Julio Marco

Assistant Professor

Universidad de Zaragoza
Department of Computer Science and Systems Engineering
Graphics & Imaging Lab

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Summary

I am an Associate Professor at Departamento de Informática e Ingeniería de Sistemas at Universidad de Zaragoza, Spain. I am also a member of the Graphics and Imaging Lab. I graduated in Informatics Engineering in December 2013, and obtained my PhD in Informatics and Systems Engineering in October 2018. My research focuses on light transport applications within the fields of computational imaging and computer graphics. In the field of computational imaging, I work on non-line-of-sight imaging methods that leverage the time-of-flight of captured photons to recover information of scenes that are not directly visible to an observer. In the field of computer graphics, I work on devising new reflectance models to accurately represent real-world material appearance.

Education

2014–2018 **PhD in Informatics and Systems Engineering**, *Universidad de Zaragoza*, Spain.
2006–2013 **BSc and MSc in Informatics Engineering**, *Universidad de Zaragoza*, Spain.
2011–2012 **Computer Science Exchange Program**, *Danmarks Tekniske Universitet*, Denmark.

PhD Thesis

Title *Efficient Methods for Computational Light Transport*
Advisors Diego Gutierrez & Adrian Jarabo
Defense October 2018

Master Thesis

Title *Transient Light Transport in Participating Media*
Advisor Adrian Jarabo
Defense December 2013

Research and academic experience

2025– **Associate Professor at Departamento de Informática e Ingeniería de Sistemas**
Universidad de Zaragoza, Spain.
Research topics: Computational imaging, non-line-of-sight imaging, physically-based rendering, material appearance modeling.

2022–2025 **Assistant Professor at Departamento de Informática e Ingeniería de Sistemas**
Universidad de Zaragoza, Spain.
Research topics: Computational imaging, non-line-of-sight imaging, physically-based rendering, material appearance modeling.

2022 **Assistant Professor at Centro Universitario para la Defensa**
Academia General Militar, Spain.
Research topics: Computational imaging, time-resolved light transport analysis, non-line-of-sight imaging methods.

2018–2022 **Postdoctoral researcher at Graphics and Imaging Lab**
Universidad de Zaragoza, Spain.
Research topics: Transient imaging methods for non-line-of-sight reconstruction and appearance modeling for realistic materials.

2014–2018 **PhD student at Graphics and Imaging Lab**
Universidad de Zaragoza, Spain
Advisors: Diego Gutierrez, Adrian Jarabo.
Research topics: Light transport simulation and transient imaging methods.

2017 (Jun–Oct) **Research Intern at Adobe Research**
San Jose, CA
Advisor: Xin Sun.
Research topic: Deep learning methods for material appearance modeling.

2016 (Jun–Aug) **Research Intern at Microsoft Research Asia**
Beijing, China
Advisor: Xin Tong.
Research topic: Deep learning methods for time-of-flight imaging.

2014 (May–Sep) **Research Intern at Disney Research Los Angeles**
Glendale, CA
Advisor: Carol O'Sullivan.
Research topic: Light transport simulation and noise perception on rendering.

Journal and peer-reviewed conference publications

2025 **Looking around flatland: Looking Around Flatland: End-to-End 2D Real-Time NLOS Imaging**
María Peña, Diego Gutierrez, Julio Marco
IEEE Transactions on Computational Imaging, Vol.11, p.189-200
JCR: IF 4.2, Q2 (89/353) in *Engineering, Electrical & Electronic*

2024 **Time-Gated Polarization for Active Non-Line-Of-Sight Imaging**
Oscar Pueyo-Ciutad, Julio Marco, Stéphane Schertzer, Frank Christnacher, Martin Laurenzis, Diego Gutierrez
Proceedings of SIGGRAPH Asia 2024
Core A*

2023 **Self-Calibrating, Fully-Differentiable NLOS Inverse Rendering**
Kiseok Choi, Inchul Kim, Dongyoung Choi, Julio Marco, Diego Gutierrez, Min H. Kim
Proceedings of SIGGRAPH Asia 2023
Core A*

Virtual Mirrors: Non-Line-of-Sight Imaging Beyond the Third Bounce
Diego Royo, Talha Sultan, Adolfo Muñoz, Khadijeh Masumnia-Bisheh, Eric Brandt, Diego Gutierrez, Andreas Velten, Julio Marco
ACM Transactions on Graphics, Vol.42(4)
JCR: IF 7.8, Q1 (5/132) in *Computer Science, Software Engineering*

