Gabriel Cirio

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Education

2008–2011 **Ph.D. in Computer Science**, *INRIA*, Rennes, France.
- Haptic and Multimodal rendering
- Physically-based simulation
- Interaction techniques in virtual reality

2007–2008 **Master of Science in Computer Science**, *University of Lyon*, France.
- Data-driven progressive mesh compression

2002–2007 **Master of Engineering in Computer Science**, *INSA*, Lyon, France.

Experience

Jan. 2017 – July 2019 **Postdoctoral Researcher**, *Inria (France) and Columbia University (United States)*.
- Funded by the Marie Sklodowska Curie Global Fellowship *PhySound* (EU H2020): outgoing phase at *Columbia University*, returning phase at *Inria*.
- Sound syntesis
- Physically-based simulation

Oct. 2012 – Nov. 2016 **Postdoctoral Researcher**, *Universidad Rey Juan Carlos*, Madrid, Spain.
- Physically-based simulation
- Haptic Rendering

April–Sept. 2012 **Postdoctoral Researcher**, *Inria*, Rennes, France.
- Human locomotion trajectories in real and virtual environments

Sept. 2007 – July 2008 **Research Engineer**, *CNRS, LIRIS Lab*, Lyon, France.
- Research on data-driven progressive mesh compression algorithms
- Development of a mesh processing framework based on CGAL

January–July 2007 **Research Intern**, *University of Michigan 3D Lab*, Ann Arbor, MI, USA.
- Development of an Ageia PhysX-based physics engine for CAVE interaction
- Development of a stereoscopic viewer (anaglyph and passive) for Second Life

Languages

French	Mother tongue
Spanish	Mother tongue
English	Fluent
Italian	Intermediate

Interests

sports	Tennis (Uruguay champion in March 1999, 15-16 years old category), soccer
music	Guitar (4 years of studies)

Academic Activities

Reviewing

International Journals:

- IEEE Transactions on Visualization and Computer Graphics, IEEE Transactions on Haptics, ACM Transactions on Applied Perception, IEEE MultiMedia, ACM Journal on Computing and Cultural Heritage, ASME Journal of Computing and Information Science in Engineering

International Conferences:

- ACM SIGGRAPH Asia, IEEE Virtual Reality, Eurographics, Pacific Graphics, IEEE World Haptics, IEEE Haptics Symposium, EuroHaptics, ACM CHI, IEEE 3DUI

Commitees

Conference Program Committee member:

- IEEE World Haptics 2017
- EuroHaptics 2016 - Demonstrations and Work in Progress
- ACM Virtual Reality Software and Technology (VRST) 2015
- IEEE Virtual Reality (VR) 2015
- Spanish Conference on Computer Graphics 2014 & 2015
- Eurographics 2013, Short Papers

Tutoring

Ph.D. students:

- Daniel Lobo (URJC Madrid, since 2014): *Self-occlusions in immersive Virtual Reality environments*
- Alvaro Pérez (URJC Madrid, 2012-2015): *Haptic rendering of soft finger contact*

Master students:

- Daniel Lobo (URJC Madrid, 2013-2014): *Self-occlusions in immersive Virtual Reality environments*
- Fernando Hernández (URJC Madrid, 2012-2013): *Anisotropic Strain Limiting*
- Clément Nicolas (IFSIC Rennes, 2011): *Bimanual haptic interaction*
- Aurélien Le Gentil (INSA Rennes, 2010): *Haptic interaction with multistate media*

Teaching

At INSA Rennes (98 hours):

- Modeling for Biology Applications, Project Tutorials, M.Eng., Fall 2010
- C++ Language Labwork, B.Eng., Fall 2009 and 2010
- C Language Labwork, B.Eng., Fall 2008, 2009 and 2010
- Virtual Reality Labwork, M.Eng., Fall 2008

At URJC Madrid (60 hours):

- Virtual Reality and Interaction, M.Sc., Fall 2013 and 2014

Project involvment

European:

- PhySound (European H2020 Marie Sklodowska Curie Global Fellowship), since 2017
- Wearhap (European FP7 ICT, `www.wearhap.eu`), 2013–2016
- Animetrics (European ERC Starting Grant, `mslab.es/grants/animetrics`), 2012–2016
- Natural Interactive Walking (European FET-Open, `www.niwproject.eu`), 2008–2011

