Ana Serrano

Postdoctoral researcher

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Research Summary

My research spans several areas of visual computing, in particular: computational imaging, material appearance perception and editing, and virtual reality, with a focus on applying perceptually-motivated solutions. I am passionate about creating and applying fundamental knowledge about the perceptual system to improve user experiences and develop tools to assist content creation.

Education

Oct 2014 – Apr 2019
Ph.D. in Computer Science,
Universidad de Zaragoza, Spain, *Advisors:* Prof. Diego Gutierrez and Prof. Belen Masia.

Sep 2008 – Sep 2014
BSc and MSc in Telecommunications Engineering,
Escuela de Ingeniería y Arquitectura, Universidad de Zaragoza, Spain,
- 5th of the class graduating that year.
- M. Sc. Thesis: High temporal resolution video acquisition with coded exposures and dictionary learning (9.7/10.0 - **with honors**).

Jun 2014 – Aug 2014
Seminar Program in Advanced Physics – 90 hours,
European Organization for Nuclear Research (CERN), Geneva, Switzerland.
Including: Particle physics, nuclear physics, accelerators and detectors.

Research Experience

Feb 2014 – Present
Researcher at the Graphics & Imaging Lab,
Universidad de Zaragoza, Zaragoza, Spain, *Advisors:* Prof. Diego Gutierrez and Prof. Belen Masia.

Sep 2018 – Nov 2018
Visiting Researcher at the Max-Planck Computer Graphics group,
Max-Planck-Institut für Informatik, Saarbrücken, Germany, *Advisor:* Prof. Karol Myszkowski.

Jun 2017 – Sep 2017
Research Intern at the Adobe Creative Technologies Lab,
Adobe Research, California, USA, *Advisors:* Stephen DiVerdi and Aaron Hertzmann.

Jun 2016 – Aug 2016
Visiting Researcher at the Stanford Computational Imaging group,
Stanford University, California, USA, *Advisor:* Prof. Gordon Wetzstein.

Aug 2015 – Jan 2016
Visiting Researcher at the Max-Planck Computer Graphics group,
Max-Planck-Institut für Informatik, Saarbrücken, Germany, *Advisor:* Prof. Karol Myszkowski.

Apr 2015 – May 2015
Visiting Researcher at the Stanford Computational Imaging group,
Stanford University, California, USA, *Advisor:* Prof. Gordon Wetzstein.

Jun 2014 – Aug 2014
Intern at the CERN ATLAS Pixel DAQ group,
European Organization for Nuclear Research (CERN), Geneva, Switzerland, *Advisor:* Dr. Karolos Potamianos.

Publications

Journal publications

2019 **A Similarity Measure for Material Appearance**
Manuel Lagunas, Sandra Malpica, Ana Serrano, Elena Garces, Diego Gutierrez, and Belen Masia.
ACM Transactions on Graphics (Proc. SIGGRAPH 2019).

2019 **Motion parallax for $360°$ RGBD video**
Ana Serrano, Incheol Kim, Zhili Chen, Stephen DiVerdi, Diego Gutierrez, Aaron Hertzmann, and Belen Masia.
IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE VR 2019).

2019 **Crossmodal perception in virtual reality**
Sandra Malpica*, Ana Serrano*, Marcos Allue, Manuel Bedia, and Belen Masia. **Equal contribution.*
Multimedia Tools and Applications.

2018 **Saliency in VR: How do people explore virtual environments?**
Vincent Sitzmann*, Ana Serrano*, Amy Pavel, Maneesh Agrawala, Diego Gutierrez, Belen Masia, and Gordon Wetzstein. **Equal contribution.*
IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE VR 2018).

2017 **Movie Editing and Cognitive Event Segmentation in Virtual Reality Video**
Ana Serrano, Vincent Sitzmann, Jaime Ruiz-Borau, Gordon Wetzstein, Diego Gutierrez, and Belen Masia.
ACM Transactions on Graphics (Proc. SIGGRAPH 2017).

2017 **Attribute-preserving gamut mapping of measured BRDFs**
Tiancheng Sun, Ana Serrano, Diego Gutierrez, and Belen Masia.
Computer Graphics Forum (Proc. EGSR 2017).

2017 **Convolutional Sparse Coding for capturing High Speed Video Content**
Ana Serrano, Elena Garces, Diego Gutierrez, and Belen Masia.
Computer Graphics Forum.

2016 **An intuitive control space for material appearance**
Ana Serrano, Diego Gutierrez, Karol Myszkowski, Hans-Peter Seidel, and Belen Masia.
ACM Transactions on Graphics (Proc. SIGGRAPH Asia 2016).

