

**DEMOGRAPHIC INFORMATION**

**NAME:** Francisco Javier de la Portilla Muelas (a.k.a. Javier Portilla)  
**ADDRESS:** Instituto de Optica, CSIC, Serrano 121, Madrid 28006  
**PLACE OF BIRTH:** Madrid, SPAIN. **DATE OF BIRTH:** February 5, 1966

**ACADEMIC RECORDS AND HONORS****EDUCATION AND TRAINING****Education**

1994	M. Sc. Telecommunication Engineer	Universidad Politécnica de Madrid, Spain
1999	Ph. Digital Image Processing	Universidad Politécnica de Madrid, Spain

**Predoctoral training**

1995-1998	Pre-Doctoral Fellow. Image Process. & Comp. Vision	Instituto de Optica, CSIC, Madrid, Spain
-----------	--	--

**Postdoctoral training**

1999-2001	Post-Doctoral Fellow	Center for Neural Science, New York Univ., NY, USA
-----------	----------------------	--

**ACADEMIC APPOINTMENTS**

1999-2000	Research Assistant, in Laboratory for Computational Vision (E. Simoncelli)	Center for Neural Science. New York University, New York, NY, USA
2000-2002	Assistant Professor	ETSI Informática, Universidad de Granada, Spain
2003-2006	Research Associate (Ramón y Cajal Program)	ETSI Informática, Universidad de Granada, Spain
2006-2008	Research Associate (Ramón y Cajal Program)	Instituto de Optica, CSIC, Madrid, Spain
2008	Research Associate (post-RyC)	Instituto de Optica, CSIC, Madrid, Spain
2008-	Faculty Senior Scientist	Instituto de Optica, CSIC, Madrid, Spain

**AWARDS AND HONORS****Fellowships**

1995	Spanish Ministry of Education and Science Pre-doctoral Fellowship.
1999	Spanish Ministry of Education and Culture Postdoctoral Fellowship.

**Awards and honors**

2007	I3 Program Certificate of Outstanding Research Trajectory, Ministry of Science and Education, Spain
2008	CSIC 2007 Outstanding Scientist
2009	2008 Best Paper Award. IEEE Signal Processing Society

**PARTICIPATION IN PROFESSIONAL SOCIETIES AND COMMUNITY SERVICES****MAJOR COMMITTEE ASSIGNMENTS****Service in Review Panels**

2001,2003, 2004,2005	IEEE International Conference on Image Processing
2002	GMBV First International Workshop on Generative-Model-Based Vision
2003	VLBV International Workshop on Very Low Bit-Rate Video Coding
2003	Member of Review Panels for R&D Grants of the Junta de Extremadura, Spain
2006-	Search committee member for various positions at Consejo Superior de Investigaciones Científicas (Madrid, Spain)
2002,2004, 2005,2007	PhD thesis committee member of the following: Irene Epifanio López (Universidad de Valencia UVEG), Roberto Valerio (Universidad Politécnica de Madrid), Filip Rooms (Universiteit Gent, Belgium), Juan Gutiérrez Aguado (Universidad de Valencia UVEG), Roberto Costantini (École Polytechnique Fédérale de Lausanne EPFL, Switzerland)
1999-	Review of journal articles: Vision Research; Pattern Recognition; IEEE Trans. on Circuits and Systems for Video Technology; IEEE Trans. on Circuits and Systems II; IEEE Trans. on Systems, Man and Cybernetics B; IEEE Trans. on Signal Processing; IEEE Trans. on Image Processing; IEEE Trans. on Pattern Analysis and Machine Intelligence; IEEE Signal Processing Letters; Signal Processing; Pattern Recognition Letters; Network; International Journal of Computer Vision; Optical Engineering; Journal of Electronic Imaging; Journal of Vision; JOSIA A

