Miguel Masó, PhD

miguel.maso@upc.edu +34 717 712 217 Chartered Civil Engineer, Nº 36285

City: Barcelona (08006) Birth date: 9/4/1989 ORCID: 0000-0003-0962-8550

Employment history

2025 - … **International Centre for Numerical Methods in Engineering (CIMNE)**
Postdoctoral researcher

2022 - … **Universitat Politècnica de Catalunya (UPC)** - Barcelona School of Civil Engineering
Adjunct lecturer

2022 - 2025 **SOCOTEC Spain** - Buildings and cities
Specialist Engineer, Head of Development and Innovation

2017 - 2022 **International Centre for Numerical Methods in Engineering (CIMNE)**
PhD Candidate (FPI Fellowship)

Education

2017 - 2022 **PhD in Civil Engineering**
UPC, Barcelona, Spain

2013 - 2015 **Bachelor's degree in Philosophy and Theology**
Pontificia Universtià della Santa Croce, Rome, Italy

2007 - 2013 **Ingeniero de Caminos, Canales y Puertos** (equivalent to MSc in Civil Engineering)
UPC, Barcelona, Spain

Languages

Spanish (native) - Catalan (Native) - English (C1) - Italian (B1)

CV Summary

After studying civil engineering and a period studying philosophy and theology in Rome, he began a doctorate in civil engineering at CIMNE. During the initial years of his doctoral studies, he combined research with work for social purposes at the Montseny Foundation.

During his research period at CIMNE, he worked on the stabilization of finite elements for the hyperbolic differential equations, focusing on numerical implementation, multi-physics coupling, and multi-scale resolution. These developments have been successfully applied to various projects. In addition to the finite element stabilization, he also researched on the particle finite element method, using both moving mesh and fixed meshes.

After three-year working in the structural engineering consultancy at SOCOTEC, he returned to academia as a postdoctoral researcher.

Publications

Journal papers

Montanino, Andrea, Miguel Masó Sotomayor, and Alessandro Franci (2025). "One-way coupled Eulerian–Lagrangian strategy for wave propagation and impact on coastal areas". In: *Communications in Nonlinear Science and Numerical Simulation* 147, p. 108845. ISSN: 1007-5704. DOI: https://doi.org/10.1016/j.cnsns.2025.108845.

De-Pouplana, Ignasi et al. (2023). "A prototype of a micro-scale model for the distribution of NO2 in urban areas". In: *Atmospheric Pollution Research* 14.2, p. 101668. ISSN: 1309-1042. DOI: 10.1016/j.apr.2023.101668.

Masó, Miguel, Alessandro Franci, et al. (July 2022). "A Lagrangian-Eulerian procedure for the coupled solution of the Navier-Stokes and shallow water equations for landslide-generated waves". In: *Advanced Modeling and Simulation in Engineering Sciences*, pp. 2213–7467. DOI: 10.1186/s40323-022-00225-9.

Masó, Miguel, Ignasi De-Pouplana, and Eugenio Oñate (Feb. 2022). "A FIC-FEM procedure for the shallow water equations over partially wet domains". In: *Computer Methods in Applied Mechanics and Engineering* 389, p. 114362. DOI: 10.1016/j.cma.2021.114362.

Puigferrat, A. et al. (July 2021). "Semi-Lagrangian formulation for the advection-diffusion-absorption equation". In: *Computer Methods in Applied Mechanics and Engineering* 380, 113807:1–113807:26. DOI: 10.1016/j.cma.2021.113807.

Theses

Masó, M. (2022). "Coupling shallow water models with three-dimensional models for the study of fluid-structure interaction problems using the particle finite element method". Universitat Politècnica de Catalunya.

Conferences

Maso, M., A. Franci, et al. (2022a). "A one-way coupled Lagrangian-Eulerian procedure for the solution of landslide-generated waves". In: *WCCM APCOM - 15th World Congress on Computation Mecchanics & 8th Asian Pacific Congress on Computation Mechanics*. Yokohama, Japan (Virtual).

