

# Curriculum Vitae

Julie Digne  
September 7th, 1984

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CNRS Researcher in team GeoMod at LIRIS (Université Claude Bernard Lyon 1).

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## Positions

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- Since 2012** CNRS researcher in team GeoMod at LIRIS (Université Claude Bernard Lyon 1).  
**2011-2012** Post-doctorate at INRIA Sophia Antipolis in GEOMETRICA team in collaboration with Caltech (California Institute of Technology). Collaboration with Pierre Alliez, David Cohen-Steiner, Mathieu Desbrun et Fernando de Goes.  
**2010-2011** Post-doctorate at Centre de Mathématiques et de Leurs Applications (École Normale Supérieure de Cachan).  
**2007-2010** PhD Centre de Mathématiques et de Leurs Applications (CMLA), ENS Cachan, PhD advisor Jean-Michel Morel, defended on 23/11/2010.  
**PhD award from Fondation Mathématique Jacques Hadamard (FMJH) 2012.**  
**2007** Master internship at ENS Cachan, with Jean-Michel Morel  
**2005** Engineering internship at ATR, research center at Kyoto, Japan (Neurosciences and Image processing) - 6 months.

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## Education

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- 2007–2010** PhD in Applied Mathematics at ENS Cachan  
**2006–2007** Master Mathématiques, Vision, Apprentissage (MVA, ENS Cachan). Highest honors.  
**2003–2006** Engineering degree from Télécom ParisTech (Paris)

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## Publications

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- *Interactive Example-Based Terrain Authoring with Conditional Generative Adversarial Networks*, E. Guérin, J. Digne, E. Galin, A. Peytavie, C. Wolf, B. Martinez, B. Benes, ACM TOG, Proceedings SIGGRAPH Asia 2017
- *Super-resolution of Point Set Surfaces using Local Similarities*, A. Hamdi-Chérif, J. Digne, R. Chaine, Computer Graphics Forum 2017.
- *Sparse Geometric Representation Through Local Shape Probing*, J. Digne, S. Valette et R. Chaine, IEEE Transactions on Visualization and Computer Graphics 2017.
- *The Bilateral Filter for Point Clouds* J. Digne, Image Processing On Line (IPOL), 2017.

- *Fine Scale Image Registration in Large-Scale Urban LIDAR Point Sets*, Maximilien Guislain, Julie Digne, Raphaëlle Chaine, Gilles Monnier, Computer Vision and Image Understanding (CVIU) Special Issue on Large-Scale 3D Modeling of Urban Indoor or Outdoor Scenes from Images and Range Scans, Volume 157, pages 90-102, issn 1077-3142, 2017
- *Coherent Multi-Layer Landscape Synthesis*, Oscar Argudo, Carlos Andujar, Antonio Chica, Eric Guérin, Julie Digne, Adrien Peytavie, Eric Galin, Computer Graphics International, The Visual Computer, Volume 33, Issue 6–8, pp 1005–1015, June 2017.
- *Detecting and Correcting Shadows in Urban Point Clouds and Image Collections*, Maximilien Guislain, Julie Digne, Raphaëlle Chaine, Dimitri Kudelski, Pascal Lefbvre-Albaret, Proceedings 3DV2016, Stanford, October 2016.
- *Sparse representation of terrains for procedural modeling*, Eric Guérin, Julie Digne, Eric Galin, Adrien Peytavie, Computer Graphics Forum 2016, vol. 35, no2, pp177-187, Special Issue for the Proceedings Eurographics 2016
- *An Implementation and Parallelization of the Scale Space Meshing Algorithm*, Julie Digne, Image Processing On Line (IPOL), 5, pp.282-295, 2015
- *Self-similarity for accurate compression of point sampled surfaces*, Julie Digne, Raphaëlle Chaine, Sébastien Valette, Computer Graphics Forum 2014, vol.33, no2, pp155-164, Special Issue for the Proceedings Eurographics 2014
- *A numerical analysis of differential operators on raw point clouds*, Julie Digne, Jean-Michel Morel, Springer Numerische Mathematik 2014. Numerische Mathematik, vol. 127(2), pp 255-289, Springer, 2014
- *Feature-Preserving Surface Reconstruction and Simplification from Defect-Laden Point Sets*, Julie Digne, David Cohen-Steiner, Pierre Alliez, Mathieu Desbrun, Fernando de Goes, Journal of Mathematical Imaging and Vision, Springer, 2014.
- *An analysis and implementation of a parallel ball pivoting algorithm*, Julie Digne, Image Processing On Line (IPOL), vol. 4 pp 149-168, 2014.
- *Neighborhood filters and the recovery of 3D information*, Julie Digne, Mariella Dimiccoli, Neus Sabater, Philippe Salembier, chapter in
- *Handbook of Mathematical Methods in Imaging*, Springer, 1st Edition., 1688 p., pages 1203-1229, ISBN: 978-0-387-92920-0\_27, 2011. Seconde Édition en 2015; 1ère édition en 2013.
- *Similarity based filtering of point clouds*, Julie Digne, Proceedings International Conference on Vision and Pattern Recognition (CVPR) 2012 (International Workshop on Point Cloud Processing), 2012.
- *Mesh Segmentation and Model Extraction*, Julie Digne, Jean-Michel Morel, Charyar Mehdi-Souzani, Claire Lartigue, Selected papers of the Seventh Conference on Curves and Surfaces, June Avignon, 24-30, 2010, Springer, Lecture Notes in Computer Science, vol. 6920, 2012.
- *Scale Space Meshing of Raw Data Point Sets*, Julie Digne, Jean-Michel Morel, Charyar Mehdi Souzani, Claire Lartigue, Computer Graphics Forum, vol. 30, n.6, pp 1630-1642, 2011 (ISSN 1467-8659).
- *Farman Institute 3D Point Sets - High Precision 3D Data Sets*, Julie Digne, Nicolas Audfray, Claire Lartigue, Charyar Mehdi-Souzani, Jean-Michel Morel, Image Processing On Line (IPOL), 2011 (ISSN 2105-1232).
- *High Fidelity Scan Merging*, Julie Digne, Jean-Michel Morel, Nicolas Audfray, Claire Lartigue, Computer Graphics Forum, vol. 29, n. 5, pp 1643-1651, 2010 (ISSN 0167-7055).
- *The Level Set Tree on Meshes*, Julie Digne, Jean-Michel Morel, Nicolas Audfray, Charyar Mehdi-Souzani, Proceedings of the Fifth Symposium on 3D Data Processing, Visualization and Transmission (3DPVT2010), Paris, 17-20 Mai 2010.
- *Feature extraction from high-density point clouds: toward automation of an intelligent 3D contact less digitizing strategy*, Charyar Mehdi-Souzani, Julie Digne, Nicolas Audfray, Claire Lartigue, Jean-Michel Morel, Computer Aided Design and Applications, vol. 7, n. 6, 2010 (ISSN 1686-4360).

