WORK EXPERIENCE

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| 2022 – Now | Senior Scientist SEDDI Inc C++, OpenGL, Python, PyTorch   * Implemented state-of-the-art methods to generate personalized avatars using statistical models. * Refactored the avatar generation pipeline for maintainability while honoring best design practices. * Optimized critical data structures to enable vectorization, resulting in up to 10x performance boost. * Improved robustness and realism of real-time cloth simulation engine. |
| 2021 – 2022 | Research Engineer Meta Reality Labs Research C++, CUDA   * Implemented robust interactive soft-body simulation leveraging SIMD for superior performance. * Added seamless support for CPU and GPU solvers through template metaprogramming. |
| 2020 | Research Intern Meta Reality Labs Research C++, CUDA   * Prototyped GPU-accelerated finite element analysis with significant boost over CPU baseline. |
| 2015 – 2021 | Student Researcher Universidad Rey Juan Carlos C++, C#, CUDA, Direct Compute, Unity   * Developed a novel constraint-based formulation for simulating viscous and viscoelastic fluids. * Devised novel strategies for driving ultrasonic haptic devices for interacting with virtual fluids. * Engaged in reading seminars to explore and discuss the advancements in computer graphics research. * Collaborated on the production of papers and demos, ensuring to meet project deadlines. |
| 2020 | Research Intern Ultraleap Ltd C++, Python   * Integrated a model to predict the effects of ultrasonic focal points in virtual skin phantom. |
| 2017 – 2018 | Student Researcher AnyVerse Python   * Explored machine learning methods to infer the time evolution of fluid dynamic states. * Funded by Spain’s government under the *Doctorados Industriales* program (*ref. DI-16-08640*). |
| 2013 – 2015 | Junior Programmer IRTIC C#, Unity   * Ported training simulator for cargo handling in port operations to Unity. * Developed Augmented Reality interactive applications and demos using Unity and Vuforia. |

EDUCATION

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| 2016 – 2021 | Ph.D. in Computer Science Universidad Rey Juan Carlos   * Obtained Best Doctoral Thesis Award by the Spanish Section of Eurographics. |
| 2015 – 2016 | M.Sc. in CG, Videogames and VR Universidad Rey Juan Carlos   * Rendering techniques, GPGPU, physics-based simulation, geometry processing, videogames, VR... |
| 2010 – 2015 | B.Sc. in Multimedia Engineering Universitat de València   * Computer engineering & multimedia systems (graphics, simulation, sound, ...). |

PUBLICATIONS

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| 2021 | Soft-Tissue Simulation for Comp. Planning of Orthognathic Surgery Journal of Personalized Medicine, 2021 |
| 2021 | Natural Tactile Interaction with Virtual Clay IEEE World Haptics Conference, 2021 |
| 2020 | Robust Eulerian-on-Lagrangian Rods ACM Trans. on Graphics, 2020 |
| 2020 | Path Routing Optimization for STM Ultrasound Rendering IEEE Trans. on Haptics, 2020 |
| 2019 | Ultrasound Rendering of Tactile Interaction with Fluids IEEE World Haptics Conference, 2019 |
| 2017 | Conformation Constraints for Efficient Viscoelastic Fluid Simulation ACM Trans. on Graphics, 2017 |
| 2015 | Real-time Inextensible Hair with Volume and Shape CEIG, 2015 |

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| CERTIFICATIONS   |  | | --- | | Machine Learning  Stanford Online @ Coursera | | Neural Networks and Deep Learning  Deeplearning.ai @ Coursera | | Improving Deep Neural Networks: Hyperparameter tuning  Deeplearning.ai @ Coursera | | PROFESSIONAL INTERESTS   |  |  |  | | --- | --- | --- | | Rocket with solid fill  Mechanical simulation | Hill scene with solid fill  Real-time rendering | Gauge with solid fill  High-perf. computing | | Artificial Intelligence with solid fill  Machine learning | Virtual Reality headset with solid fill  Mixed reality  (AR & VR) | Touchscreen with solid fill  Haptic rendering | | OTHER SKILLS AND PERSONAL INTERESTS   |  |  | | --- | --- | | Tools | Visual Studio, VS Code | | Frameworks | Eigen, PyTorch, Numpy, Sympy | | HPC | CUDA, OpenCL, OpenGL, GLSL, HLSL | | Game Engines | Unity, Godot | | Hobbies & Interests | Single player videogames, travelling, trying out new food, comedy shows, petting dogs, naps | |