National:

- Modelado inverso masivo de simulaciones a gran escala (Spain MINECO/FEDER), since 2016
- Digitanatomy (Spain MINECO), 2013-2016
- NIEVE (Inria, `www-sop.inria.fr/reves/NIEVE`), 2011
- OSCOS (French ANR), 2007–2008

Awards

Funding awards

- *Marie Sklodowska-Curie Individual Fellowship* - Global, ENG Panel (221,000€, grant agreement No 706708, Jan. 2016 to July 2019): Postdoctoral research fellowship funded by the European Union's Horizon 2020 Research and Innovation programme .
- *Juan de la Cierva Spanish Postdoctoral Fellowship* (86,000€, Dec 2013 – Nov 2016): merit-based fellowship for Postdoctoral researchers. Funded by the Spanish Ministerio de Economia y Competitividad.
- *PhD mobility scholarship* (2400€, May – Aug 2009): merit-based scholarship for PhD students covering the expenses of an international collaboration. Funded by the Universite Europeenne de Betagne
- *Study abroad scholarship* (2600€, Sep 2006 – Jun 2007): merit-based scholarship for University students covering the expenses of an international exchange program. Funded by the Region Rhone-Alpes (bourse Explo'ra).
- *Bourse Major* (18,600€, Sep 2004 – Aug 2007) : merit-based scholarship for international students covering the full expenses of University studies. Funded by the French Ministry of Foreign Affairs.
- *Bourse d'Excellence* (12,400€, Sep 2002 – Aug 2004): merit-based scholarship for international students covering the full expenses of University studies. Funded by the Agence pour l'Enseignement Français à l'Etranger.

Publications

International Journals

"Optimization-based Wearable Tactile Rendering", Alvaro Perez, Daniel Lobo, Francesco Chinello, **Gabriel Cirio**, Monica Malvezzi, Jose San Martin, Domenico Prattichizzo, Miguel A. Otaduy. *IEEE Transactions on Haptics*, to appear.

"Yarn-Level Cloth Simulation with Sliding Persistent Contacts", **Gabriel Cirio**, Jorge Lopez-Moreno and Miguel A. Otaduy. *IEEE Transactions on Visualization and Computer Graphics*, 23(2):1152–1162, 2017.

"Crumpling Sound Synthesis", **Gabriel Cirio**, Dingzeyu Li, Eitan Grinspun, Miguel A. Otaduy and Changxi Zheng. *ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia)*, 35(6), 181:1–181:11, 2016.

"Sparse GPU Voxelization of Yarn-Level Cloth", Jorge Lopez-Moreno, David Miraut, **Gabriel Cirio** and Miguel A. Otaduy. *Computer Graphics Forum*, Wiley-Blackwell, 2015.

"Yarn-Level Simulation of Woven Cloth", **Gabriel Cirio**, Jorge Lopez-Moreno, David Miraut and Miguel A. Otaduy. *ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia)*, 33(6), 207:1–207:11, 2014.

"Kinematic Evaluation of Virtual Walking Trajectories", **Gabriel Cirio**, Maud Marchal, Anne-Hélène Olivier and Julien Pettré. *IEEE Transactions on Visualization and Computer Graphics (Proceedings of IEEE Virtual Reality)*, 19(4), 671–680, 2013.

"Perceiving affordances in virtual reality: Influence of person and environmental properties in perception of standing on virtual grounds", Tony Regia-Corte, Maud Marchal, **Gabriel Cirio** and Anatole Lécuyer. *Virtual Reality*, 17–28, Springer-Verlag, 2013.

"Vibrotactile Rendering of Splashing Fluids", **Gabriel Cirio**, Maud Marchal, Anatole Lécuyer and Jeremy R. Cooperstock. *IEEE Transactions on Haptics*, 6(1):117–122, 2013.

"Walking in a Cube: Novel Metaphors for Safely Navigating Large Virtual Environments in Restricted Real Workspaces", **Gabriel Cirio**, Peter Vangorp, Maud Marchal, Emanuelle Chapoulie, Anatole Lécuyer and George Drettakis. *IEEE Transactions on Visualization and Computer Graphics (Proceedings of IEEE Virtual Reality)*, 18(4):546–554, 2012.

