

Julio Marco

Assistant Professor

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Summary

I am an Assistant Professor and member of the Graphics and Imaging Lab at Universidad de Zaragoza, Spain. My research background covers light transport applications within the areas of computer graphics and computational imaging. Under the regime of transient light transport, I work on on computational imaging applications for scene understanding. I currently work on non-line-of-sight imaging methods to recover information of scenes that are not directly visible to an observer by using transient light transport. On traditional steady-state light transport, I am interested on Monte Carlo methods for physically-based rendering, and material appearance modeling.

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.*

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

2022– **Assistant professor at Departamento de Informática e Ingeniería de Sistemas**, *Universidad de Zaragoza, Spain.*

Research topics: Computational imaging, time-resolved light transport analysis, non-line-of-sight imaging methods.

- 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 reconstruction methods.
- Jul 2017 – **Research Intern at Adobe Research, San Jose, CA**
 Oct 2017 *Advisor: Xin Sun.*
 Research topic: Deep learning methods for material appearance modeling.
- Jun 2016 – **Research Intern at Microsoft Research Asia, Beijing, China**
 Aug 2016 *Advisor: Xin Tong.*
 Research topic: Deep learning methods for time-of-flight imaging.
- May 2014 – **Research Intern at Disney Research Los Angeles, Glendale, CA**
 Sep 2014 *Advisor: Carol O’Sullivan.*
 Research topic: Light transport simulation and noise perception on rendering.

Publications

JOURNAL AND PEER-REVIEWED CONFERENCE PUBLICATIONS

- 2023 **Self-calibrated, Fully Differentiable NLOS Inverse Rendering** [↗](#)
 Kiseok Choi, Inchul Kim, Dongyoung Choi, Julio Marco, Diego Gutierrez, Min H. Kim
ACM SIGGRAPH Asia 2023 (to appear)
- 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
Transactions on Graphics Vol.42(4)
- 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)
- 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
- 2020 **A General Framework for Pearlescent Materials** [↗](#)
 Ibón Guillén, Julio Marco, Diego Gutierrez, Wenzel Jakob, Adrian Jarabo
Transactions on Graphics Vol.39(6)

- 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)
- 2019 **Progressive Transient Photon Beams** [↗](#)
Julio Marco, Ibón Guillén, Wojciech Jarosz, Diego Gutierrez, and Adrian Jarabo
Computer Graphics Forum, Vol.38(6)
- 2018 **Second-Order Occlusion-Aware Volumetric Radiance Caching** [↗](#)
Julio Marco, Adrian Jarabo, Wojciech Jarosz, and Diego Gutierrez
ACM Transactions on Graphics, Vol.37(2)
- 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)
- 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)
- 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)
- 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)
- 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
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
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 Confer-
 ence on Computer Graphics (CEIG) 2019.

Funded Projects participation

- 2022– **ENLIGHTEN – Scene Recovery Using an Extended Plenoptic Function**
Funded by European Defence Fund
- 2016–2021 **REVEAL – Scene Recovery Using an Extended Plenoptic Function**
Funded by Defense Advanced Research Projects Agency (DARPA)
- 2016–2020 **CHAMELEON – Intuitive editing of visual appearance from real-world
 datasets**
Programme: H2020 - European Research Council (ERC)

Service

PROGRAM CHAIR

- 2023 Spanish Conference on Computer Graphics (CEIG)

PROGRAM COMMITTEE MEMBER

- 2020, 2019 ACM SIGGRAPH Asia Technical Briefs and Posters
- 2021 International Conference on Computer Graphics Theory and Applications
 (GRAPP)
- 2021 Computational Visual Media Conference (CVM)
- 2020, 2019, International Conference on Computer Graphics and Visualization (CGVCVIP)
 2018
- 2019, 2018 Spanish Conference on Computer Graphics (CEIG)

REVIEWER

- 2019, 2018 ACM Transactions on Graphics
- 2021, 2020, 2018 ACM SIGGRAPH
- 2019, 2017 ACM SIGGRAPH Asia
- 2019 ACM Transactions on Applied Perception
- 2018, 2017 Computer Graphics Forum
- 2018 Pacific Graphics
- 2017 Eurographics
- 2021 Optics Letters
- 2021, 2020 IEEE Transactions on Computational Imaging
- 2017 High Performance Graphics
- 2016 European Conference on Computer Vision
- 2021, 2019, 2018, 2017 Computers and Graphics
- 2018 IEEE Transactions on Instrumentation and Measurement
- 2021, 2018 Sensors
- 2020, 2019 Applied Sciences
- 2018 Asian Conference on Computer Vision
- 2018 Graphics Interface
- 2017 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**