Maso, M., A. Franci, et al. (2022b). "Un Procedimiento Lagrangiano-Euleriano para la Solución Acoplada de las Ecuaciones de Navier-Stokes y Aguas Poco Profundas para Olas Generadas por Deslizamientos de Laderas". In: *CMN XV - Congress on Numerical Methods Engineering*. Las Palmas de Gran Canaria, Spain.

Maso, M., I. De-Pouplana, and E. Oñate (2019). "Coupling shallow water models with 3D models for the study of fluid-structure interaction problems using the particle finite element method". In: *Particles 2019 - VI International Conference on Particle-based Methods*. Barcelona, Spain.

Stays and other activities

Visiting researcher, Centro de Investigación en Matemáticas. Purpose: Research. Comparable tasks: WP3 of project TCAiNMaND-PIRSES-GA-2013-612607 Numerical Methods for Real

Time Computations Research on stabilized formulations the Finite Element Method applied to hyperbolic conservation laws. 18/07/2017 - 19/10/2017.

Teaching activities

2022 - …   **Structural Dynamics.** Credits: 7'5. Degree: Master's degree in Structural & Construction Engineering. UPC.

2022 - 2022   **Structural Analysis.** Credits: 7'5. Degree: Master's degree in Civil Engineering. UPC.

2017 - 2017   **Numerical Methods.** Credits: 6. Degree: Bachelor's degree in Materials Engineering. UPC.

Participation in R+D+i projects

(*2021 SGR 01349*) *Mecànica de Medis Continus i Estructures*
Financing entity: AGAUR. Agència de Gestió d'Ajuts Universitaris i de Recerca
From: 01/01/2022 To: 30/06/2025
PI: Cervera Ruiz, Luis Miguel

(*DPI2015-67857-R*) *Proyectos de I+D: Retos de la Sociedad 2015*
Financing entity: MINECO
From: 01/01/2016 To: 31/12/2018
PI: Codina, Ramon; Baiges, Joan

(*FP7- 612607*) *FP7-PEOPLE-2013-IRSES*
Financing entity: EC
From: 01/01/2014 To: 31/12/2017
PI: Larese de Tetto, Antonia

Divulgation activities

Subject: Sostenibilidad de las estructuras. Criterios para la descarbonización.
Promoting entity: Asociación de Consultores de Estructuras (ACE)
Organizing entity: Fundació Privada Institut d'Estudis Estructurals
Dates: 16/10/2024 - 13/11/2024

Participation in industry projects

New Velindre Cancer Centre, Cardiff (2022-2025) SACYR
Structural design; Robustness assessment against disproportional collapse; Vibration assessment for isolation of medical equipment.

Shushah Island Resort, Stage 3 (2022-2024) RBTA
Structural design.

Étude de mode de ruine de six bâtiments industriels (2023) SOCOTEC-France
CFD analysis of fire; Structural analysis of thermo-plastic deformations.

Anàlisi de patologia de la cúpula de la sala capitular del monestir de Pedralbes (2023) ICUB
Forensic analysis of crack propagation.

Mercury Tower, Malta (2024) Zaha Hadid
Vibration assessment on serviceability limits for a flying theatre.

Proposta correctiva a la cúpula de la sala capitular del monestir de Pedralbes (2024) ICUB
Structural design.

Hotel Puerto Málaga (2024) b720
Structural analysis; Deep foundation design.

Bridges on new Genome Campus, Hinxton (2025) Evolve
Revision and assessment of structural design.

Residencial Torre Garellano (2025) Arup
CFD Analysis of wind loads on facade.

BIM developments internal project (2023-2025) SOCOTEC-Spain
Interconnectivity and automation processes of BIM modelling from calculation models.

BIM developments (2025) Hormipresa
Development of an automated process for reviewing lifting assemblies.

Miscellaneous

- **Skills:** Computational Mechanics, Fire Engineering, Ocean Engineering, Vibration Assessment
- **Programming:** C++, Python, Julia, C#, .NET, Git
- **Tools:** Robot Structural Analysis API, Revit API
- **Miscellaneous:** ENVISION Sustainability Professional 2023-2024