**Editorial Boards**

2007	Guest editor. EURASIP Journal of Applied Signal Processing Special Issue: "Image Perception"
------	--

**REPORT OF RESEARCH**  
**RESEARCH FUNDING INFORMATION (SINCE 2000)**

**Public Funding**

2003	Ramón y Cajal Program Visual-statistical image representation models. Application to texture analysis/synthesis, restoration and codification.	PI
2003-2005	Centro de Investigación y Desarrollo de la Armada (R&D Center for the Navy), Spanish Ministry of Defense Application of new visual-statistical models to the restoration of noisy and blurry images	PI
2003-2007	TIC2003-01504, CICYT, Spanish Ministry of Science & Technology Visual-statistical image representation models and their applications	PI
2006-2009	TEC2006-13845, CICYT, Spanish Ministry of Science & Technology Integration of non-linear statistical and perceptual representations for image codification and restoration	
2008-2009	Proyecto Intramural Especial (PIE), CSIC, Spanish Ministry of Science & Innovation New image processing and representation tools based on sparseness, and their implementation in massive parallel architectures	PI

**Private Funding**

2005-2006	Ilía Sistemas, S.L. HARI: Desarrollo de herramientas automáticas de restauración de imágenes para entornos operativos	PI
2006-2008	Indra Sistemas, S.A. Scientific and technical support for the high level algorithmics of Proyecto Coincidente for the Spanish Ministry of Defence 'Real-time post-processing of hybrid optical-digital infrared imaging. Proyecto MVT-HODIS'	PI

**BIBLIOGRAPHY**

*Original Refereed Publications*

- J. A. Guerrero-Colon, E.P. Simoncelli, J. Portilla, "Image denoising using mixtures of Gaussian scale mixtures," Proc. of the IEEE ICIP 2008, pp. 565-8, San Diego, CA, USA (2008).
- L. Mancera, J. Portilla, "Non-convex sparse optimization through deterministic annealing and applications," Proc. of the IEEE ICIP 2008, pp. 917-20, San Diego, CA, USA (2008).
- J.A. Guerrero-Colón, L. Mancera, J. Portilla, "Image Restoration using Space-Variant Gaussian Scale Mixtures in Over-Complete Pyramids," IEEE Trans. on Image Processing, vol.27(1), pp. 27-41 (2008).
- L. Mancera, J. Portilla, "L0-norm-based sparse representation through alternate projections," Proc. of the IEEE ICIP 2006, pp. 2089-92, Atlanta, GA, USA (2006)
- J.A. Guerrero-Colon, J. Portilla, "Deblurring-by-denoising using spatially adaptive Gaussian scale mixtures in overcomplete pyramids," Proc. of the IEEE ICIP 2006, pp. 625-8, Atlanta, GA, USA (2006).
- J. Portilla, "A Perceptual Bayesian Estimation Framework and its Application to Image Denoising," Proc. of the EUSIPCO, 2006 (5 pages), Florence, Italy (2006).
- L. Mancera, J. Portilla, "Image De-quantizing via Enforcing Sparseness in Overcomplete Representations," Advanced Concepts for Intelligent Vision Systems. Lecture Notes in Computer Science 3708, pp 411-8, Springer-Verlag, Berlin (2005).
- J. Portilla, D. Otaduy, C. Dorransoro, "Low-Complexity Linear Demosaicing Using Joint Spatial-Chromatic Image Statistics," Proc. of IEEE ICIP 2005 , vol. I, 61-64, Genoa, Italy (2005)
- J.A. Guerrero-Colon, J. Portilla, "Two-Level Adaptive Denoising using Gaussian Scale Mixtures in Overcomplete Oriented Pyramids," Proc. of IEEE ICIP 2005 , vol. I, 105-108, Genoa, Italy (2005)
- J. Portilla, "Full Blind Denoising through Noise Covariance Estimation using Gaussian Scale Mixtures in the Wavelet Domain," Proc. of IEEE ICIP 2004 , pp. 1217-1220, Singapur (2004).
- J. Portilla, V. Strela, M. Wainwright, E.P. Simoncelli, "Image Denoising using Scale Mixtures of Gaussians in the Wavelet Domain," IEEE Trans. on Image Processing, 12(11):1338-51 (2003).
- J. Portilla, E. P. Simoncelli, "Image Restoration using Gaussian Scale Mixtures in the Wavelet Domain," Proc. of IEEE ICIP 2003, vol II, pp. 965-968, Barcelona, Spain (2003).
- J. Portilla, E. P. Simoncelli, "Adaptive Wiener Denoising Using a Gaussian Scale Mixture Model in the Wavelet Domain," Proc. of IEEE ICIP 2001, vol 2, pp. 37-40, Tesseloniki, Greece (2001).
- J. Portilla and E.P. Simoncelli, "A parametric texture model based on joint statistics of complex wavelet coefficients," Int'l Journal of Computer Vision, 40(1):49-71 (2000).
- J. Portilla, E.P. Simoncelli, "Image Denoising via Adjustment of Wavelet Coefficient Magnitude Correlation," Proc. of IEEE ICIP 2000, vol 3, pp. 277-280, Vancouver ,BC, Canada (2000)
- A. Taberero, J. Portilla, R. Navarro, "Duality of Log-Polar Image Representations in the Space and the Spatial-Frequency Domains," IEEE Trans. on Signal Processing, 47(9):2469-79 (1999).