2016 **Convolutional Sparse Coding for High Dynamic Range Imaging**
Ana Serrano, Felix Heide, Diego Gutierrez, Gordon Wetzstein, and Belen Masia.
Computer Graphics Forum (Proc. Eurographics 2016).
Honorable Mention.

2016 **Dynamic range expansion based on image statistics**
Belen Masia, Ana Serrano, and Diego Gutierrez.
Multimedia Tools and Applications.

Peer-reviewed Conference Publications

2020 **Exploring the impact of $360°$ movie cuts in users' attention**
Carlos Marañes, Diego Gutierrez, and Ana Serrano.
IEEE VR 2020 (to be presented).

2019 **Structure-preserving style transfer**
Santiago Calvo, Ana Serrano, Diego Gutierrez, and Belen Masia.
Proc. of the Spanish Conference on Computer Graphics (CEIG) 2019.

2017 **Improved Intuitive Appearance Editing based on Soft PCA**
Sandra Malpica, Miguel Barrio, Diego Gutierrez, Ana Serrano, and Belen Masia.
Proc. of the Spanish Conference on Computer Graphics (CEIG) 2017.

2016 **Crossmodal perception in immersive environments**
Marcos Allue, Ana Serrano, Manuel G. Bedia, and Belen Masia.
Proc. of the Spanish Conference on Computer Graphics (CEIG) 2016.
Honorable Mention.

2015 **Compressive High-Speed Video Acquisition**
Ana Serrano, Diego Gutierrez, and Belen Masia.
Proc. of the Spanish Conference on Computer Graphics (CEIG) 2015.
Honorable Mention.

Posters and Workshops

2017 **Attribute-preserving gamut mapping of measured BRDFs**
Tiancheng Sun, Ana Serrano, Diego Gutierrez, and Belen Masia.
In ACM SIGGRAPH (posters) 2017.
1st place at ACM Student Research Competition.

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

2016 **Intuitive Editing of Material Appearance**
Ana Serrano, Diego Gutierrez, Karol Myszkowski, Hans-Peter Seidel, and Belen Masia.
In ACM SIGGRAPH (posters) 2016.

2015 **An In-Depth Analysis of Compressive Sensing for High Speed Video Acquisition**
Ana Serrano, Diego Gutierrez, and Belen Masia.
In International Conference on Computational Photography (posters) 2015.

Technical Reports

2014 **ATLAS Pixel detector firmware upgrade: Reading out the standard output for the IBL-ROD via VME**
Ana Serrano.
Technical Report CERN-STUDENTS-Note-2014-056, CERN PH Department.

Book chapters

2019 **Revisiones sobre Arte, patrimonio y tecnología en la era digital**
Ana Serrano, Belen Masia, and Diego Gutierrez.
IAACC Pablo Serrano, Gobierno de Aragón (ISBN 978-84-8380-411-7).

Patents

2019 **Virtual Reality Parallax Correction**
Stephen DiVerdi, Ana Serrano, and Aaron Hertzmann.
Number: US20190110038A1 (Application status: Pending).

Funding & Awards

2020 **Lise Meitner Award Postdoctoral Fellowship**. Max-Planck postdoctoral fellowship for excellent women in Computer Science

2020 **Best thesis CESA award**. Awarded by the Economic and Social Council of Aragon for the best thesis dissertation (including all fields of knowledge) in Aragon.

2019 **Aragonés del año** finalist in the Science and Technology category. Awarded by the newspaper *El periódico de Aragón*.

2018 **Nvidia Research Fellowship**. Including $50,000 funding.

2018 **Tercer Milenio** Young Research Talent award. Awarded by the newspaper *Heraldo de Aragón*.

2018 **Mobility Grant**. 4-month competitive grant for carrying short stays in research centers. Awarded by the Spanish Ministry of Economy and Competitiveness.

2017 **Adobe Research Fellowship Honorable Mention**. Including $2,000 funding and a Creative Cloud membership.

2017 **1st place at the ACM Student Research Competition**. Attribute-preserving gamut mapping of measured BRDFs. SIGGRAPH (posters) 2017.

2016 **Best Paper (Honorable Mention)**. Convolutional Sparse Coding for High Dynamic Range Imaging. Eurographics 2016.

2016 **Best Paper (1 in 2)**. Crossmodal perception in immersive environments. Spanish Conference on Computer Graphics (CEIG) 2016.

2015 **Best Paper (1 in 2)**. Compressive High-Speed Video Acquisition. Spanish Conference on Computer Graphics (CEIG) 2015.

