

# PABLO MUSÉ FREIRE

May 2015

## Personal Information

---

- Date and place of birth: February 5, 1975. Montevideo, Uruguay
- Citizenship: Uruguayan

## Contact Information

---

IIE, Facultad de Ingeniería,  
Universidad de la República  
11300 Montevideo  
Uruguay

Ph.: +598 2 711 0974 ext. 113  
Fax. +598 2 711 7435  
Email: pmuse@fing.edu.uy

## Education

---

### **Ph.D., Applied Mathematics** **2001 - 2004**

*CMLA, École Normale Supérieure de Cachan, France.*

- Dissertation Topic: "On the definition and recognition of planar shapes in digital images."
- Advisor: Prof. Jean-Michel Morel.

### **DEA (MSc.), Mathematics, Vision and Learning** **2000 - 2001**

*CMLA, École Normale Supérieure de Cachan, France.*

- Dissertation Topic: "Shape recognition and image retrieval."
- Advisor: Prof. Jean-Michel Morel.

### **Electrical Engineer** **1993 - 1999**

*Universidad de la República, Facultad de Ingeniería, Uruguay.*

## Professional Experience

---

### **Universidad de la República, Uruguay** **Since 2015**

**Full Professor of Signal Processing** (Associate Prof., 2012 – 2014; Assistant Prof., 2008 – 2011).

Head of the Department of Signal Processing with 20 persons in charge (2012 to 2014) and at least five R&D national and international projects. From 2009 to 2011, I was Director of the Graduate School of the Electrical Engineering Division, with more than 50 students. Research and teaching in statistical signal processing, statistical data analysis, detection theory and machine learning, image processing, geophysics and medical image processing. Strong relationship with top US and French universities, foreign national agencies (CNES and NASA's Jet Propulsion Lab) and foreign companies. Advisor of several MSc. and PhD students in Uruguay, Argentina, France and USA:

### **Master theses**

- *Mario González.* Variational methods and optimisation in image restoration of satellite imaging. Master in Mathematical Engineering UDELAR. Thesis co-advised with Prof. Roberto Markarián. **Recently started.**
- *Mauricio Delbracio.* Point Spread Function estimation of an optical system and applications to super-resolution. Master in Electrical Engineering UDELAR / Master in Mathematics, Vision and Learning, ENS Cachan, France. Thesis co-advised with Dr. Andrés Almansa, 2008–2009.

- *Cecilia Aguerrebere*. A study of the image formation model and noise characterization in SPECT imaging. Applications to denoising and epileptic foci localization. Master in Electrical Engineering UDELAR / Master in Mathematics, Vision and Learning, ENS Cachan, France. Thesis co-advised with Prof. Julie Delon, 2010–2011.
- *Marcelo Fiori*. Polyps detection in virtual colonoscopy. Master in Mathematical Engineering UDELAR. Thesis co-advised with Prof. Guillermo Sapiro, 2010–2011.
- *Claire Delplancke*. Image restoration in the presence of Gaussian and impulsive noise by total variation minimisation. Master M1 in Applied Mathematics, Ecole Normale Supérieure de Cachan, France, 2011.

## PhD theses

- *Mariano Tepper*. Detecting clusters and boundaries: a twofold study on shape representation. Doctorado en Ciencias de la computación, Universidad de Buenos Aires. Thesis co-advised with Dr. Andrés Almansa (CNRS) and Prof. Marta Mejail (UBA), 2007–2011.
- *Mauricio Delbracio*. Two Problems of Digital Image Formation: Recovering the Camera Point Spread Function and Boosting Stochastic Renderers by Auto-similarity Filtering. PhD in Electrical Engineering UDELAR / PhD in Applied Mathematics, ENS Cachan, France. Thesis co-advised with Dr. Andrés Almansa and Prof. Jean-Michel Morel, 2010–2013.
- *Cecilia Aguerrebere*. On the Generation of High Dynamic Range Images: Theory and Practice from a Statistical Perspective. PhD in Electrical Engineering UDELAR / PhD in Applied Mathematics, Télécom ParisTech, France. Thesis co-advised with Prof. Julie Delon and Prof. Yann Gousseau, 2011 – May 2014.
- *Marcelo Fiori*. Graph inference and graph matching problems: Theory and algorithms. PhD in Electrical Engineering UDELAR. Thesis co-advised with Dr. Guillermo Sapiro, 2012 – 2015.
- *Javier Preciozzi*. Stereoscopic super-resolution and high precision topographic reconstruction from high resolution satellite imaging. PhD in Electrical Engineering UDELAR. Thesis co-advised with Dr. Andrés Almansa. 2010 - July 2015 (**expected**).
- *Rodrigo Alonso*. Spatio-temporal estimation of solar resources in Uruguay based on satellite imaging. PhD in Electrical Engineering UDELAR. Thesis co-advised with Prof. Gonzalo Abal, 2011 - July 2015 (**expected**).