17. J. Portilla and E.P. Simoncelli, "Texture modeling and synthesis using joint statistics of complex wavelet coefficients," Proc. of IEEE Workshop on Statistical and Computational Theories of Vision, <http://www.stat.ucla.edu/~sczhu/Workshops/sctv99.html>, Fort Collins CO, USA (1999).
18. R. Manduchi, J. Portilla, "Independent Component Analysis of Textures," Proc. of IEEE International Conference on Computer Vision ICCV, vol. 202, pp. 1054-60, Kofu, Greece (1999)
19. O Nestares, R Navarro, J Portilla and A Taberbero, "Efficient Spatial-Domain Implementation of a Multiscale Image Representation Based on Gabor Functions," Journal of Electronic Imaging, 7:166-73 (1998).
20. E. P. Simoncelli, J. Portilla, "Texture characterization via joint statistics of wavelet coefficient magnitudes," Proc. of IEEE ICIP 1998, vol.1, pp. 62-66, Chicago, IL, USA (1998).
21. J. Portilla, R. Navarro, A. Taberbero, "Optimizing Parametric Deformable Kernels: Space-Variant Filtering and Scaling-Rotation Invariance," Proc. of IEEE TFTA 1998, pp.513-516, Pittsburgh, PA, USA (1998).
22. J. Portilla, R. Navarro, "Efficient Method for Space-Variant Low-Pass Filtering," Proc. of VII Spanish Symposium on Pattern Recognition and Image Analysis (SNRFIAI), vol. 1, pp. 287-292, Bellaterra, Spain (1997)
23. O. Nestares, J. Portilla, "Texture Segmentation through Adaptive Filtering," Proc. of VII Spanish Symposium on Pattern Recognition and Image Analysis (SNRFIAI), vol. 2, pp. 98-99, Bellaterra, Spain (1997)
24. O Nestares, R Navarro, J Portilla and A Taberbero, "Automatic Computation of the Area Irradiated by Ultrashort Laser Pulses in Sb Materials through Texture Segmentation of TEM Images," Ultramicroscopy, 66:101-15 (1996).
25. J Portilla, R Navarro, O Nestares, A Taberbero, "Texture Synthesis-by-Analysis Based on a Multiscale Early-Vision Model," Optical Engineering, 35:2403-17 (1996).

