Riccardo Talami, PhD

Research Fellow in Building Performance Simulation and Optimization

National University of Singapore (NUS) and Singapore-ETH Centre

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Italian citizen and Singapore Permanent Resident (PR)

Bio

Riccardo specializes in developing cross-scale computational methods, workflows, and tools that transform performance-based building and urban design. His work empowers building and urban stakeholders to shape sustainable, comfortable, smart, efficient, flexible, and climate-resilient built environments.

Interests

- Sustainable and Integrated Building Design
- Performance-based Building and Urban Design
- Building Performance Simulation and Optimization
- Computational Design
- Artificial Intelligence
- Numerical Optimization
- Early-design Exploration
- Multi-criteria Decision Making
- Design Uncertainty and Robustness Analysis
- Smart Built Environments
- HVAC Systems Design and Controls
- Daylighting
- Indoor Environmental Quality

Education

2019 – 2022

Loughborough, United Kingdom

Doctor of Philosophy (PhD) in Building Science/Building Engineering (Building Performance Optimization)

Loughborough University, School of Architecture, Building and Civil Engineering

Thesis title: The sequential design optimization of building performance

Supervisors: Prof. Jonathan Wright and Dr. Bianca Howard

2014 - 2017

Venice, Italy and Berkeley, California

Master of Science in Architecture and Innovation (Sustainable Design)

University of California Berkely (UC Berkeley) and Università IUAV di Venezia (IUAV), Architecture and Innovation

Thesis title: Recent trends in radiant system technology for heating and cooling

Supervisors: Fred Bauman, PE (UC Berkeley), Prof. Piercarlo Romagnoni (IUAV) and Simone Cappelletti (STEAM Engineering)

2011 - 2014

Venice, Italy

Bachelor of Science in Architecture

Università IUAV di Venezia (IUAV), Architectural Science

Work Experience

- **Research Fellow** (2024 - current)
  Department of Architecture, College of Design and Engineering
  National University of Singapore - NUS and Singapore-ETH Centre (Singapore)
  Duties: Collaborating on research projects related to Early-design exploration, Multi-criteria Decision Making, Robust Building Design Optimization, Urban Building Energy Modelling, Building Design.

- **Research Fellow** (2023 - 2024)
  Department of the Built Environment, College of Design and Engineering
  National University of Singapore - NUS (Singapore)
  Duties: Led a team for research projects on Temperature Setpoints and Indoor Environmental Quality, and the development of online tools for practical applications. Collaborated on research projects related to Building Envelope Systems. Supervised final year students for research thesis and visiting scholars. Developed and published scientific papers. Managed the procurement for project expenses.

- **Doctoral Researcher** (2019 - 2022)
  School of Architecture, Building and Civil Engineering
  Loughborough University (Loughborough, United Kingdom)
  Duties: Researched on Building Performance Optimization. Developed and published scientific papers. Delivered lectures.

- **Co-Instructor and Teaching Assistant** (2017 - 2018)
  ASD - Architecture and Sustainable Design Pillar
  Singapore University of Technology and Design - SUTD (Singapore)

Duties: Developed coursework structure, teaching materials, and assignments. Delivered lectures, conducted weekly reviews and supervised final exams.

- **Research Assistant** (2017 - 2018)
  Design for Climate and Comfort Lab (DCC)
  Singapore University of Technology and Design - SUTD (Singapore)
  Duties: Developed and conducted independent research on Radiant Cooling Systems in the Tropics and Human Behaviour in office settings. Collaborated on research projects related to Daylighting in Buildings and Building Performance of Tropical Building Typologies. Developed and published scientific papers.

- **Student Researcher** (2016)
  Center for the Built Environment (CBE)
  University of California Berkely - UC Berkeley (United States)
  Duties: Researched on Radiant Cooling Systems, culminating in published scientific reports and the development of an online tool.

Associations and Memberships

- **Committee Member - Electronic Communications -** *International Building Performance Simulation Association* **(IBPSA-Singapore)** (2024 - Current)
- **Professional Committee Member** - *International Building Performance Simulation Association* **(IBPSA-Singapore)** (2024 - Current)
- **Student Member -** *International Building Performance Simulation Association* **(IBPSA-United Kingdom)** (2019 - 2022)

Core Skills

Transferrable Skills

- Excellent journal, conference paper, and technical report writing skills
- Ability to work in a team and independently
- Good presentation and communication skills (verbal and written)
- Ability to work in a multidisciplinary and multicultural environment
- Ability to work on several projects simultaneously, with clear deadlines and under pressure

Software and Technical

- Energy Analysis: Energy Plus (Conventional, Design Builder and Open Studio Interfaces), ArchSim and Honeybee plug-ins for Grasshopper
- Energy Certification: Master Clima 11300
- Solar and Environmental Analysis: Ecotect, Climate Consultant
- Daylight Analysis: Radiance (DIVA and Ladybug interfaces)

- Parametric Modeling: Rhinoceros/Grasshopper
- Statistics and Data Science: R
- Programming: Python, Java
- Environmental Sensors: HOBO products, DustTrak™ DRX Aerosol Monitor 8534, XL2 Audio and Acoustic Analyzer, VelociCalc Multi-Function Ventilation Meter 9565, RAE Systems ppbRAE 3000+ Portable Handheld VOC Monitor, Testo Luxmeter
- Microcontrollers: Raspberry Pi, Arduino
- Architecture/Engineering Drafting and Modeling: AutoCAD, ArchiCAD, Revit, SketchUp, Rhinoceros
- Graphic and Editing: Photoshop, Illustrator, InDesign
- General: Microsoft Office package

Certifications/Courses

- Certified Peer Reviewer Course from Elsevier, January 8-9, 2020
- Grasshopper Level 1 course from McNeel, 12 hours, January 25-29, 2021
- Grasshopper Level 2 course from McNeel, 18 hours, January 25-29, 2021

Languages

- English: Full Professional Proficiency
- Italian: Native Proficiency
- French: Elementary Proficiency
- Spanish: Elementary Proficiency

Awards

- **UK Engineering and Physical Sciences Research Council Scholarship**, Engineering and Physical Sciences Research Council (2019 - 2022)
- **Winner of Best Poster Award** for “Subjective and Measured Evidence for Residential Lighting Metrics in the Tropics” (in collaboration with Jakubiec, J. Alstan; Srisamranrungruang, Thanyalak; Kong, Zhe; Quek, Geraldine), 16th International IBPSA Conference (2019).

Publications

Journal papers: 5, Conference papers: 4, Reports: 1, Thesis: 2.

Publications are available at: https://scholar.google.com/citations?user=EmFyzowAAAAJ&hl=en.

Upcoming publications: Undergoing peer-review: 4, In process/Writing-up: 5