## CSI Ingenieros, Uruguay

Since 2014

*Senior External Consultant, R&D*. Signal, image and video analysis, pattern recognition, machine learning. Applications to: 3D reconstruction and damage evaluation of containers, drone and hyperspectral-based precision agriculture, optimization of forestal and pulp mill processes.

## Digital Sense Technologies, Uruguay

Since Feb. 2008

*Senior External Consultant, R&D*. Signal, image and video analysis, pattern recognition, machine learning. Applications to: satellite-based precision agriculture, object detection and recognition, augmented reality, fraud detection and logistics optimization. Project management and scientific consulting for US and national companies such as Viewdle, Universal Studios (Orlando), Paytrue, Advicemetech, Fonofarma, Sendstar and Otoharmonics.

## California Institute of Technology, Pasadena, CA, USA

Sept 2006 - Dec 2011

*Postdoctoral Scholar in Geophysics*; later *Visiting Professor, Seismo Lab*. Research in seismic and tectonic signal processing of radar, GPS and satellite images.

## Cognitech Inc., Pasadena, CA, USA

June 2005 - Aug 2006

*Senior Researcher*. Research and development in computer vision, remote sensing, image processing and image analysis. Applications to photogrammetry, forensic sciences and US Government projects.

<b>CMLA, ENS Cachan, France</b> <i>Chercheur contractuel</i> . Postdoctoral studies in applied mathematics and image analysis.	<b>2004 - 2005</b>
<b>ENS Cachan, France</b> <i>Allocataire de recherche</i> . Doctoral studies in applied mathematics and image analysis.	<b>2001 - 2004</b>
<b>CEREMADE, Université Paris IX - Dauphine, France</b> <i>Moniteur</i> . Teaching undergraduate mathematics.	<b>2001 - 2004</b>
<b>Universidad de la República, Uruguay</b> <i>Research/Teaching Assistant</i> . Research in biomedical signal processing, image processing. Teaching signals and systems and signal processing.	<b>1997 - 2000</b>

#### Academic and Industrial Research Projects

---

<b>Scientific coordinator, ANII (National Research and Innovation Agency, Uruguay)</b> - Project: "Early detection of plagues in soy using hyperspectral cameras and drones."	<b>2014</b>
<b>Local scientific coordinator, CNES Project (France)</b> CNES, Télécom ParisTech, Universidad de la República. - Topic: "Réduction d'artefacts de compression dans les images du satellite Pléiades."	<b>2013 - 2016</b>
<b>Local scientific coordinator, STIC-AmSud, Argentina/France/Uruguay</b> ENS Cachan, Universidad de Buenos Aires, Télécom ParisTech, Universidad de la República. - Topic: "Mathematical models for visual perception and subpixel computer vision."	<b>2011 - 2013</b>
<b>Local scientific coordinator, CESBIO/CNES Project, France/Uruguay</b> CESBIO, ENS Cachan, Télécom Paristech, Universidad de la República. - Topic: "Traitement des perturbations RFI sur les images SMOS".	<b>2010 - 2012</b>
<b>Consultant, ANII (National Research and Innovation Agency, Uruguay)</b> - Project: "Soil segmentation based on multispectral satellite imaging for precision agriculture. "	<b>2010</b>
<b>Principal investigator, Comisión Honoraria de Lucha contra el Cáncer</b> Universidad de la República. - Topic: "Image processing of dermatoscopic data for the study of melanocytic lesions."	<b>2009 - 2011</b>
<b>Principal investigator, Comisión Sectorial de Investigación Científica</b> Universidad de la República, , Uruguay. - Topic: "Detection theory, image processing, and applications to detection, segmentation and characterization of skin lesions in dermatoscopic images ."	<b>2007 - 2009</b>
<b>Researcher, Tectonics Observatory, USA</b> California Insitute of Technology. - Topic: "Calibration of pushbroom satellites."	<b>2006 - 2007</b>
<b>Researcher, Seismological Laboratory, USA</b> California Insitute of Technology. - Topic: "Multiscale estimation of tectonic displacement fields using GPS networks."	<b>2006 - 2007</b>
<b>Researcher, Programa de Desarrollo Tecnológico (PDT), Uruguay</b> Universidad Católica and Universidad de la República. - Topic: "Image analysis with applications to biomedical imaging, biotechnology and multimedia ."	<b>2006 - 2008</b>
<b>Researcher, franco-italian project Galileo</b> CMLA, ENS Cachan and University of Bologna. - Topic: "Shape recognition: Theory and Applications."	<b>2003 - 2004</b>
<b>Researcher, ISII - RNRT project, France</b> French program "National Research Network in Telecommunications". CMLA, ENS Cachan and Poseidon-VisionIQ. - Topic: "Semantic indexing of images in the Internet."	<b>2001 - 2002</b>