"Six Degrees-of-Freedom Haptic Interaction with Fluids", **Gabriel Cirio**, Maud Marchal, Sébastien Hillaire and Anatole Lécuyer. *IEEE Transactions on Visualization and Computer Graphics*, 17(11):1714–1727, 2011.

International Conferences

"Efficient Nonlinear Skin Simulation for Multi-Finger Tactile Rendering", Alvaro Perez, **Gabriel Cirio**, Daniel Lobo, Francesco Chinello, Domenico Prattichizzo and Miguel A. Otaduy. In *Proceedings of IEEE Haptics Symposium*, pp. 155–160, 2016.

"Efficient Simulation of Knitted Cloth Using Persistent Contacts", **Gabriel Cirio**, Jorge Lopez-Moreno and Miguel A. Otaduy. In *Proceedings of ACM SIGGRAPH/Eurographics Symposium on Computer Animation*, pp. 55–61, 2015.

"Soft Finger Tactile Rendering for Wearable Haptics", Alvaro Perez, Daniel Lobo, Francesco Chinello, **Gabriel Cirio**, Monica Malvezzi, José San Martín, Domenico Prattichizzo and Miguel A. Otaduy. In *Proceedings of IEEE World Haptics*, pp. 327–332, 2015.

"A Virtual Reality Platform to Study Crowd Behaviors", Anne-Hélène Olivier, Julien Bruneau, **Gabriel Cirio** and Julien Pettré. In *The Conference in Pedestrian and Evacuation Dynamics (PED2014)*, Transportation Research Procedia, pp. 114–122, Elsevier, 2014.

"Six-DoF Haptic Interaction with Fluids, Solids, and their Transitions", **Gabriel Cirio**, Maud Marchal, Miguel A. Otaduy and Anatole Lécuyer. In *Proceedings of IEEE World Haptics*, pages 157–162, 2013.

"Strain Limiting for Soft Finger Contact Simulation", Alvaro Perez, **Gabriel Cirio**, Fernando Hernández, Carlos Garre and Miguel A. Otaduy. In *Proceedings of IEEE World Haptics*, pages 79–84, 2013.

"Novel Interactive Techniques for Bimanual Manipulation of 3D Objects with Two 3DoFHaptic Interfaces", Anthony Talvas, Maud Marchal, Clément Nicolas, **Gabriel Cirio**, Mathieu Emily and Anatole Lécuyer. In *Proceedings of EuroHaptics, Lecture Notes in Computer Science*, pages 552–563, 2012.

"Virtual Chromatic Percussions Simulated by Pseudo-Haptic and Vibrotactile Feedback", Taku Hachisu, **Gabriel Cirio**, Maud Marchal, Anatole Lécuyer and Hiroyuki Kajimoto. In *Proceedings of ACM International Conference on Advances in Computer Entertainment Technology*, pages 21–25, 2011.

"Tap, squeeze and stir the virtual world: Touching the different states of matter through 6DoF haptic interaction", **Gabriel Cirio**, Maud Marchal, Aurélien Le Gentil and Anatole Lécuyer. In *Proceedings of IEEE Virtual Reality Short Papers*, pages 123–126, 2011.

"Data-Driven Progressive Mesh Compression Using Associated Properties", **Gabriel Cirio**, Guillaume Lavoué and Florent Dupont (2010). In *Springer Communications in Computer and Information Science (Proceedings of GRAPP 2010)*, pages 217–223, 2011.

"Walking Up and Down in Immersive Virtual Worlds: Novel Interaction Techniques Based on Visual Feedback", Maud Marchal, Anatole Lécuyer, **Gabriel Cirio**, Laurent Bonnet and Mathieu Emily. In *Proceedings of IEEE Symposium on 3D User Interfaces*, pages 19–26, 2010.

"The magic barrier tape: a novel metaphor for infinite navigation in virtual worlds with a restricted walking workspace", **Gabriel Cirio**, Maud Marchal, Tony Regia-Corte and Anatole Lécuyer. In *Proceedings of ACM Symposium on Virtual Reality Software and Technology*, pages 155–162, 2009.