2015 **Mobility Grant**. 4-month competitive grant for carrying short stays in research centers. Awarded by the Spanish Ministry of Economy and Competitiveness.

2015 **FPI Grant**. 4-year competitive PhD grant. Awarded by the Spanish Ministry of Economy and Competitiveness.

Supervised Students

2020 **Daniel Martin.** *Study and improvement of motion parallax in 6-DoF visualizations for VR.*
Graduated January 2020. Grade: 9.8/10.0 - **with honors**.

2019 **Carlos Marañes.** *Cognitive event segmentation in Virtual Reality: applications to complex footage.*
Graduated July 2019. Grade: 9.5/10.0 - **with honors**.

2018 **Sandra Malpica.** *Study and applications of human sensory perception in Virtual Reality.*
Master thesis, November 2018. Grade: 9.5/10.0 - **with honors**.

2018 **Miguel Martinez.** *3D scene modeling for VR video techniques benchmarking.*
Graduated May 2018. Grade: 9.5/10.0 - **with honors**.

2017 **Javier Camon.** *Editing in VR: influence of directional sound on narrative continuity.*
Graduated September 2017. Grade: 9.5/10.0 - **with honors**.

2017 **Miguel Barrio.** *Improved intuitive spaces for material appearance editing.*
Graduated September 2017. Grade: 9.0/10.0.

2017 **Sandra Malpica.** *Improvement of a material representation model for intuitive appearance editing.*
Graduated April 2017. Grade 9.4/10.0.

2017 **Jaime Ruiz-Borau.** *Narrative continuity in virtual reality.*
Graduated April 2017. Grade: 8.5/10.0.

2017 **Santiago Calvo.** *Content-aware texture and style transfer using convolutional neural networks.*
Graduated February 2017. Grade: 9.2/10.0.

| 2016 | **Marcos Allue.** *Crossmodal perception in immersive environments.* Graduated December 2016. Grade: 9.2/10.0. |
| 2015 | **Nicolas Landa.** *Compressive sensing techniques for image acquisition.* Graduated February 2015. Grade: 9.3/10.0. |

Teaching

| 2017, 2018 | **Image composition and editing**. Universidad de Zaragoza, Spain. |
| 2016, 2017, 2018, 2019 | **Programming Fundamentals**. Universidad de Zaragoza, Spain. |

Service & Volunteering

Program Committee member

2020, 2019, 2018	Symposium on Applied Perception (SAP).
2020	International Conference on Computer Graphics Theory and Applications (GRAPP).
2020	International conference on Computational Visual Media (CVM).
2019	SIGGRAPH Asia Technical Briefs and Posters.
2019, 2018	Spanish Conference on Computer Graphics (CEIG).
2019, 2018	Conference on Graphics, Patterns and Images (SIBGRAPI).
2018	International Conference on Computer Graphics and Visualization (CGVCVIP).

Reviewer

Journals	IEEE Trans. on Computational Imaging (2019), ACM Trans. on Graphics (2019, 2018), ACM Trans. on Applied Perception (2019, 2018, 2017), IEEE Trans. on Multimedia (2019), IEEE Trans. on PAMI (2018), IEEE Journal of Selected Topics in Signal Processing (2017), Computer Graphics Forum (2017, 2016, 2015), Computers & Graphics (2016), The Visual Computer (2017, 2016).
Conferences	ACM SIGGRAPH and SIGGRAPH Asia (2020, 2019, 2018, 2017), Eurographics (2020, 2019, 2018), ACM CHI 2020, IEEE VR (2019, 2018), INTERACT (2019), ACM VRST (2018, 2017), CVM (2017), Pacific Graphics (2019, 2017, 2016).
Others	I am part of the Editorial Board of the journal *Frontiers in Virtual Reality: Technologies for VR* since 2019. I also review national grants for the Spanish Ministry.

Other collaborations in scientific dissemination events

2019	Invited speaker at *Woman Techmakers Zaragoza*.
2019	Invited speaker at *The electric gaze: International Seminar on the Intersections between Image, Technology, and Critical Thought.*
2018	Invited speaker at the ACM *Talk & Tech* Wroclaw.
2016, 2017	Student Volunteer at the ACM SIGGRAPH Asia Program Committee meeting.
2016	Student Volunteer at ACM SIGGRAPH 2016.
2015, 2016	Invited speaker at *NEOcom talks* on new technologies in the field of electrical engineering, Universidad de Zaragoza.
2014 – 2019	Volunteer for *Girls' Day*, Universidad de Zaragoza.

Languages

Spanish	Native
English	Fluent
French	Beginner