## Teaching experience

---

**Ecole Normale Supérieure de Cachan, CMLA, France** June 2010, Sept. 2012, May 2014  
- Visiting professor, CNRS and ENS Cachan; Theses advisor and graduate courses on image processing.

**Télécom ParisTech, TSI, France** April 2009, Sept. 2011, Sept. 2013, March 2015  
- Visiting professor; Theses advisor and lecture of several seminars.

**Universidad Nacional del Centro, Fac. de Ciencias Exactas, Argentina** Sept 2009  
- Visiting professor; Graduate course on image analysis and detection theory.

**Universidad de Buenos Aires, Fac. de Ciencias Exactas, Argentina** August 2008  
- Visiting professor; Graduate course on image analysis and detection theory.

**Universidad de la República, Fac. de Ingeniería, Uruguay** Since Feb 2008

- Since 2008: Statistical Signal Processing (graduate course).
- Since 2008: Pattern Recognition (graduate course).
- 2008–2010: Image Processing (graduate course).
- 10/2010–12/2010: Monte Carlo Statistical Methods for the estimation of state-space models (graduate course). Taught with Prof. Thierry Chonavel, Télécom Bretagne, France.
- 2012: *Mathematical Methods for Image Processing* (graduate course). Taught with Prof. Roberto Markarián, IMERL, UDELAR.

**Universidad Nacional del Centro de la Prov. de Buenos Aires, Argentina** Sept 2009  
- Visiting professor; Detection of Geometric Structures based on Computational Gestalt. Applications to shape recognition (graduate course).

**Université Paris 9 - Dauphine, France** 2002 - 2004  
- Teaching assistant, undergraduate courses: Analysis, Algebra, Introduction to probability theory.

**Universidad de la República, Fac. de Ingeniería, Uruguay** 1996 - 2000  
- Teaching assistant, undergraduate courses: lab of biomedical engineering, Sampling theory and digital signal processing, Communication systems.

## Fellowships and awards

---

**Investigador G°4**, Programa de Desarrollo de Ciencias Básicas (PEDECIBA),  
Área Matemáticas Since 2014

**Investigador Nivel II**, Sistema Nacional de Investigadores, Uruguay Since 2009  
Área: Ciencias Naturales y Exactas / Matemáticas

**Best paper award**, Iberoamerican Conf. on Pattern Recognition, CIARP09 Nov 2009

**Régimen de Dedicación Total**, Universidad de la República Since 2008

**Postdoctoral fellowship**, California Institute of Technology, USA 2006 - 2007

**Doctoral fellowship**, CMLA, ENS-Cachan, France 2001 - 2004

**Master fellowship**, French Government, French Embassy in Uruguay 2000 - 2001

## Book

F. Cao, J.L. Lisani, J.-M. Morel, P. Musé, F. Sur. *A theory of shape identification*. Lecture Notes in Mathematics, Vol. 1948, Springer, 2008.

