Jose Luis **Ponton**

Ph.D. Student · Character Animation · XR · Computer Graphics

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Education

Universitat Politècnica de Catalunya *Barcelona, Spain*
Ph.D. in Computing *Dec. 2022 - Present*

- Researching and developing deep learning-based tools to advance human motion understanding and provide high-quality avatar motion in VR applications.
- Supervisors: Nuria Pelechano and Carlos Andujar.
- Awarded a Ph.D. scholarship FPU 2021 (code FPU21/01927) from the Spanish Administration.

Universitat Politècnica de Catalunya *Barcelona, Spain*
M.Sc. in Innovation and Research in Informatics *Sep. 2020 - Jul. 2022*

- Grade: 9.15/10.00
- Specialization in Computer Graphics and Virtual Reality
- Thesis: Motion Matching for Character Animation and Virtual Reality Avatars in Unity

Universitat Politècnica de Catalunya *Barcelona, Spain*
B.S. in Computer Science and Engineering *Sep. 2016 - Jul. 2020*

- Grade: 9.03/10.00 (Rank 3 of 239).
- Thesis: Navigation and collaboration techniques for Virtual Reality.

Experience

Hyper Online (Y Combinator startup) *(Remote) San Francisco, California, USA*
Freelance *Feb. 2024 - Jan. 2025*

- Designed and developed the computer vision-based motion capture pipeline for Hyper's desktop application. Integration and post-processing of computer vision-based pose, hand and face tracking techniques, and retargeting to skeletal and blend shapes models.
- Designed and implemented AI models for audio-to-blendshapes.

Max Planck Institute for Informatics *Saarbrücken, Germany*
Research Intern *May. 2024 - Jul. 2024*

- Researched deep learning-based motion synthesis from insole sensor data.
- Supervisor: Prof. Dr. Christian Theobalt.

CYENS Centre of Excellence *Nicosia, Cyprus*
Research Intern *Jul. 2022 - Sep. 2022*

- Researched deep learning for data-driven character animation from sparse input data.
- Supervisor: Dr. Andreas Aristidou.

Universitat Politècnica de Catalunya *Barcelona, Spain*
Researcher *Apr. 2019 - Nov. 2022*

- Researched real-time motion synthesis for character animation and VR avatars: Deep Learning, Motion Matching, IK and Motion Capture.
- Developed an open-source Unity package to easily integrate VR self-avatars to any application. https://github.com/UPC-ViRVIG/AvatarGo
- Developed collaborative VR and AR tools for visualizing and interacting with architectural designs.

Skills

Programming	Python, C#, C++, LaTeX, R, CUDA, GLSL/HLSL
Game Engines/Libraries/SW	Unity, PyTorch, Blender, Git, VR, AR, Mediapipe
Languages	English, Spanish, Catalan

Selected Publications

DragPoser: Motion Reconstruction from Variable Sparse Tracking Signals via Latent Space Optimization
Jose Luis Ponton, Eduard Pujol, Andreas Aristidou, Carlos Andujar, Nuria Pelechano
Eurographics 2025. May. 2025. London, UK.
Computer Graphics Forum (10.1111/cgf.70026).

Stretch your reach: Studying Self-Avatar and Controller Misalignment in Virtual Reality Interaction
Jose Luis Ponton, Reza Keshavarz, Alejandro Beacco, Nuria Pelechano
CHI conference on Human Factors in Computing Systems. May. 2024. Hawaii, USA. (10.1145/3613904.3642268)

Exploring the Role of Expected Collision Feedback in Crowded Virtual Environments
Haoran Yun, Jose Luis Ponton, Alejandro Beacco, Carlos Andujar, Nuria Pelechano
31th IEEE Conference on Virtual Reality and 3D User Interfaces. Mar. 2024. Orlando, USA. (10.1109/VR58804.2024.00068)

SparsePoser: Real-time Full-body Motion Reconstruction from Sparse Data
Jose Luis Ponton, Haoran Yun, Andreas Aristidou, Carlos Andujar, Nuria Pelechano
SIGGRAPH Asia 2023. Dec. 2023. Sydney. Australia.
ACM Transactions on Graphics (10.1145/3625264).

Fitted avatars: automatic skeleton adjustment for self-avatars in virtual reality
Jose Luis Ponton, Víctor Ceballos, Lesly Acosta, Alejandro Ríos, Eva Monclús, Nuria Pelechano
Virtual Reality. Springer. Jul. 2023. (10.1007/s10055-023-00821-z)

Animation Fidelity in Self-Avatars: Impact on User Performance and Sense of Agency
Haoran Yun, Jose Luis Ponton, Carlos Andujar, Nuria Pelechano
30th IEEE Conference on Virtual Reality and 3D User Interfaces. Mar. 2023. Shanghai, China. (10.1109/VR55154.2023.00044)

Combining Motion Matching and Orientation Prediction to Animate Avatars for Consumer-Grade VR Devices
Jose Luis Ponton, Haoran Yun, Carlos Andujar, Nuria Pelechano
ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA). Sep. 2022. Durham, United Kingdom.
Computer Graphics Forum (10.1111/cgf.14628).

AvatarGo: Plug and Play self-avatars for VR
Jose Luis Ponton, Eva Monclus, Nuria Pelechano
Eurographics 2022 - Short Papers. May. 2022. Reims, France. (10.2312/egs.20221037).

Selected Projects

Please, visit my website for a complete list of my projects: https://joseluisponton.com/projects

Motion Matching (over 400 stars on GitHub)
Motion Matching implementation for the Unity game engine. It includes a spring-based character controller, BVH-accelerated search, inertialization blending, automatic and customizable feature extraction/selection, foot lock, tags, among other features.
https://github.com/JLPM22/MotionMatching

PyMotion
Python library for manipulating and processing motion data in NumPy or PyTorch. It is designed to facilitate the development of neural networks for character animation. Features: quaternion operations and conversions to other rotation representations; dual quaternions; BVH importer/exporter; skeletal operations such as forward kinematics. https://github.com/UPC-ViRVIG/pymotion