#### *Other Original Publications*

26. C. Dorronsoro, J.A. Guerrero-Colon, M.C. de la Fuente, J.M. Infante, J. Portilla, "Low-cost Wavefront Coding Using Coma and a Denoising-based Deconvolution," Proc. of the SPIE, vol. 6737, 67370E (12 pages), Florence, Italy (2007).
27. J. Portilla, J.A. Guerrero-Colón, "Image restoration using adaptive Gaussian scale mixtures in overcomplete pyramids," Proc. of the SPIE, , vol. 6701, pp. 67011F (15 pages), San Diego, CA, USA (2007).
28. J. Portilla, L. Mancera, "L0-based sparse approximation: two alternative methods and some applications," Proc. of the SPIE, , vol. 6701, pp. 67011Z (15 páges), San Diego, CA, USA (2007).
29. J. Portilla, "Image Restoration using Gaussian Scale Mixtures in Overcomplete Oriented Pyramids," Proc. of the SPIE, vol. 5914, 59141F (15 pages), San Diego, CA, USA (2005).
30. C. Dorronsoro, D. Otaduy, Y. Navarro, J. Portilla, "Simulated Intensified Images," Proc. of the SPIE, vol. 5987, 59870D (13 pages), Brujas, Belgium (2005).
31. F. Rooms, W. Phillips, J. Portilla, "Parametric PSF Estimation via Sparseness Maximization in the Wavelet Domain," Proc. of SPIE vol. 5607, pp. 26-33, Philadelphia, PA, USA (2004).
32. J. Portilla, "Blind Non-White Noise Removal in Images using Gaussian Scale Mixtures in the Wavelet Domain," Proc. of IEEE Benelux Signal Proc. Symposium, pp. 17-20, Hilvarenebeck, Netherlands (2004).
33. J. Portilla, E.P. Simoncelli, "Image Denoising using Gaussian Scale Mixtures in the Wavelet Domain," Computer Science Technical Report # TR2002-831 Courant Institute of Mathematical Sciences (N.Y.U.), New York, NY, USA (2002).
34. V. Strela, J. Portilla, E. P. Simoncelli, "Image Denoising Using a local Gaussian Scale Mixture Model in the Wavelet Domain," Proc. SPIE vol. 4119, pp. 363-371, San Diego, CA, USA (2000)
35. J. Portilla, E.P. Simoncelli, "Texture Representation and Synthesis through Second Order Characterization of Complex Wavelet Coefficient Magnitudes," Publicaciones del Instituto de Óptica (C.S.I.C.), vol. 54, Madrid, Spain (1999).
36. J. Portilla, "Representación local-multi-escala de imágenes. Modelado y síntesis de texturas," Ph. D. Thesis. E.T.S.I. Telecomunicación, Universidad Politécnica de Madrid. Madrid, Spain (1999).
37. R. Navarro, J. Portilla, A. Taberbero, "Duality Between Foveation and Multiscale Local Spectrum Estimation," Proc. of the SPIE, vol. 3299, pp. 306-317, San Jose, CA, USA (1998).
38. A. Taberbero, J. Portilla, R. Navarro, "Duality Between the local Spectrum of a Signal and its Inverse Fourier Transform, the Local Signal," Publicaciones del Instituto de Óptica (C.S.I.C.), vol. 53, Madrid, Spain (1997).
39. R. Navarro and J. Portilla, "Robust Method for Texture Synthesis-by-Analysis Based on a Multiscale Gabor Scheme," Proc. of the SPIE, vol. 2657, pp. 86-97, San Jose, CA, USA (1996).
40. R. Navarro, O. Nestares. J. Portilla, A. Taberbero, "Several Experiments on Texture Analysis, Coding and Synthesis by Gabor Wavelets," Publicaciones del Instituto de Óptica (C.S.I.C.), vol. 52, Madrid, Spain (1995).
41. J. Portilla, "Desarrollo de un sintetizador imitativo de texturas visuales basado en una representación de imágenes con funciones de Gabor," M. Sc. Thesis, E.T.S.I. Telecomunicación, Universidad Politécnica de Madrid. Madrid, Spain (1994).

**Bibliometric information. Total number of citations: 998; h-index = 12. (Web of Science, June 2009)**

**29 Conference participations** (27 International)  
**3 Mini-Workshop organization** (1 international)

### Patents

1.- P200602116. J. Portilla, C. Dorronsoro, J.A. Guerrero. "Method for restoration of images which are affected by imperfections, device for implementation of this, and the corresponding applications"

Priority date: August 6 2006. CSIC and Universidad de Granada, International (WO2008/020109)

2.- P200502100. J Portilla, C Dorronsoro, D. Otaduy. "Método de predicción lineal óptima para la reconstrucción de la imagen en cámaras digitales con sensor de mosaico"

Priority date: August 19 2005. Universidad de Granada. National.

### PhD THESIS Supervision

Luis Mancera Pascual (February 11, 2008)

José Antonio Guerrero Colón (March 14, 2008).

### Spin-offs

Co-founder in 2006 of company "Imatrics Image Technologies SLNE" (no longer partner since 2009).

<http://www.imatrics.es/en/index.htm>

### Available software toolboxes in Internet

1.-Texture Analysis/Synthesis: <http://www.cns.nyu.edu/~lcv/texture/>

2.-Noise removal in images: <http://www.io.csic.es/PagsPers/JPortilla/denoise/software/index.htm>