TALKS

Guest Lecture for the Structures for Architecture course at the University of Arkansas hosted by Prof. Emily Baker, October 2023.

Invited short talk for the Origami Engineering course at Princeton University, hosted by Prof. Glaucio Paulino, September 2023.

Guest Lecture for the Parametric Design in Architecture course at PUC-Minas, hosted by Prof. Marina Borges, August 2023.

Guest Lecture for the Experimental Structures: More with Less course at Iowa State University, hosted by Prof. Rob Whitehead, March 2023.

Guest Lecture for the Honors Students in the Structures for Architecture course at the University of Arkansas, hosted by Prof. Emily Baker, September 2022.

Guest Lecture for the Lightweight Structures course at the University of São Paulo, hosted by Prof. Ruy Pauletti and Prof. Leila Meneghetti, August 2022.

Invited Talk for the CICS Seminar on Project Tools given jointly with Prof. Pauletti and Marcio Sartorelli at the University of São Paulo, August 2018.

Outreach & Professional Development

SERVICE AND OUTREACH

2023 — on	Student Onboarding and Training Subcommittee , Member	<i>ID4/NSF</i>
2021 — on	CEE Graduate Student Committee , President (2022), Member	<i>PU</i>
2022 — on	Brazilian Graduate Student Association , Founding Vice President (2022), Secretary (2023)	<i>PU</i>
2021 — on	Form Finding Lab Social Media Manager , Publishing manager and content creator	<i>FFL/PU</i>
2020-2022	Princeton Women in STEM Leadership Council , Member	<i>PU</i>
2019-2022	IASS Social Media Liason , Publishing manager and content creator	<i>IASS</i>
2020	COVID-19 full face mask project volunteer , Computational designer	<i>USP</i>

PROFESSIONAL DEVELOPMENT

Making Sense of Student Evaluations, Pedagogy workshop, Princeton University, Spring 2024.

Efficient and Effective Lesson Planning, Pedagogy workshop, Princeton University, Fall 2023.

Preparing To Write a Meaningful Statement of Teaching Philosophy, Pedagogy workshop, Princeton University, Fall 2023.

Supporting Trans Students in the Classroom, Pedagogy workshop, Princeton University, Spring 2021.

Robotics in Architecture Workshop, Princeton University, Summer 2020.

Performative Porosity: Volumetric Modelling for Building Envelopes, Graduate course by Prof. B. Dillenburger, and Dr. M. Bernhard from Digital Building Technologies at ETH Zurich, University of São Paulo, Nov. 2019 and Mar. 2020.

Patent Writing: Beyond the Guides, University of São Paulo, Spring 2018.

IASS Symposium 2018 Structural Morphology Workshop. Boston, 2018.

Online teaching and learning how to develop MOOCs, Workshop led by Prof. Barbara Oakley followed by the lecture “Learning how to learn”, 2017.

PEER REVIEW

Automation in Construction

PNAS (consultant to main reviewer)

PROFESSIONAL MEMBERSHIPS

International Association for Shell and Spatial Structures (IASS)

American Society of Civil Engineers (ASCE)

American Institute of Steel Construction (AISC)

Languages

English, Fluent

Portuguese, Native

Spanish, Advanced

French, Beginner