National Conferences

"GPU Visualization and Voxelization of Yarn-Level Cloth", Jorge Lopez-Moreno, **Gabriel Cirio**, David Miraut and Miguel A. Otaduy. In *Spanish Computer Graphics Conference (CEIG)*, 2014.

"Anisotropic Strain Limiting", Fernando Hernandez, **Gabriel Cirio**, Alvaro Perez and Miguel A. Otaduy. In *Spanish Computer Graphics Conference (CEIG)*, 2013.

Book Chapters

"Visual Vibrations to Simulate Taps on Different Materials", Taku Hachisu, **Gabriel Cirio**, Maud Marchal, Anatole Lécuyer, Hiroyuki Kajimoto. In "Haptic Interaction - Perception, Devices and Applications", ed. H. Kajimoto, H.Ando, K.U. Kyung. Lecture Notes in Electrical Engineering, *Springer*, ISBN 978-4-431-55689-3, 2015.

"Soft Skin Simulation for Wearable Haptic Rendering", **Gabriel Cirio**, Alvaro Perez and Miguel A. Otaduy. In "Fundamentals of Wearable Computers and Augmented Reality, Second Edition", ed. W. Barfield. *CRC Press*, ISBN 978-1-4822-4350-5, 2015.

"3D Interaction Techniques for Bimanual Haptics in Virtual Environments", Anthony Talvas, Maud Marchal, **Gabriel Cirio**, and Anatole Lécuyer. In "Multi-finger Haptic Interaction", ed. I. Galiana, M. Ferre. *Springer*, ISBN 978-1-4471-5204-0, 2013.

"Multimodal Rendering of Walking over Virtual Grounds", Maud Marchal, **Gabriel Cirio**, Yon Visell, Federico Fontana, Stefania Serafin, Jeremy. R. Cooperstock, and Anatole Lécuyer. In "Human Walking in Virtual Environments", ed. F. Steinicke, Y. Visell, J. Campos, A. Lécuyer. *Springer*, ISBN 978-1-4419-8432-6, 2013.

"Multisensory and Haptic Rendering of Complex Virtual Grounds", **Gabriel Cirio**, Yon Visell, Maud Marchal and Anatole Lécuyer. In "Walking with the Senses: Non-visual perceptual techniques for walking in simulated environments", ed. Y. Visell, F. Fontana. *Logos Verlag*, ISBN 978-3-8325-2967-3, 2011.

Demonstrators

"Soft Finger Tactile Rendering for Wearable Haptics", Alvaro Perez, Daniel Lobo, Francesco Chinello, **Gabriel Cirio**, Monica Malvezzi, José San Martín, Domenico Prattichizzo, and Miguel A. Otaduy. In *IEEE World Haptics Demos*, 2015.

"The Virtual Crepe Factory: 6DoF Haptic Interaction with Fluids", **Gabriel Cirio**, Maud Marchal, Sébastien Hillaire and Anatole Lécuyer. In *ACM SIGGRAPH Emerging Technologies*, 2011.

Patents

"Computer implemented method, system and computer program product for simulating the behavior of a woven fabric at yarn level", **Gabriel Cirio**, Miguel A. Otaduy, David Miraut and Jorge Lopez-Moreno, Spain – P201431693.

"Computer implemented method, system and computer program product for simulating the behavior of a knitted fabric at yarn level", **Gabriel Cirio**, Miguel A. Otaduy and Jorge Lopez-Moreno, Spain – P201531038.

Invited Presentations

"Efficient Simulation of Fabric at the Yarn Level", **Gabriel Cirio**, Jorge Lopez-Moreno, David Miraut and Miguel A. Otaduy. *Fiber Society Conference*, Fall 2016

"Vibrotactile Rendering of Splashing Fluids", **Gabriel Cirio**, Maud Marchal, Anatole Lécuyer and Jeremy R. Cooperstock. *IEEE Haptics Symposium*, 2014.

"Six Degrees-of-Freedom Haptic Interaction with Fluids", **Gabriel Cirio**, Maud Marchal, Sébastien Hillaire and Anatole Lécuyer. *IEEE Virtual Reality*, 2011.