## Book Chapters

P. Musé, F. Sur, F. Cao, Y. Gousseau, J.-M. Morel. *Shape recognition based on an a contrario methodology*. In Statistics and analysis of shapes, H. Krim and A. Yezzi Eds., Birkhauser, 2006.

## PhD Dissertation

P. Musé, *On the definition and recognition of planar shapes in digital images*, ENS Cachan, Oct. 2004.

## Journal Articles

1. C. Aguerrebere, A. Almansa, J. Delon, Y. Gousseau, P. Musé. A Hyperprior Bayesian Approach for Solving Image Inverse Problems. **Submitted** to IEEE Trans. on Image Processing, 2015.
2. M. Tepper, P. Musé, A. Almansa. *A General Probabilistic Framework for Perceptual Grouping and its Application to the Proximity Gestalt*. **Submitted** to Vision Research, 2015. Submitted to Vision Research, 2015.
3. J. Preciozzi, A. Almansa, P. Musé, S. Durand, A. Khazaal, B. Rougé. *A sparsity-based variational approach for the restoration of SMOS images from L1A data*. **Submitted** to IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 2015.
4. M. Delbracio, P. Musé, A. Buades, J.-M. Morel. *Accelerating Monte Carlo renderers by Ray Histogram Fusion*, Image Processing Online, 5: 55-72, 2015.
5. M. Fiori, P. Musé, G. Sapiro. *A Complete System for Candidate Polyps Detection in Virtual Colonoscopy*. International Journal of Pattern Recognition and Artificial Intelligence, 28(7), 2014.
6. M. Delbracio, P. Musé, A. Buades, J. Chauvier, N. Phelps; J.-M. Morel. *Boosting Monte Carlo rendering by distribution-driven filtering*, ACM Transactions on Graphics, 33(1), Article 8, 2014.
7. C. Aguerrebere, J. Delon, Y. Gousseau, P. Musé. *Best algorithms for HDR image generation: A study of performance bounds* SIAM Journal on Imaging Sciences, 7(1): 1-34, 2014.
8. M. Tepper, P. Musé, A. Almansa. *Finding Contrasted and Regular Edges by a Contrario Detection of Periodic Subsequences*, Pattern recognition, 47(1):72-79, 2014.
9. M. Tepper, P. Musé, A. Almansa. *On the Role of Contrast and Regularity in Perceptual Boundary Saliency*, Journal of Mathematical Imaging and Vision, 2013.
10. M. Delbracio, A. Almansa, P. Musé, J.-M. Morel. *Subpixel Point Spread Function Estimation from Two Photographs at Different Distances*, SIAM Journal on Imaging Sciences, 5(4):1234 - 1260, 2012.
11. M. Delbracio, P. Musé, A. Almansa, J.-M. Morel. *The non-parametric sub-pixel local point spread function estimation is a well posed problem*, International Journal of Computer Vision, 96(2):175-194, 2012.
12. E. Heltland, P. Musé, M. Simons, Y. N. Lin, P. Shanker, C. Di Caprio. *Multiscale InSAR Time Series (MInTS) analysis of surface deformation*, Journal of Geophysical Research, v. 117, 2012.
13. M. Delbracio, P. Musé, A. Almansa. *Non-parametric sub-pixel local point spread function estimation*. Image Processing On Line, 2012.

