

José Marín Fariña

Project Research Associate — CoMMLab, Computational Multiscale Simulation Lab, Universitat de València

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PROFILE

Mathematician specializing in artificial intelligence for hemodynamics prediction at CoMMLab, the computational multiscale simulation lab of the Universitat de València. I develop deep-learning surrogates for cardiovascular flow simulation and the open-source tooling that makes complex scientific data legible — including **SciBlend** and **SciGraphs**, two official Blender extensions. My work is published in international peer-reviewed venues and presented regularly at scientific and industry conferences. Almost ten years of Blender expertise, four of them as a freelance 3D artist for over 100 international clients.

EXPERIENCE

Project Research Associate — CoMMLab, Dept. d'Informàtica, Universitat de València Oct 2025 — present

- Deep-learning surrogate models for aortic hemodynamics, predicting wall shear stress, pressure and velocity fields directly from vascular geometry as a fast alternative to computational fluid dynamics.
- Neural operators used to warm-start Navier–Stokes solvers, aimed at accelerating clinical in-silico trials.
- Design and development of the group's scientific visualization stack — SciBlend, SciGraphs and ParaView macros — and automation of OpenFOAM simulation pipelines on HPC clusters.
- Mentor of an artist collective producing outreach work around the group's research line.

Research Intern — CoMMLab, Universitat de València Jul 2024 — Oct 2025

Extracurricular (200 h, Jul 2024) and curricular (180 h, Oct–Dec 2024, graded 10.0/10.0) internships, followed by a formative traineeship from Jan to Oct 2025. Supervisor: Prof. Ignacio García-Fernández.

- Built **SciBlend**, bridging ParaView and Blender for publication-quality visualization of scientific data.
- Developed a Flask + React + Three.js web application to launch parallel OpenFOAM simulations on aortic geometries with a job-queue and semaphore system.

Freelance 3D Designer & Creative Director — Self-employed May 2019 — Aug 2022

Four years of 3D design, rendering and art direction for more than 100 international clients.

PARTICIPATION IN FUNDED PROJECTS & INDUSTRY CONTRACTS

iTools4Cardio — Intelligent tools for personalized medicine and in-silico trials in cardiology Oct 2025 — present

Spanish Ministry of Science, Innovation and Universities, PID2023-148702OB-I00. PI: Prof. Ignacio García-Fernández.

Digital twins for bioreactors using computational fluid dynamics Dec 2025 — present

Industry contract (Art. 60 LOSU) with AGROTAN NATURA S.L. PI: Prof. Ignacio García-Fernández.

Computational modeling for human-factor-centered digital twins Oct 2025 — present

Industry contract (Art. 60 LOSU) with the Institute of Biomechanics of Valencia (IBV). PI: Prof. Ignacio García-Fernández.

Residir en la Investigación — 3rd edition, Vice-Rectorate for Culture and Society, UV Jan 2026 — present

Fluid simulation for hemodynamic analysis; mentor of an artist collective creating work for public engagement with the research line. PI: Prof. Ignacio García-Fernández.

EDUCATION

MSc in Data Science — Universitat Oberta de Catalunya 2026

GPA 9.3/10. Two *Matrícula de Honor* distinctions — Data Visualization, and Geospatial Data Analysis.

BSc in Mathematics — Universitat de València 2025

Final-year thesis: *Deep Learning-Based Prediction of Wall Shear Stress from Thoracic Aorta Geometry* — graded **9.8/10**. Supervisor: Prof. Ignacio García-Fernández.

PUBLICATIONS

- J. Marín**, I. Marín, I. García-Fernández. “Visualization and Analysis of Graphs with SciGraphs”. *The Eurographics Association*, 2026. doi:10.2312/ceig.20261030 **FIRST AUTHOR**
- J. Marín**, T. M. G. Baptiste, C. Rodero, S. E. Williams, S. A. Niederer, I. García-Fernández. “SciBlend: Advanced data visualization workflows within Blender”. *Computers & Graphics* 130 (2025) 104264. doi:10.1016/j.cag.2025.104264 **FIRST AUTHOR · JCR**
- J. Marín**, I. Marín. “Extreme graph simplification applied to functional discovery in biological networks”. *PLOS Computational Biology* — PCOMPBIOL-D-26-01766. **FIRST AUTHOR** **UNDER REVIEW**

TALKS & CONFERENCES

Blender Conference 2026 — Amsterdam, Netherlands 24 Sep 2026

Graph Visualization and Analysis with SciGraphs — 50-minute talk, Classroom track. **ACCEPTED · SPEAKER**

