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Research Experience

- Sept. 2017 **Postdoctorate Research Fellow** *Under the supervision of Ruben Coen-Cagli.*
Department of Comp. Biology, Albert Einstein College of Medicine (AECOM), New-York.
- 2016–2017 **Postdoctorate Research Fellow** *Under the supervision of Gabriel Peyré.*
Département de Mathématiques et Applications (DMA), École Normale Supérieure, Paris.
- 2013–2017 **PhD under the supervision of G. Peyré and C. Monier** *Applied Mathematics and Neurosciences. Dynamic Textures Synthesis for Probing Vision in Psychophysics and Electrophysiology.* [Link](#) Dauphine University (Paris Sciences Lettres), Paris. Unité Neuroscience, Information et Complexité (UNIC-CNRS), Gif-sur-Yvette.
- 2011–2012 **Research internship under the supervision of J-M. Morel and B. Coll** *Texture synthesis : the Portilla-Simoncelli algorithm (statistical tools, optimization, C implementation).* Universitat de les Illes Balears, Mallorca. Centre de Mathématiques et de Leurs Applications (CMLA), Cachan.

List of Contributions

Pre-prints

Vacher J., Coen-Cagli R., Combining mixture models with linear mixing updates : multilayer image segmentation and synthesis, *arXiv 1905.10629, 2019* [Link](#)

Vacher J., Mamassian P., Coen-Cagli R., Probabilistic Model of Visual Segmentation, *arXiv 1806.00111, 2019* [Link](#)

Journals

Vacher J., Meso A. I., Perrinet L. U., Gabriel P., Bayesian Modeling of Motion Perception using Dynamical Stochastic Textures, *Neural Computation, 2018* [Link](#)

Briand T., Vacher J., How to Apply a Filter Defined in the Frequency Domain by a Continuous Function?, *Image Processing On Line 6, 183-211, 2016* [Link](#)

Briand T., Vacher J., Galerne B., Rabin J., The Heeger-Bergen Pyramid Based Texture Synthesis Algorithm, *Image Processing On Line 4, 276–299, 2014* [Link](#)

Conferences

Le Coënt A., Fribourg L., Vacher J, Biologically Inspired Dynamic Textures For Probing Motion Perception, *IFAC Conference on Analysis and Design of Hybrid Systems, 2018* [Link](#)

Vacher J., Meso A. I., Perrinet L. U., Gabriel P., Biologically Inspired Dynamic Textures For Probing Motion Perception, *Advances in Neural Information Processing Systems, 1918-1926, 2015* [Link](#)

Participation in Conferences

Aug. 2019	Talk : An ideal observer model for grouping and contour integration in natural images <i>European Conference on Visual Perception</i> Link
June 2016	Poster : Supervised Learning Estimation of Functional Maps from VSD Imaging <i>International Conference on Mathematical NeuroScience (ICMNS)</i> Link
Dec. 2015	Poster and spotlight presentation : Biologically Inspired Dynamic Textures for Probing Motion Perception <i>Neural Information Processing Systems (NIPS)</i> Link
June 2015	Talk : Dynamic Texture Synthesis for Probing Visual Perception <i>7e Biennale Française des Mathématiques Appliquées et Industrielles (SMAI 2015)</i> Link
June 2015	Poster : A Mathematical Account of Dynamic Texture Synthesis for Probing Visual Perception <i>International Conference on Mathematical NeuroScience (ICMNS)</i> Link
Oct. 2014	Poster : Dynamic Textures for Probing Visual Perception <i>Workshop on Geometrical Models in Vision</i> Link

Reviewer

Conferences

Neural Information Processing Systems 2019 (NeurIPS) : [Website](#)

Limited Labeled Data workshop @ICLR 2018–2019 : [Website](#)

Journals

Image Processing On Line Journal (IPOL) : [Website](#)

IEEE Transactions on Visualization and Computer Graphics : [Website](#)

Education

2013–2017	PhD in Applied Mathematics Dauphine University (Paris Sciences Lettres), Paris.
2011–2013	Master's degree in mathematics <i>Mathematics, Vision and Learning. Graduated with honours.</i> École Normale Supérieure de Cachan.
2010–2011	Bachelor's degree in mathematics <i>Applied Mathematics. Graduated with honours.</i> École Normale Supérieure de Cachan.

Teaching Activities

Oct. 2016	French tenured civil servant as teacher in mathematics <i>Availability for postdoctoral research.</i>
2013–2015	Lecturer in Analysis, Linear Algebra, Differential Calculus <i>Three hours a week. Mid to high level students.</i> Dauphine University, Paris.
July 2013	Highest mathematics competitive exam for academic teaching <i>Agrégation de mathématiques. French trainee civil servant as teacher in mathematics.</i>
2011–2013	Examiner in mathematics <i>Oral exam training. Two hours a week. High level students.</i> Classes Préparatoires aux Grandes Écoles, Janson de Sailly high school, Paris.

Professional Society Membership

since 2015	Société de Mathématiques Appliquées et Industrielles Link
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Awards and Scholarships

March 2019	Seal of Excellence for the project “Decompose the hierarchical process of human visual segmentation” <i>Certificate delivered by the European Commission, as the institution managing Horizon 2020, the EU Framework Programme for Research and Innovation 2014-2020</i> Link
2012–2013	Excellence Master’s Scholarship <i>Funding (10 000 euros) from the Fondation de Mathématiques Jacques Hadamard (FMJH)</i> Link

Languages

French : native / English : fluent / Spanish : basic

Computer Science

Operating systems : Linux, Windows

Languages : Python (parallel/GPU computing), Matlab, basic knowledge in C/C++

Interests and other activities

Sports : handball, hiking, tennis, ...

Video/Board Games : hearthstone, megawatt, smallworld, 7 wonders, ...

Music, cinema, sciences, social sciences, economy, politics, ...

President of the association "Les sENS de l’Art" in 2012 : in charge of the organization of the annual art and music festival of ENS Cachan (budget : 40 000 euros).