2022 **Structure-Aware Parametric Representations for Time-Resolved Light Transport**
Diego Royo[†], Zesheng Huang[†], Yun Liang, Boyan Song, Adolfo Muñoz, Diego Gutierrez, Julio Marco ([†]*Equal contribution*)
Optics Letters, Vol. 47(19)
JCR: IF 3.6, Q2 (31/100) in *Optics*

2021 **Virtual Light Transport Matrices for Non-Line-Of-Sight Imaging**
Julio Marco, Adrian Jarabo, Ji Hyun Nam, Xiaochun Liu, Miguel Ángel Cosculluela, Andreas Velten, Diego Gutierrez
IEEE/CVF International Conference on Computer Vision
Core A*

2020 **A General Framework for Pearlescent Materials**
Ibón Guillén, Julio Marco, Diego Gutierrez, Wenzel Jakob, Adrian Jarabo
ACM Transactions on Graphics, Vol.39(6)
JCR: IF 5.414, Q1 (9/108) in *Computer Science, Software Engineering*

Compression and Denoising of Transient Light Transport
Yun Liang, Mingqin Chen, Zesheng Huang, Diego Gutierrez, Adolfo Muñoz, and Julio Marco
Optics Letters, Vol. 45(7)
JCR: IF 3.776, Q1 (22/99) in *Optics*

2019 **Progressive Transient Photon Beams**
Julio Marco, Ibón Guillén, Wojciech Jarosz, Diego Gutierrez, and Adrian Jarabo
Computer Graphics Forum, Vol.38(6)
JCR: IF 2.116, Q2 (38/108) in *Computer Science, Software Engineering*

2018 **Second-Order Occlusion-Aware Volumetric Radiance Caching**
Julio Marco, Adrian Jarabo, Wojciech Jarosz, and Diego Gutierrez
ACM Transactions on Graphics, Vol.37(2)
JCR: IF 6.495, Q1 (1/107) in *Computer Science, Software Engineering*

2017 **DeepToF: Off-the-Shelf Real-Time Correction of Multipath Interference in Time-of-Flight Imaging**
Julio Marco, Quercus Hernandez, Adolfo Muñoz, Yue Dong, Adrian Jarabo, Min H. Kim, Xin Tong, and Diego Gutierrez
ACM Transactions on Graphics, Vol.36(6)
JCR: IF 4.384, Q1 (3/104) in *Computer Science, Software Engineering*

Recent Advances in Transient Imaging: A Computer Graphics and Vision Perspective
Adrian Jarabo, Belen Masia, Julio Marco, and Diego Gutierrez
Visual Informatics, Vol.1(1)
(2022 indicators) IF 3.0, Q2 (65/132) in *Computer Science, Software Engineering*

Transient Photon Beams
Julio Marco, Ibón Guillén, Wojciech Jarosz, Diego Gutierrez, and Adrian Jarabo
Spanish Conference on Computer Graphics (CEIG) 2017
Best Paper award (1 in 2)

2016 **Real-time Rendering on a Power Budget**
Rui Wang, Bowen Yu, Julio Marco, Tianlei Hu, Diego Gutierrez, and Hujun Bao
ACM Transactions on Graphics, Vol.35(4)
JCR: IF 4.088, Q1 (1/106) in *Computer Science, Software Engineering*

2014 **A Framework for Transient Rendering**
Adrian Jarabo, Julio Marco, Adolfo Muñoz, Raul Buisan, Wojciech Jarosz, and Diego Gutierrez
ACM Transactions on Graphics, Vol.35(4)
JCR: IF 4.096, Q1 (1/104) in *Computer Science, Software Engineering*

Posters, Workshops, Datasets

2019 **A Dataset for Benchmarking Time-Resolved Non-Line-of-Sight Imaging**
Miguel Galindo, Julio Marco, Matthew O'Toole, Gordon Wetzstein, Diego Gutierrez, and Adrian Jarabo
IEEE International Conference on Computational Photography Posters, 2019

DeepToF: Off-the-Shelf Real-Time Correction of Multipath Interference in Time-of-Flight Imaging
Julio Marco, Quercus Hernandez, Adolfo Muñoz, Yue Dong, Adrian Jarabo, Min H. Kim, Xin Tong, and Diego Gutierrez
IEEE International Conference on Computational Photography Posters, 2019

