José María Pizana García

Physics Simulation & Computer Graphics Research Engineer
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- R&D for industrial cloth and robotics simulation engines.
- Digital twins and real2sim system identification, closing the sim-to-real gap.
- Developed video games and their engines.
- PhD in cloth simulation, with first-author papers in relevant venues (TVCG, CGF).

WORK EXPERIENCE

SceniX — May 2025 – Jul 2026 (Remote)

R&D Engineer
SceniX, Madrid, Spain
C++, CUDA, Python, Mechanics Simulation, Robotics, MuJoCo, Digital Twins
- Built a GPU-accelerated cloth simulation engine, with intersection-free contact handling and Python bindings.
- Calibrated the cloth simulator to captured fabric data through a system-identification pipeline.
- Engineered a MuJoCo robot motion stack, bridging low-level control with high-level robot commands.
- Developed a second system-identification pipeline to align simulation with physical robots, closing the sim-to-real gap to sub-millimeter on benchmark motions.

SEDDI — Sep 2019 – May 2024 (Remote since May 2023)

R&D Engineer
SEDDI, Madrid, Spain
C++, CUDA, Python, Mechanics Simulation, Digital Twins
- Researched a novel, robust yarn-level cloth bending method and implemented it (CPU and GPU) in a production engine.
- Developed core parts of a surface-level cloth simulation engine, spanning numerical solving, materials, and collisions with a special focus on robustness.
- Characterized physical fabrics by fitting the simulator's material model to lab measurements.
- Optimized critical algorithms and data structures, speeding up full-garment drapes by more than two orders of magnitude.

Universidad Rey Juan Carlos — Jan 2023 – Jun 2024

Master's Thesis Supervisor
King Juan Carlos University (URJC), Madrid, Spain
C++, WebAssembly, WebGPU
- Supervised a student building a real-time cloth simulation engine in C++/ WebAssembly on WebGPU.

Universidad Rey Juan Carlos — Nov 2018 – Jul 2019

Research Assistant
King Juan Carlos University (URJC), Madrid, Spain
Unity3D, C++, OpenGL, Matlab, CUDA
- Researched yarn-level cloth simulation, prototyping in Matlab and Unity before integration in a production engine in C++.

WILDFRAME — Dec 2017 – Apr 2018

Game Programmer
Wildframe Media, Valencia, Spain
Unity3D, C++ Game Engine, C#, Adobe Audition, Adobe Photoshop
- Developed an interface-intensive painting game in Unity.
- Ported a strategy game to Universal Windows Platform on a custom C++ engine.

init — Mar 2017 – Nov 2017

Game Programmer
Institute of New Imaging Technologies (INIT), Castellón, Spain
Unity3D, C#, 3DS Max, Virtual Reality
- Developed VR applications for a professional trade show and for design and UX research.
- Developed a proof-of-concept competitive VR game.
- Researched custom lightmapping performance.

EDUCATION

Sep 2019 – Jul 2024 (Remote)

PhD in High Fidelity Cloth Simulation

King Juan Carlos University, Madrid, Spain
Cum Laude & Industrial Doctorate Mentions
Thesis: High Fidelity Cloth Simulation in Production Environments
Directors: Gabriel Cirio, Miguel A. Otaduy

Sep 2018 – Sep 2019

Master's Degree in Computer Graphics, Video Games and VR

King Juan Carlos University, Madrid, Spain
Grade: 9.51 / 10

Sep 2014 – Jul 2018

Degree in Video Game Design & Development

Jaume I University, Castellón, Spain
Grade: 8.04 / 10

Sep 2012 – Jul 2014

Physics Degree

University of Valencia, Valencia, Spain
First and second year

PUBLICATIONS & COMMUNICATIONS

July 2024

Seeking Efficiency for the Accurate Draping of Digital Garments in Production

José María Pizana, Gabriel Cirio, Alicia Nicas, Alejandro Rodríguez
Journal Article, IEEE Transactions on Visualization and Computer Graphics

October 2022

Towards Cloth Digital Twins

José M. Pizana
Scientific Presentation, Graphyz2

Oct & Nov 2020

A Bending Model for Nodal Discretizations of Yarn-Level Cloth

José María Pizana, Alejandro Rodríguez, Gabriel Cirio, Miguel A. Otaduy
Journal Article, Computer Graphics Forum
Scientific Presentation, Symposium on Computer Animation 2020

July 2017

Realistic Scene Generation Methods for Virtual Reality

José M. Pizana, Cristina Gasch, Inmaculada Remolar
Congress Poster, CEIG 2017 - Spanish Computer Graphics Congress

AWARDS

June 2019

Master's Degree Advanced Rendering Contest Winner

King Juan Carlos University, Madrid
Judges: Marcos Fajardo (Solid Angle), Matt Chiang (WDAS), Jorge Jiménez (Activision)
Link to diploma

PROFESSIONAL TOOLS, SKILLS AND INTERESTS

Languages	C++, Python, C#
Frameworks	Eigen, Numpy, Embree, TBB
HPC / Graphics	CUDA, OpenGL, GLSL, HLSL, Vulkan
Game Engines	Unity, Godot, Custom Engines

OTHER SKILLS AND PERSONAL INTERESTS

Organizational and Social

- Class delegate: Video Games Degree | 2014 - 2016
- Tabletop RPG game master: casual and workplace groups | since 2009

Creative Skills

- Image and Video Editing: personal and scientific projects | since 2014
- Theater: Shoah and las Peras del Olmo groups, Elche, Spain | 2010 - 2012

LANGUAGES

Spanish: Native • **Catalan**: Native • **English**: Fluent