

Carlos Aliaga

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Education

PhD Computer Science <i>Graphics & Imaging Lab</i>	Universidad de Zaragoza, Spain 2013-2017
MSc Computer Science <i>Escuela de Ingeniería y Arquitectura</i>	Universidad de Zaragoza, Spain 2012-2013
Computer Science Engineer (BSc+MSc) <i>Centro Politécnico Superior</i>	Universidad de Zaragoza, Spain 2005-2012

Career

Facebook Reality Labs <i>Research Scientist</i>	Sausalito, California Oct. 2019 -
Desilico Labs <i>Lead Scientist</i>	Madrid, Spain Oct. 2017 - Feb. 2019
Focused on reproducing the appearance of real garments in virtual environments through physically based simulations and renderings based on optical and mechanical measurements. Led two groups of engineers and MSc's (9 people in total), in charge of the two main areas related to fabric appearance: a) design and build an optical capture device to extract the structural and optical properties of the fabrics at the micro fiber level, and b) design and development of proprietary volumetric rendering engines (CPU and GPU) to render fabrics as heterogeneous, dense high-frequency volumes with highly anisotropic fiber scattering. There are two ongoing US Patents about these topics while working at Desilico Labs.	
Universidad Rey Juan Carlos <i>Computer Graphics Researcher</i>	Madrid, Spain April. 2017 - Sept. 2017
With Dr. Jorge López Moreno. and Prof Dr. Miguel Angel Otaduy.	
Graphics and Imaging Lab <i>Computer Graphics PhD Student</i>	Universidad de Zaragoza, Spain 2010 - 2017
Focused on perception, modeling and rendering of complex materials and virtual humans. Under the supervision of Prof. Dr. Diego Gutiérrez.	
Technicolor <i>Research Intern</i>	Rennes, France Sep. 2016 - Dec. 2016
Mixed Illumination Analysis in Single Image for Color Grading. Under the supervision of Tania Pouli and Patrick Pérez.	
Walt Disney Animation Studios <i>Research Intern</i>	Burbank, California Jun. 2016 - Sep. 2016
Art-directable micro appearance modeling of cloth. Under the supervision of Matt Chiang and Brent Burley.	
Walt Disney Animation Studios <i>Research Intern</i>	Burbank, California Jun. 2014 - Dec. 2014
Evaluating the relative importance of appearance vs dynamics in cloth perception. Under the supervision of Rasmus Tamstorf and Carol O'Sullivan	
Faculdade de Ciências da Universidade do Porto (Porto's Science Faculty) <i>Research Engineer</i>	Porto, Portugal Jun. 2012 - Aug. 2012
Real-time realistic skin rendering. Under the supervision of Veronica Orvalho.	

Awards and Achievements

- Torres Quevedo Grant (3 years) at Desilico Labs. *State Research Agency (Spain) 2018*. Ranked 13 of 193. Ref: PTQ-17-09155. Aid of three years' duration "for the employment of PhDs developing bearing on industrial research projects in order to favour the professional career of the researchers and stimulate the demand of researchers in the private sector, and for helping the consolidation of recently created technology companies".
- Bronze medal at the ACM Students Research Competition at SIGGRAPH 2016.
- 4-years PhD grant. Diputación General de Aragón (State Government) 2013.
- CAI Europa Grant, 2012. Funding for Porto's Science Faculty visiting research engineer.
- Spanish Baccalaureate - Science and Technology, 2004. Zaragoza, Spain. Graduated with Honors.

Publications

C. Castillo, J. Lopez, and C. Aliaga, "Recent advances in fabric appearance reproduction," *Conditionally accepted in Computers&Graphics*, 2019.

R. Alcain., C. Heras., I. Salinas., J. López., and C. Aliaga., "Microscale optical capture system for digital fabric recreation," in *Proceedings of the 7th International Conference on Photonics, Optics and Laser Technology - Volume 1: PHOTOPTICS*, pp. 114–119, 2019.

A. Jarabo, C. Aliaga, and D. Gutierrez, "A radiative transfer framework for spatially-correlated materials," *ACM Transactions on Graphics*, vol. 37, no. 4.

C. Aliaga, "Modeling and perception of the appearance of virtual humans," *PhD Dissertation*, 2017.

S. Duchêne, C. Aliaga, T. Pouli, and P. Perez, "Mixed illumination analysis in single image for interactive color grading," in *Expressive 2017 The Joint Symposium on Computational Aesthetics and Sketch-Based Interfaces and Modeling and Non-Photorealistic Animation and Rendering*, The Eurographics Association, 2017.

C. Aliaga, C. Castillo, D. Gutierrez, M. A. Otaduy, J. Lopez-Moreno, and A. Jarabo, "An appearance model for textile fibers," *Computer Graphics Forum (Proc. of the Eurographics Symposium on Rendering)*, vol. 36, no. 4, 2017.

E. Zell, C. Aliaga, A. Jarabo, K. Zibrek, D. Gutierrez, R. McDonnell, and M. Botsch, "To stylize or not to stylize?: The effect of shape and material stylization on the perception of computer-generated faces," *ACM Trans. Graph.*, vol. 34, pp. 184:1–184:12, Oct. 2015.

J. A. Iglesias-Guitian, C. Aliaga, A. Jarabo, and D. Gutierrez, "A biophysically-based model of the optical properties of skin aging," *Computer Graphics Forum (EUROGRAPHICS 2015)*, vol. 34, no. 2.