2018 **Towards Practical Rendering of Fiber-Level Cloth Appearance Models**
Adrian Alejandre, Carlos Aliaga, Julio Marco, Adrian Jarabo, and Adolfo Muñoz
Material Appearance Modeling Workshop, 2018

2017 **Intuitive Editing of Visual Appearance from Real-World Datasets**
Julio Marco, Ana Serrano, Adrian Jarabo, Belen Masia, and Diego Gutierrez
Material Appearance Modeling Workshop, 2017

Second-Order Occlusion-Aware Volumetric Radiance Caching
Julio Marco, Adrian Jarabo, Wojciech Jarosz, and Diego Gutierrez
ACM SIGGRAPH 2017 Posters

Transient Photon Beams
Julio Marco, Ibón Guillén, Wojciech Jarosz, Diego Gutierrez, and Adrian Jarabo
SIGGRAPH 2017 Posters

2014 **Theory and Analysis of Transient Rendering**
Adrian Jarabo, Julio Marco, Adolfo Muñoz, Raul Buisan, Wojciech Jarosz, and Diego Gutierrez
ACM SIGGRAPH 2014 Posters

Awards & Competitions

2019 **Honorable Mention Eurographics PhD Award**, awarded by Eurographics 2019.

2017 **Semifinalist at ACM Student Research Competition**, *Transient Photon Beams*, SIGGRAPH 2017 Posters.

2017 **Best Paper award (1 in 2), CEIG 2019**, *Transient Photon Beams*, Spanish Conference on Computer Graphics (CEIG) 2019.

Funded Projects

2024–2027 **xDDiff – Multidimensional optical diffusion for the measurement of appearance**
Funded by EURAMET EMPIR JRP (European Metrology Programme for Innovation and Research, Joint Research Project), Horizon Europe and participating states.
Role: Principal investigator

2023–2026 **IMMERSENSE – Modelado computacional de la percepción multimodal en realidad virtual**
Funded by AEI (Agencia Estatal de Investigación, Spain)
Role: Member of the research team

2022–2026 **ENLIGHTEN – European Non-Line-of-Sight Optical Imaging**
Funded by EDF (European Defence Fund)
Role: Member of the research team

2022–2026 **SestoSenso – Physical Cognition for Intelligent Control and Safe Human-Robot Interaction**
Funded by Horizon Europe
Role: Member of the research team

2016–2021 **REVEAL – Revolutionary Enhancement of Visibility by Exploiting Active Lightfields**
Funded by DARPA (Defense Advanced Research Projects Agency)
Role: Member of the research team

2016–2020 **CHAMELEON – Intuitive editing of visual appearance from real-world datasets**
Funded by H2020 - ERC (Horizon 2020 European Research Council)
Role: Member of the research team

Service

Program Chair

2024 Spanish Computer Graphics Conference (CEIG)

Program Committee

2025 Pacific Graphics
Eurographics Short Papers

2024 ACM SIGGRAPH Asia Technical Briefs and Posters
Eurographics Short Papers
Pacific Graphics

2023 Intl. Conf. on Computer Graphics Theory and Applications (GRAPP)
Computer Graphics International
Computational Visual Media Conference (CVM)

2022 Eurographics Short Papers
Intl. Conf. on Computer Graphics Theory and Applications (GRAPP)

DAGM German Conference on Pattern Recognition

Computational Visual Media Conference (CVM)

2019 ACM SIGGRAPH Asia Technical Briefs and Posters

Intl. Conf. on Computer Graphics and Visualization (CGVCVIP)

Spanish Computer Graphics Conference (CEIG)

2018 Intl. Conf. on Computer Graphics and Visualization (CGVCVIP)

Spanish Computer Graphics Conference (CEIG)

Reviewer

Nature Communications, ACM Transactions on Graphics, ACM SIGGRAPH, ACM SIGGRAPH Asia, ACM Transactions on Applied Perception, IEEE Transactions on Computational Imaging, IEEE Transactions on Pattern Analysis and Machine Intelligence, Eurographics, Computer Graphics Forum, Computers & Graphics, Pacific Graphics, Optics Letters, Optics Express, High Performance Graphics, ECCV, Asian Conference on Computer Vision, IEEE Transactions on Instrumentation and Measurement, Graphics Interface, Sensors, Applied Sciences, Computational Visual Media Conference.

Other

2018 Student Volunteer at SIGGRAPH Asia Program Committee meeting.

2014 Local committee member at Spanish Conference on Computer Graphics.

2013 Local committee member at Eurographics Symposium on Rendering.

Languages

Spanish **Native**

English **Fluent**