14. R. Alonso, G. Abal, R. Siri, P. Musé. *Brightness-dependent Tarpley model for global solar radiation estimation using GOES satellite images: application to Uruguay*, Solar Energy, v.: 86 11, p.: 3205 - 3215, 2012.
15. G. Capdehourat, A. Corez, A. Bazzano, R. Alonso, P. Musé. *Toward a combined tool to assist dermatologists in melanoma detection from dermoscopic images of pigmented skin lesions*, Pattern Recognition Letters, 32(16): 2187-2196, 2011.
16. M. Tepper, P. Musé, A. Almansa, M. Mejail. *Automatically finding clusters in Normalized Cuts*, Pattern Recognition, 44(7): 1372-1386, 2011.
17. Y. N. Lin, M. Simons, E. Hetland, P. Musé, C. Di Caprio. *A multiscale approach to estimating topographically correlated propagation delays in radar interferograms*, Geochemistry Geophysics Geosystems, v. 11 Q09002, 2010.
18. C. Tape, P. Musé, M. Simons, D. Dong, F. H. Webb. *Multiscale estimation of GPS velocity fields*, Geophysical Journal International, 179(2): 945-971, 2009.
19. S. Leprince, P. Musé, J.-P. Avouac. *In-Flight CCD Distortion Calibration for Pushbroom Satellites Based On Subpixel Correlation*, IEEE Transactions on Geoscience and Remote Sensing, 46(9): 2675-2683, 2008.
20. F. Cao, J. Delon, A. Desolneux, P. Musé, F. Sur. *A unified framework for detecting groups and application to shape recognition*, Journal of Mathematical Imaging and Vision, 27(2): 91-119, 2007.
21. P. Musé, F. Sur, F. Cao, Y. Gousseau, J.-M. Morel. *An a contrario decision method for shape element recognition*, International Journal of Computer Vision, 69(3): 295-315, 2006.
22. F. Cao, P. Musé y F. Sur. *Extracting meaningful curves from images*, Journal of Mathematical Imaging and Vision, 22(2-3): 159-181, 2005.
23. P. Musé, F. Sur, J.-M. Morel. *Sur les seuils de reconnaissance de formes*, Traitement du Signal, 20(3): 279-294, 2003.
24. H. Suárez, M. Arocena, A. Suárez, T. A. de Artagaveytia, P. Musé, J. Gil. *Changes in Postural Control Parameters after Vestibular Rehabilitation in Patients with Central Vestibular Disorders*, Acta Otolaryngol (Stockh), 123(2): 143-147, 2003.
25. H. Suárez, P. Musé, A. Suárez, M. Arocena. *Assessment of the risk of fall, related to visual stimulation, in patients with central vestibular disorders*, Acta Otolaryngol (Stockh), 121(2): 220-224, 2001.
26. H. Suárez, P. Musé, A. Suárez, M. Arocena. *Postural behavior responses to visual stimulation in patients with vestibular disorders*, Acta Otolaryngol (Stockh), 120(2): 168-172, 2000.

#### Articles in Proceedings and Conferences

1. J. Preciozzi, P. Musé, A. Almansa, S. Durand, B. Rougé, A. Khazaal. *SMOS images restoration from L1A data: A sparsity-based variational approach*, proceedings of the IEEE International Geoscience and Remote Sensing Symposium, Québec, Canada, 2014.
2. C. Aguerrebere, J. Delon, Y. Gousseau, P. Musé. *Single Shot High Dynamic Range Imaging*, proceedings of the International Conference on Computational Photography (ICCP 2014), Intel Santa Clara, California, 2014.
3. C. Aguerrebere, J. Delon, Y. Gousseau, P. Musé. *Simultaneous HDR image reconstruction and denoising for dynamic scenes*, proceedings of the International Conference on Computational Photography (ICCP 2013), Harvard, Cambridge, MA, USA , 2013.