C. Aliaga, C. O'Sullivan, D. Gutierrez, and R. Tamstorf, "Sackcloth or silk?: The impact of appearance vs dynamics on the perception of animated cloth," in *Proceedings of the ACM SIGGRAPH Symposium on Applied Perception, SAP '15*, (New York, NY, USA), pp. 41–46, ACM, 2015.

B. Masia, G. Wetzstein, C. Aliaga, R. Raskar, and D. Gutierrez, "Display Adaptive 3D Content Remapping," *Computers & Graphics, Special Issue on Advanced Displays*, vol. 37, no. 8, pp. 983–996, 2013.

C. Aliaga, C. Castillo, D. Gutiérrez, J. L.-M. Miguel Ángel Otaduy, and A. Jarabo, "Fiber-level model for predictive cloth rendering," *SIGGRAPH Posters*, 2016.

C. Aliaga, J. Iglesias-Guitián, A. Jarabo, J. I. Echevarría, and D. Gutiérrez, "Biophysically-based aging of human skin appearance," *Spanish Computer Graphics Conference (CEIG) Posters*, 2014.

B. Masiá, G. Wetzstein, C. Aliaga, R. Raskar, and D. Gutiérrez, "Display-adaptive 3d content remapping," *Eurographics Symposium on Rendering (EGSR) Posters*, 2013.

B. Masiá, G. Wetzstein, C. Aliaga, R. Raskar, and D. Gutiérrez, "Perceptually optimized content remapping for automulti-scopic displays," *Siggraph Posters*, 2012.

Participation in Research Projects

CHAMELEON

Intuitive editing of visual appearance from real-world datasets
Project ID: 682080.

PI: Prof. Dr. Diego Gutiérrez.

European Commission. ERC Program

2016-2021

VERVE

*Vanquishing fear and apathy through E-inclusion:
Personalized and populated Realistic Virtual Environments for clinical, home and mobile platforms.*
Grant agreement no.: 288914.

PI: Prof. Dr. Carol O'Sullivan, Prof. Dr. Diego Gutiérrez.

European Commission. ICT Program

2011-2014

GOLEM

Realistic Virtual Humans

Grant agreement no.: 251415.

PI: Prof. Dr. Diego Gutiérrez.

European Commission. Marie Curie Program

2010-2014

Modeling and estimation of appearance in 3D objects

Diputación General de Aragón, Communauté de Travail des Pyrénées (CTP6/11).

PI: Prof. Dr. Adolfo Muñoz.

DGA & CTP6/11

2012-2013

Service

- Computer Graphics Forum; Pacific Graphics; Transactions on Applied Perception, Computers & Graphics; SIVP; CVM. *Reviewer.*
- CEIG 2014, 2018 (Spanish Conference on Computer Graphics). *Local Committee Member.*
- Eurographics Symposium on Rendering 2013. *Local Committee Member.*

Teaching Experience, Students Supervised

Advanced Rendering.

Masters in Computer Graphics, Games and Virtual Reality

Subject of the second semester covering the fundamentals of global illumination and physically based materials.

Universidad Rey Juan Carlos, Spain.

2018 - 2019

Sergio Suja

Masters in Computer Graphics, Games and Virtual Reality

Optical Capture for Textile Materials.

10/10, graduated with honors.

Universidad Rey Juan Carlos, Spain.

2019

Javier Fabre

Masters in Computer Graphics, Games and Virtual Reality

GPU Volumetric Path Tracing for Cloth Rendering.

10/10, graduated with honors. *Best Masters Thesis Award.*

Universidad Rey Juan Carlos, Spain.

2018

Carlos Guillén

Computer Science Final Degree Project

Rendering realistic hair.

8.5/10.

Universidad de Zaragoza, Spain.

2014

Balma Félez

Industrial Design Engineering Final Degree Project

Asch Psychological Experiment into Virtual Environments.

8.5/10.

Universidad de Zaragoza, Spain.

2013

Programming Skills

- Proficient with c++.
- Working experience in GPU rendering using OpenGL-GLSL and DirectX-HLSL.
- Experience in Python, Matlab, Javascript.

Artistic Experience

Graphic Designer

Freelance

○ In house graphic designer and illustrator for Iber-World agency of events from 2011 to 2014.

○ Corporate Imaging / web design for Eurographics Spanish Chapter, Graphics & Imaging Lab, GOLEM, centromedico-palafox.com, abyssec.com, eroticaenigma.com, apartamentosballbenas.com. From 2005 to 2010.

○ Design of the official information map for International Exposition 2008. For Zaragoza's City Council.

Zaragoza, Spain

2005 – 2014

Illustrator

Freelance

Zaragoza, Spain

2005 – 2009

- Illustrations for an online company of board-games (www.nestorgames.com) in 2009 and 2010.
- Illustrations for t-shirts for Sikkis, a specialized shop in Zaragoza, from 2005 to 2009.
- Live caricature drawing for company events (Puerto Venecia) in 2007.

Artistic Skills

Highly experienced and skilled at drawing, painting and designing. Traditional and digital.
Proficient in digital illustration and vector drawing (Adobe Photoshop, Illustrator).
Wide experience in 3D modeling and rendering (3D Studio Max, Maya, Zbrush).
Knowledge of video editing and composition (Adobe After Effects).
Experience with 2D animation and web.

Languages

Spanish (native), English (fluent), French (Intermediate, B1 certificate by Official Language School).

Misc.

Passion for art and animation, both traditional and computer generated. Particularly interested in light and color, from the artistic and technical perspectives.
Great people skills: working experience in leading a team (9 people), also in public relations and customer service at events and fairs.
Love racquet sports and running.