

Virginia Estellers¹

CONTACT INFORMATION

*Professional
address:* UCLA Vision Lab
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UCLA campus
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RESEARCH INTERESTS

Mathematical modeling and computational techniques in imaging

My research interests are in modeling and computational techniques for inverse problems in imaging, particularly using variational methods, convex optimization, and partial differential equations. I am interested in the theoretical and physical aspects of the acquisition of images, their mathematical representations, and the development of efficient numerical techniques.

EDUCATION

Ph.D, Electrical Engineering, July 2013.

Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland.
Advisor: Jean-Philippe Thiran.

B.Sc. and M.Sc. in Mathematics, February 2008.

Polytechnic University of Catalonia, Barcelona, Spain.

B.Sc. and M.Sc. in Electrical Engineering, July 2008.

Polytechnic University of Catalonia, Barcelona, Spain.

RESEARCH EXPERIENCE

University of California, Los Angeles, US.

Postdoctoral SNSF Fellow

October 2013 – ongoing.

- Efficient Discretizations for Vision
- Surface reconstruction from point clouds.
- Efficient algorithms for optical flow and occlusion detection.
- Non-local geometric methods for image reconstruction.

Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland.

PhD student

September 2008 – August 2013.

- Variational methods in image processing with applications to image segmentation, surface reconstruction and compressive sensing.
- Audio-Visual Speech Recognition and multi-modal signal processing.

IBM Research, Zurich, Switzerland.

Research internship

May 2012 – November 2012.

- Surface reconstruction from SEM images of integrated circuits.
- Fast image segmentation and classification method for failure detection in SEM images of integrated circuits.

Polytechnic University of Catalonia, Barcelona, Spain.

Undergraduate research grant

October 2006 – January 2008.

¹[Active links are in blue.](#)

- Implementation and analysis of distributed algorithms in EU project WINSOC (Wireless Sensor Networks with Self-Organization Capabilities for Critical Emergency Applications).

TEACHING
EXPERIENCE

Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland.

Teaching assistant

- Teaching assistant for courses Image Processing I and II.
- Supervision of master students for the final-year project.

PROFESSIONAL
ACTIVITIES

- Reviewer: IEEE Transactions on Image Processing, Journal of Imaging and Vision, International Conference on Computer Vision (ICCV), IEEE International Conference on Image Processing (ICIP), Asian Conference on Computer Vision (ACCV).
- Expert Evaluator for European Commission Horizon 2020 FET-OPEN-RIA 2015

PUBLICATIONS

Journal articles

V. Estellers, M.A. Scott, and S. Soatto. *Robust Surface Reconstruction* *SIAM Journal on Imaging Sciences*, under review, 2015.

V. Estellers, and S. Soatto. *Detecting Occlusions as an Inverse Problem* *Journal of Mathematical Imaging and Vision*, pp 1–18, 2015.

V. Estellers, S. Soatto, and X. Bresson. *Adaptive Regularization with the Structure Tensor* *IEEE Transactions on Image Processing*, vol.24, no. 6., pp. 1777–1790, 2015

V. Estellers, J.-P. Thiran, and M. Gabrani. *Surface Reconstruction from Microscopic Images in Optical Lithography*. *IEEE Transactions on Image Processing*, vol. 23, no.8, pp. 3569–3573, 2014.

V. Estellers, D. Zosso, X. Bresson, and J.-P. Thiran. *Harmonic Active Contours*. *IEEE Transactions on Image Processing*, vol.23, no. 1, pp. 69–82, 2014.

V. Estellers, J.-P. Thiran, and X. Bresson. *Enhanced Compressed Sensing Recovery with Level Set Normals*. *IEEE Transactions on Image Processing*, vol. 22, no. 7, pp. 2611–2626, 2013.

V. Estellers, D. Zosso, R. Lai, S. Osher, J.-P. Thiran, and X. Bresson. *An Efficient Algorithm for Level Set Method Preserving Distance Function*. In *IEEE Transactions on Image Processing*, vol. 21, no. 12, pp. 4722–4734, 2012.

V. Estellers, M. Gurban, and J.-P. Thiran. *On dynamic stream weighting for Audio-Visual Speech Recognition*. In *IEEE Transactions on Audio, Speech, and Language Processing*, vol. 20, no. 4, pp. 1145–1157, 2012.

V. Estellers and J.-P. Thiran. *Multi-pose lipreading and Audio-Visual Speech Recognition*. In *EURASIP Journal on Advances in Signal Processing*, vol. 2012.

Conference articles

V. Estellers, G. Graber, S. Soatto. *Adaptive Multiscale Discretizations for Vision* under review for ECCV, 2016.

P. Stanley-Marbell, V. Estellers, M. Rinard. *Crayon: Saving Power through Shape and Color Approximation on Next-Generation Displays* EuroSys, 2016.

V. Estellers, M. Scott, and S. Soatto. *Robust Poisson Surface Reconstruction* *Scale Space and Variational Methods for Computer Vision*, 2015.

B. Seguin, V. Estellers, and M. Gabrani. *Estimating Pattern Sensitivity to the Printing Process for Varying Dose/Focus Conditions for RET development in the sub-22nm Era*. In *SPIE, Metrology, Inspection, and Process Control for Microlithography*, 2014.

V. Estellers, D. Zosso, X. Bresson, and J.-P. Thiran. *Harmonic Active Contours for multichannel*

image segmentation.

In *Proc. IEEE International Conference on Image Processing (ICIP)*, pp. 3141–3144, 2011.

V. Estellers and J.-P. Thiran. *Multipose Audio-Visual Speech Recognition.*

In *Proc. IEEE European Signal Processing Conference (EUSIPCO)*, pp. 1065–1069, 2011.

V. Estellers and J.-P. Thiran. *Overcoming Asynchrony in Audio-Visual Speech Recognition.*

In *Proc. IEEE International Workshop on Multimedia Signal Processing (MMSP)*, pp. 466–471, 2010.

V. Estellers, P. M. Baggenstoss, and J.-P. Thiran. *Class-specific classifiers in audio-visual speech recognition.*

In *Proc. IEEE European Signal Processing Conference (EUSIPCO)*, pp. 1998–2002, 2010.

V. Estellers, M. Gurban, and J.-P. Thiran. *Selecting relevant visual features for speechreading.*

In *Proc. IEEE International Conference on Image Processing (ICIP)*, pp. 1433–1436, 2009.

PATENTS

V. Estellers and M. Gabrani. **Contour fitting for automatic SEM filtering of images of integrated circuits.** International patent with IBM, 2013.

D. DeMaris, F. De Morsier, V. Estellers, N. Casatti, M. Gabrani **Layout Assessment Method and System.** International patent with IBM, 2014.

COMPUTER SKILLS

- **Programming Languages:** C, python.
- **Technical Software:** Matlab, scientific python.

MISCELLANEOUS

- **Languages** Spanish and Catalan (native), English and French (proficient), German (fluent).