4. M. Fiori, P. Sprechmann, J. Volgstein, P. Musé, G. Sapiro. *Robust Multimodal Graph Matching: Sparse Coding Meets Graph Matching*. In: Advances in Neural Information Processing Systems 26 (NIPS 2013), Lake Tahoe, Nevada, USA , 2013.
5. M. Fiori, P. Musé, A. Hariri, G. Sapiro. Multimodal Graphical Models via Group Lasso, SPARS 2013: Signal Processing with Adaptive Sparse Structured Representations, Lausanne, Switzerland, 2013.
6. C. Aguerrebere, J. Delon, Y. Gousseau, P. Musé. *Algorithmes optimaux pour la génération d'images HDR. Une étude des bornes de performance*, proceedings of GRETSI 2013, Brest, France.
7. M. Fiori, P. Musé, G. Sapiro. *Polyps Flagging in Virtual Colonoscopy*, Congreso Iberoamericano de Reconocimiento de Patrones, (CIARP), La Habana, Cuba, 2013. In: Progress in Pattern Recognition, Image Analysis, Computer Vision, and Applications, Lecture Notes in Computer Science Volume 8259, 2013, pp 181-189.
8. M. Tepper, P. Musé, A. Almansa, M. Mejail. *Boruvka Meets Nearest Neighbors*, Congreso Iberoamericano de Reconocimiento de Patrones (CIARP), La Habana, Cuba, 2013. In: Progress in Pattern Recognition, Image Analysis, Computer Vision, and Applications Lecture Notes in Computer Science Volume 8259, 2013, pp 560-567
9. M. Tepper, P. Musé, A. Almansa, M. Mejail. *Finding Edges by A Contrario Detection of Periodic Subsequences*, Conferencia Iberoamericana de Reconocimiento de Patrones (CIARP), Buenos Aires, Argentina, 2012. In: Progress in Pattern Recognition, Image Analysis, Computer Vision, and Applications Lecture Notes in Computer Science Volume 7441, 2012, pp 773-780.
10. M. Fiori, P. Musé, G. Sapiro. *Topology Constraints in Graphical Models*. In: Advances in Neural Information Processing Systems 25 (NIPS 2012), Lake Tahoe, Nevada, USA , 2012.
11. J. Preciozzi, P. Musé, A. Almansa, S. Durand, B. Rougé, A. Khazaal, F. Cabot, Y. Kerr. *Sparsity based restoration of SMOS images in the presence of outliers*, proceedings of the IEEE International Geoscience and Remote Sensing Symposium, Munich, Germany, 2012.
12. R. Alonso, G. Abal, R. Siri, P. Musé, P. Toscano. *Global Solar Irradiation Assessment in Uruguay Using Tarpley Model and GOES Satellite Images*, proceedings of the Solar World Congress 2011, International Solar Energy Society , Kassel, Germany, 2011.
13. M. Fiori, P. Musé, S. Aguirre, G. Sapiro. *Automatic Colon Polyp Flagging via Geometric and Texture Features*, proceedings of the 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Buenos Aires, Argentina, 2010, pp 3170-3173.
14. G. Capdehourat, A. Corez, A. Bazzano, P. Musé. *Pigmented skin lesions classification using dermatoscopic images*, Conferencia Iberoamericana de Reconocimiento de Patrones (CIARP) 2009, Guadalajara, Mexico. In: Progress in Pattern Recognition, Image Analysis, Computer Vision, and Applications Lecture Notes in Computer Science Volume 5856, 2009, pp 537-544.
15. M. Tepper, F. Gómez Fernández, P. Musé, A. Almansa, M. Mejail. *Morphological Shape Context: Semi-locality and Robust Matching in Shape Recognition*, proceedings of the 2009 Iberoamerican Conference on Pattern Recognition(CIARP), Lecture Notes in Computer Science, Vol. 5856, 2009.
16. C. Aguerrebere, P. Sprechmann, P. Musé, R. Ferrando. *A-contrario localization of epileptogenic zones in SPECT images*. proceedings of the International Symposium on Biomedical Imaging ISBI-2009 (IEEE), July 2009, Boston, USA.
17. P. Musé, C. Tape, M. Simons. *Multiscale estimation of GPS velocity fields*. Eos Trans. American Geophysical Union, 89(53), Fall Meet. Suppl., Abstract G51A-0609, San Francisco, CA, USA, December 2008.

