José María Pizana García

Ph. D. in Mechanics Simulation

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- ✧ Worked on research and development of industrial simulation engines, as well as developing game engines.
- ✧ Strong mathematical and physics background.
- ✧ Strong social skills developed from more than a decade of directing role playing games and acting experience.

WORK EXPERIENCE

Sep. 2019 - May 2024

(Remote since May 2023)

R&D Engineer
SEDDI, Madrid, Spain
C++, CUDA, Python, Mechanics Simulation
- ✧ Researched a novel yarn-level cloth simulation bending method with increased robustness. Implemented it on a production simulation engine both in CPU and GPU.
- ✧ Contributed to the development of a surface-level cloth simulation engine in topics such as numerical solving, simulation materials and collisions.
- ✧ Optimized and analyzed critical algorithms and data structures related to said simulation engine, resulting in more than two orders of magnitude of improvement in performance over the initial implementation. This resulted in greater robustness and realism, allowing users to accurately predict drape.

Jan. 2023 - June 2024

Master Thesis Tutor
Rey Juan Carlos University (URJC), Madrid, Spain
C++, WebAssembly, WebGPU
- ✧ Led a student on the development of a real-time cloth simulation engine on WebGPU using C++ through WebAssembly.

Nov. 2018 - July 2019

Research Assistant
Rey Juan Carlos University (URJC), Madrid, Spain
Unity3D, C++, OpenGL, Matlab, CUDA
- ✧ Researched about yarn-level cloth simulation techniques, first using fast-iteration engines and tools such as Matlab and Unity, and then a production simulation engine in C++ and CUDA.

Dec. 2017 - Apr. 2018

Game Programmer
Wildframe Media, Valencia, Spain
Unity3D, C++ Game Engine, C#, Adobe Audition, Adobe Photoshop
- ✧ Participated in the development of an interface-intensive painting game in Unity.
- ✧ Carried out the porting to Universal Windows Platform of a strategy game in a custom game engine in C++.

Mar. 2017 - Nov. 2017

Game Programmer
Universitary Institute of New Imaging Technologies (INIT), Castellón, Spain
Serious Games, Unity3D, 3DS Max, Virtual Reality, Visual Realism, Optimization
- ✧ Developed VR applications for a professional trade show as well as for research related to design and user experience..
- ✧ Developed a small, competitive VR game.
- ✧ Researched about custom lightmapping performance.

EDUCATION

Sep. 2019 - July 2024

(Remote)

Ph. D. in Mechanics Simulation
SEDDI, Madrid, Spain
Cum Laude & Industrial Mentions
Thesis: High Performance Cloth Simulation in Production Environments
Directors: Gabriel Cirio, Miguel A. Otaduy

URJC
Sep. 2018 - Sep. 2019

Master's Degree in Computer Graphics, Video Games and VR
Rey Juan Carlos University, Móstoles, Spain
Grade: 9.51 / 10
Subjects with honors: Advanced Animation and Simulation, Advanced Rendering, Computer Animation, Virtual Reality and Interaction, Seminars and Training Complements

UJI
Sep. 2014 - Jul. 2018

Degree in Video Game Design & Development
Jaume I University, Castellón
Grade: 8.04 / 10
Subjects with honors: Algorithms and Data Structures, Operating Systems, Computer Technology, Basic Computing

PUBLICATIONS & COMMUNICATIONS

July 2024

High Performance Cloth Simulation in Production Environments
José M. Pizana
PhD Thesis, Rey Juan Carlos University

July 2024

Seeking Efficiency for the Accurate Draping of Digital Garments in Production
José M. Pizana, Gabriel Cirio, Alicia Nicas, Alejandro Rodríguez
Journal Article, IEEE Transactions on Visualization and Computer Graphics

Oct. 2022

Towards Cloth Digital Twins
José M. Pizana
Scientific Presentation, Graphyz2

Oct. 2020 & Nov. 2020

A Bending Model for Nodal Discretizations of Yarn-Level Cloth
José M. 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
Rey Juan Carlos University, Madrid
Judges: Marcos Fajardo (Solid Angle), Matt Chiang (WDAS), Jorge Jiménez (Activision)
Link to diploma

PROFESSIONAL TOOLS, SKILLS AND INTERESTS

Tools	Visual Studio, VS Code, QTCreator, Matlab
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
- ✧ Role Playing games director: both in friendly and professional circles | since 2009

Creative Skills
- ✧ Image and Video Editing: personal and scientific projects | 2014 - 2024
- ✧ Theater: Shoah and las Peras del Olmo groups, Elche, Spain | 2010 - 2012