CinC 2026 — Computing in Cardiology, Madrid, Spain	20–23 Sep 2026
<i>Shape-Driven Surrogate Modeling of Thoracic Aortic Hemodynamics</i> — with A. Bayón, F. Martínez-Gil, P. Romero, A. Liberos, M. Lozano, I. García-Fernández. ACCEPTED · SPEAKER	
VPH 2026 — 9th Int. Conf. on the Virtual Physiological Human, Milan, Italy	1–4 Sep 2026
<i>Predicting Hemodynamics from Aortic Geometry</i> — with A. Bayón, F. Martínez-Gil, P. Romero, M. Lozano, I. García-Fernández. ACCEPTED · SPEAKER	
CEDYA / CMA 2026 — Spanish Congress on Differential Equations and Applied Mathematics	10 Jul 2026
<i>Neural Operators Predicted Warm-Start for Navier–Stokes Solvers in Clinical In-Silico Trials</i> SPEAKER	
CEIG 2026 — Spanish Computer Graphics Conference	2 Jun 2026
<i>Visualization and Analysis of Graphs with SciGraphs</i> — with I. Marín and I. García-Fernández. SPEAKER	
Blender Conference 2025 — Amsterdam, Netherlands · Theater track	19 Sep 2025
<i>SciBlend: Advanced Data Visualization Workflows</i> SPEAKER	
CEIG 2025 — XXXIV Spanish Computer Graphics Conference, Jaén	2–4 Jun 2025
<i>SciBlend: Advanced Data Visualization Workflows within Blender</i> SPEAKER	
vHearts 2025 — Valencia	2025
Two posters: <i>SciBlend: Advanced Data Visualization Workflows within Blender</i> and <i>Deep Learning-Based Prediction of Wall Shear Stress from Thoracic Aorta Geometry</i>	
CASEIB 2025 — Spanish Society of Biomedical Engineering, Zaragoza	2025
Poster: <i>Deep Learning-Based Prediction of Wall Shear Stress from Thoracic Aorta Geometry</i>	

OPEN-SOURCE SOFTWARE

SciBlend — official Blender Extension · GPL-3.0 · extensions.blender.org/add-ons/sciblend
Python toolkit extending Blender for scientific visualization: import of non-native formats (VTK, netCDF, Shapefile), shader and legend generation, coordinate grids, annotation and compositing, with Cycles and real-time EEVEE rendering of large time-varying data. Cross-platform; peer-reviewed in Computers & Graphics; doi:10.5281/zenodo.15420392.
BasicSpanner — MIT · github.com/josemarinfarina/BasicSpanner
Interactive C++/Qt6 desktop application for extreme graph simplification. Given a set of seed nodes it computes the <i>basic network</i> : a strict graph spanner holding the seeds plus the minimal set of connectors needed to preserve the distances between them, with multi-threaded permutation testing, real-time reporting and an interactive visualization panel. Windows and Linux builds. Reference implementation for the manuscript under review at PLOS Computational Biology.
SciGraphs — official Blender Extension · extensions.blender.org/add-ons/scigraphs
Import, analysis, styling and rendering of graphs inside Blender: layouts, centrality metrics, community detection, geospatial data, sparse matrices and Geometry Nodes, plus VR immersive visualization and LLM-assisted scene generation.

TECHNICAL SKILLS

Programming	Python (advanced), C++, JavaScript/React, MATLAB, Qt/PyQt, Flask, Three.js
Data science	Deep-learning surrogates (U-Net, neural operators), statistical shape models, geospatial data analysis, data visualization
Simulation	OpenFOAM, CFD post-processing, cardiac electrophysiology data, HPC job automation and scheduling
Visualization	Blender Python API & Geometry Nodes, Cycles/EEVEE, ParaView (macros), VTK, VR pipelines
Modeling	Computational anatomy from medical imaging, CAD and parametric models; Cinema 4D, ZBrush, Marvelous Designer/Clo, Daz Studio
Languages	Spanish — native · Valencian — C1 (JQCV) · English — B1 certified; regular speaker at international conferences in English

RECOGNITION

- **SciBlend** and **SciGraphs** are published as **official Blender Extensions** (macOS, Windows and Linux), released as open source.
- Speaker at the **Blender Conference two consecutive years** (Amsterdam 2025 and 2026).
- Published research in collaboration with **King's College London**, **Imperial College London**, the **University of Edinburgh**, **Karolinska Institutet**, the **Alan Turing Institute**, the **Spanish National Research Council (CSIC)** and the **Universitat Politècnica de València**.