18. M. Simons, E.A. Hetland, P. Musé, Y.N. Lin, C. Dicaprio, A. Rickerby. *A multiscale approach to InSAR time series analysis*. Eos Trans. American Geophysical Union, 89(53), Fall Meet. Suppl., Abstract G23A-05, San Francisco, CA, USA, December 2008.
19. S. Leprince, E. Berthier, P. Musé, C. Delacourt, J-P. Avouac. *Monitoring Earth's Surface Dynamics with Optical Imagery*. SIAM Conference on Imaging Science, San Diego, CA, USA, July 2008.
20. S.E. Owen, D. Dong, R.B. Lohman, Z. Liu, E. Hetland, P. Musé, P. Lundgren, F. Webb, M. Simons. *Multi-spatial and temporal scale deformation of Japan from GEONET data*, Eos. Trans. American Geophysical Union, 88(23), Jt. Assem. Suppl., Abstract G41A-05. Acapulco, Mexico, May 2007.
21. L. Rudin, P. Monasse, P. Musé. *Method of Epipolar Characteristics for Accurate 3-D Mosaic of Urban Elevation Geometry from Video Sequences*, 2006 Special Conference "Measuring the Earth (Part II): Latest Developments with Digital Surface Modeling and Automated Feature Extraction", American Society for Photogrammetry and Remote Sensing, San Antonio, Texas, November 2006.
22. A. Cerri, D. Giorgi, P. Musé, F. Sur, F. Tomassini. *Shape recognition via an a contrario model for size functions*, proceedings of the 2006 International Conference on Image Analysis and Registration (ICIAR), Lecture Notes in Computer Science, Vol. 4142, Springer, 2006.
23. P. Musé, F. Sur, F. Cao, Y. Gousseau. *Unsupervised Thresholds for Shape Matching*, proceedings of the International Conference on Image Processing ICIP-2003 (IEEE), September 2003, Barcelona, Spain. Oral session.
24. P. Musé, F. Sur, J.-M. Morel. *Affine Invariant Shape Recognition*, Mathematisches Forschungsinstitut Oberwolfach Meeting : "The Mathematical, Computational and Biological Study of Vision", Oberwolfach, Germany, November 2001.
25. H. Suárez, P. Musé, A. Suárez, M. Arocena. *Postural adaptation induced by visual stimulation in patients with vestibular disorders*, 2000 Annual MidWinter Meeting of the Association for Research in Otolaryngology. Florida, USA, February 2000.
26. H. Suárez, P. Musé, A. Suárez, M. Arocena. *Measures of postural responses to different visual stimulation in patients with vestibular disorders*, Collegium Oto-Rhino-Laryngologicum Amicitiae Sacrum. Lyon, France, February 1999.
27. P. Musé, H. Suárez, A. Suárez, M. Arocena. *Análisis de Señales Posturográficas: puesta a punto de un método de medida y su instrumentación*, XII Congreso Argentino de Bioingeniería, Buenos Aires, Argentina, June 1999.
28. H. Suárez, P. Musé, A. Suárez, M. Arocena. *Postural responses with different visual stimulations in patients with central vestibular disorders*, 1999 Annual MidWinter Meeting of the Association for Research in Otolaryngology. Florida, USA, February 1999.

#### **Other conferences and scientific meetings**

1. C. Aguerrebere, J. Delon, Y. Gousseau, P. Musé. *Simultaneous HDR Image Reconstruction and Denoising for Dynamic Scenes*, SIAM Conference on Imaging Sciences - SIAM IS14. Honk Kong, May 2014.
2. M. Delbraccio, A. Almansa, P. Musé, J.-M. Morel. *Blind Subpixel Point Spread Function Estimation from Scaled Image Pairs*, SIAM Conference on Imaging Sciences - SIAM IS12. Philadelphia, USA, May 2012.



3. M. Delbracio, P. Musé, A. Almansa, J.-M. Morel. *Subpixel estimation of digital optical camera's point spread functions in the presence of aliasing*, Inter-Continental Advanced Materials for Photonics Summer/Winter School (ICAMP 2011), Montevideo, Uruguay, May 2011. Invited conference.
4. M. Tepper, P. Musé, A. Almansa. *A truly unsupervised, non-parametric clustering method*, Dagstuhl Seminar *Innovations for Shape Analysis: Models and Algorithms*. Dagstuhl, Wadern, Germany, April 2011. Invited conference.
5. P. Musé. *A Contrario Image Matching: Shape-elements, Shape-Context, SIFT, PCA*, SIAM Conference on Imaging Sciences - SIAM IS10. Chicago, USA. April 2010. Oral session.
6. J. Delon, P. Musé, F. Sur. *Validation a contrario de clusters*, 2ème Congrès National de Mathématiques Appliquées et Industrielles - SMAI. Evian, France, May 2005. Oral session.
7. P. Musé, F. Sur, F. Cao, and J.-M. Morel, *Hierarchical Clustering Validity Assessment and Shape Recognition*, Emphasis Week on Perceptual Organization. Mathematical Sciences Research Institute, Berkeley, USA, April 2005. Invited conference.
8. P. Musé, F. Sur, F. Cao, Y. Gousseau. *An a contrario Decision Method for Shape Element Recognition*, Emphasis Week on Perceptual Organization. Mathematical Sciences Research Institute, Berkeley, USA, April 2005. Invited conference.
9. P. Musé, F. Sur, F. Cao, Y. Gousseau. *Automatic Thresholds for Shape Recognition*, *Seventh International Symposium on Signal Processing and its Applications*, ISSPA 2003. Paris, France, July 2003. Invited conference.
10. CEMRACS 2002: *Mathematical Methods in Image Processing*, Summer Mathematical Research Center on Scientific Computation and Its Applications, Marseille, France, 2002.
11. Workshop *Le traitement d'image à l'aube du XXIème siècle*, Société de l'Electricité, de l'Electronique et des Technologies de l'Information. Paris, France, 2002. Invited conference.