## PhD thesis (2010)

- *Inverse Geometry: from the raw point cloud to the 3D surfaces - Theory and Algorithms*, PhD advisor Jean-Michel Morel.

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## PhD students and master interns

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- **Tong Fu**, since 2017 co-advised with Raphaëlle Chaine
- **Beatrix Fulop-Balogh**, since 2017 co-advised with Nicolas Bonneel
- **Yohann Béarzi**, since 2015 co-advised with Raphaëlle Chaine
- **Maximilien Guislain**, 2014-2017 joint industry-academic thesis with Technodigit, co-advised with Raphaëlle Chaine
- Agathe Herroux, master ENS Lyon, (co-advised with Nicolas Bonneel), 2018
- Beatrix Fulop, master ENS Lyon, (co-advised with Nicolas Bonneel), 2017
- Agathe Herroux, master ENS Lyon (co-advised with Nicolas Bonneel), 2017
- Prisca Bonnet (co-advised with Sébastien Valette and Raphaëlle Chaine), 2015
- Yohann Bearzi, master Lyon 1, 2015
- Thibault Dupont, master Lyon 1, co-advised with Adrien Peytavie, 2015
- Azzouz Hamdi-Cherif, master Lyon 1, 2014

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## Funded Research Projects

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- **PAPS (Patch-aware processing of surfaces) Project**. Funded by the French ANR. **Principal Investigator**. 2015-2018.
- **eRoma Project**. Funded by the French ANR. 2017-2021
- **Papaya Project**. Funded by the PIA.
- **IPOL Project (CMLA)**. Funded by the ERC "Twelve Labors". 2010-2015

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## Teaching

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- 2017-2018** : **Master Course** Advanced Image Processing, 3DMT master, Saint Etienne University.
- 2016-2018** : **Master informatique fondamentale at ENS Lyon** Mathematical methods for image synthesis with Nicolas Bonneel. Master ID3D (Statistical models for image processing), Engineering school course (CPE) on surface reconstruction.
- 2013-2016** : Master Course *Informatique Graphique et Image*, teaching assistant for several courses in Algorithmic and programming.

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## Administrative responsibilities

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- Member of the SMAI-SIGMA group advisory board since 2018.
- Member of the AFIG board since 2016.
- Deputy director of team GeoMod since January 2015
- Elected member of the LIRIS board (since September 2015)

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## Program Committees

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- IPC Eurographics - Short Papers (2017,2018)
- IPC CGI - Computer Graphics International (2018)
- IPC Eurographics - State of the Art Reports (2017)
- Editorial board of Image Processing OnLine IPOL since 2012.
- IPC Geometry Modeling and Processing (GMP) 2014-2015-2016-2017-2018
- IPC Digital Heritage (2013 and 2015)
- IPC Siggraph Asia Posters and Technical Briefs (2014 and 2016)
- Chair of the best paper program of AFIG and Eurographics French Chapter since 2016
- Reviewer for (among others) *IPOL*, *TOG Transaction on Graphics*, *Computer Graphics Forum*, *SIGGRAPH*, *SIGGRAPH Asia*, *Eurographics*, *Pattern Recognition*, *IEEE - TVCG*.

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## Organisation of international events

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- Member of the organizing committee of Eurographics 2017 in Lyon (400 participants)
- Chair of Eurographics - Workshops with Brian Wyvill (University of Victoria, Canada)
- Member of the organizing committee of EGSR and HPG 2014 in Lyon (100 participants)