

Ana Serrano

Postdoc

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Research Interests

My research spans several areas of visual computing, and my work lies at the intersection of perception and image processing. In the past, I have worked in the fields of computational imaging, and material perception. Currently, my main focus is to apply fundamental knowledge on human attentional behavior in order to overcome some of the current challenges of virtual reality.

Keywords: Data analysis, image processing, virtual reality, applied perception

Education

- Oct 2014 – **Ph.D. in Computer Science**,
Apr 2019 *Universidad de Zaragoza*, Spain, *Advisors:* Prof. Diego Gutierrez and Prof. Belen Masia.
- Sep 2008 – **BSc and MSc in Telecommunications Engineering**,
Sep 2014 *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 – **Seminar Program in Advanced Physics – 90 hours**,
Aug 2014 *European Organization for Nuclear Research (CERN)*, Geneva, Switzerland.
Including: Particle physics, nuclear physics, accelerators and detectors.

Research Experience

- Feb 2014 – **Researcher at the Graphics & Imaging Lab**,
Present *Universidad de Zaragoza*, Zaragoza, Spain, *Advisors:* Prof. Diego Gutierrez and Prof. Belen Masia.
- Sep 2018 – **Visiting Researcher at the Max-Planck Computer Graphics group**,
Nov 2018 *Max-Planck-Institut für Informatik*, Saarbrücken, Germany, *Advisor:* Prof. Karol Myszkowski.
- Jun 2017 – **Research Intern at the Adobe Creative Technologies Lab**,
Sep 2017 *Adobe Research*, California, USA, *Advisors:* Stephen DiVerdi and Aaron Hertzmann.
- Jun 2016 – **Visiting Researcher at the Stanford Computational Imaging group**,
Aug 2016 *Stanford University*, California, USA, *Advisor:* Prof. Gordon Wetzstein.
- Aug 2015 – **Visiting Researcher at the Max-Planck Computer Graphics group**,
Jan 2016 *Max-Planck-Institut für Informatik*, Saarbrücken, Germany, *Advisor:* Prof. Karol Myszkowski.
- Apr 2015 – **Visiting Researcher at the Stanford Computational Imaging group**,
May 2015 *Stanford University*, California, USA, *Advisor:* Prof. Gordon Wetzstein.
- Jun 2014 – **Intern at the CERN ATLAS Pixel DAQ group**,
Aug 2014 *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. of IEEE VR).
- 2019 **Crossmodal perception in virtual reality**
Sandra Malpica*, Ana Serrano*, Marcos Allue, Manuel Bedia, and Belen Masia. **These authors contributed equally to the work.*
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. **These authors contributed equally to the work.*
IEEE Transactions on Visualization and Computer Graphics (Proc. of IEEE VR).
- 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. of SIGGRAPH 2017).
- 2017 **Attribute-preserving gamut mapping of measured BRDFs**
Tiancheng Sun, Ana Serrano, Diego Gutierrez, and Belen Masia.
Computer Graphics Forum (Proc. of 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. of 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. of 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

- 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 (undergrad).
- 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.

Funding & Awards

- 2019 **Aragonés del año** finalist in the Science and Technology category.
- 2018 **Tercer Milenio** young research talent award.
- 2018 **Nvidia Research Fellowship Award.** Including a \$50,000 prize.
- 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 a \$2,000 prize 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

- 2018 **Miguel Martinez.** *3D scene modeling for VR video techniques benchmarking.*
Graduated May 2018. Grade: 9.5/10.0 - **with honors.**
- 2017 **Javier Camon.** *Edition in VR: influence of sound techniques 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.

Participation in Research Projects

- 2016 – Present CHAMELEON: Intuitive editing of visual appearance from real-world datasets. *European Research Council (ERC)*. PI: Diego Gutierrez.
- 2016 – Present REVEAL: Scene Recovery Using an Extended Plenoptic Function. *Defense Advanced Research Projects Agency (DARPA)*. PI: Diego Gutierrez.
- 2016 – 2018 IMAGER: Imagen Computacional. Técnicas avanzadas de edición y visualización mediante computación en dominios alternativos. *Spanish Ministry of Economy and Competitiveness*. PI: Belen Masia.
- 2014 – 2016 LIGHTSLICE: Captura, análisis y aplicaciones del transporte de luz multidimensional (Aplicación a imagen médica). *Spanish Ministry of Economy and Competitiveness*. PI: Diego Gutierrez.

Service & Volunteering

Program Committee Member

- 2018, 2019 Symposium on Applied Perception (SAP)
- 2018, 2019 Spanish Conference on Computer Graphics (CEIG)
- 2018 Conference on Graphics, Patterns and Images (SIBGRAPI)
- 2018 International Conference on Computer Graphics and Visualization (CGVCVIP)

Reviewer

- 2018 ACM SIGGRAPH; ACM SIGGRAPH Asia; ACM UIST; Transactions on Graphics; Transactions on Applied Perception; Transactions on Pattern Analysis and Machine Intelligence.
- 2017 ACM SIGGRAPH; Eurographics; IEEE VR; Transactions on Applied Perception; IEEE Journal of Selected Topics in Signal Processing; Computer Graphics Forum; Pacific Graphics.
- 2016 Computer Graphics Forum; Pacific Graphics; European Conference on Computer Vision; Computational Visual Media Conference; The Visual Computer Journal; Computers and Graphics.
- 2015 Computer Graphics, Visualization, Computer Vision and Image Processing Conference.
- Other collaborations in scientific dissemination events**
- 2018 Invited speaker at the ACM Talk & Tech Wroclaw
- 2014, 2016, 2017, 2018 Volunteer for Girls' Day, Universidad de Zaragoza.
- 2016, 2017 Student Volunteer at the ACM SIGGRAPH Asia Program Committee meeting
- 2017 Talk on Advances on computer graphics for high-school students (*Santiago Hernandez* public school).
- 2016 Student Volunteer at ACM SIGGRAPH 2016
- 2015, 2016 Speaker at *NEOcom talks* on new technologies in the field of electrical engineering, Universidad de Zaragoza

Languages

Spanish Native
 English Fluent
 French Beginner

Last updated: May 25th, 2019.