## Patents

---

S. Leprince, Pablo Musé, J.-P. Avouac. US Patent, California Institute of Technology: *Distortion Calibration for Optical Sensors*. US Patent 8,452,123. Accepted May 28, 2013 (filed December 20, 2008).

L. Rudin, P. Musé, P. Monasse, P. Yu. US Patent, Cognitech, Inc.: *System and Method for Pattern Detection*. US Patent 8,106,968. Accepted January 31, 2012 (filed February 2008).

## Editorial Activities

---

Associate Editor for: *IPOP: Image Processing Online* (since 2010); *ISRN Probability and Statistics* (since 2012).

Member of conferences committees:

- Organizing committee, *Congreso Iberoamericano de Reconocimiento de Patrones*, IAPR, Montevideo, Uruguay, 2015.
- Program committee, *Neural Information Processing Systems (NIPS)* (since 2014).
- Organizing committee, *Foundations of Computational Mathematics*, Montevideo, Uruguay, 2014.
- Program committee, *International Conference on Image and Signal Processing (ICISP)*, France 2014.
- Chairman of minisymposium “Beyond Single Shot Imaging: Academic and Industrial Points of View”. *SIAM Conference on Imaging Science*, Honk Kong, 2014.
- Chairman of symposium “Computer Graphics, Virtual Reality and Image Processing”, *Conferencia Latinoamericana en Informática*, Venezuela, 2013.
- Program committee, *Congreso Iberoamericano de Reconocimiento de Patrones*, IAPR (since 2008).

Reviewer for:

- Board of reviewers, *Mathematical Reviews*, American Mathematical Society (since 2013)
- *Medical Engineering and Physics* (2012)
- *IPOL: Image Processing Online* (2011, 2012 and 2013)
- *SIAM Journal on Imaging Sciences* (2008, 2009, 2010 and 2012)
- *Pattern Recognition Letters* (2010)
- *Agencia Nacional de Investigación e Innovación, Uruguay*. Evaluation of R&D projects (2010, 2012)
- *Instituto Nacional de Tecnología Agropecuaria (INTA), Argentina*. Evaluation of R&D projects (2009)
- *Congreso Iberoamericano de Reconocimiento de Patrones, CIARP* (2008, 2009, 2012, 2013, 2014)
- *Journal of Mathematical Imaging and Vision* (2008)
- *IEEE Transactions on Pattern Analysis and Machine Intelligence* (2004, 2005, 2007, 2014)
- *IEEE Transactions on Image Processing* (2006, 2011, 2013, 2014)
- *IEEE Transactions Neural Networks and Learning Systems* (2014)

## Languages

---

**Spanish:** mother tongue. **French:** very fluent. **English:** very fluent.

## Professional References

---

**Yves Meyer** `ymeyer@cmla.ens-cachan.fr`

French Academy of Sciences,  
Professor Emeritus, ENS Cachan, France.

**Jean-Michel Morel** `morel@cmla.ens-cachan.fr`

Senior Member, Institut de France,  
Professor, CMLA, ENS Cachan, France.

**Gregory Randall** `randall@fing.edu.uy`

Professor, Facultad de Ingeniería, Universidad de la República, Uruguay.

**Mark Simons** `simons@caltech.edu`

Professor of Geophysics, Seismological Laboratory, California Institute of Technology, USA.