
CURRICULUM VITAE

Gabriele Facciolo

Short Bio

Gabriele Facciolo received his B.Sc. and M.Sc. from Universidad de la Republica del Uruguay, and his Ph.D. from the DTIC at Universitat Pompeu Fabra (Barcelona, Spain) under the supervision of Vicent Caselles. After post-doctoral research at ENS Paris-Saclay and ENPC, he became senior researcher at DxO. Currently he is professor of applied mathematics at CMLA ENS Paris-Saclay. The algorithms for 3D reconstruction and the satellite stereo pipeline (S2P) he has developed at the CMLA has been adopted as the CNES's official pipeline, and has won the 2016 IARPA 3D Stereo Mapping Challenge. The denoising algorithms he has developed are currently beating the state-of-the-art. He has been teaching mathematics and image processing for over ten years. G. Facciolo is one of the founding Editors of IPOL (www.ipol.im), the first journal publishing articles associated to online executable algorithms.

Summary

Professor of Applied Mathematics at Centre Borelli, ENS Paris-Saclay

Mathematics applied to image processing and computer vision.

Doctor from Universitat Pompeu Fabra, Barcelona (2011)

- Advisor: Vicent Caselles
- Examining board: Jean-Michel Morel (chair), José Mazón Ruiz, and Andrés Almansa

Habilitation à diriger des recherches (HDR) from ENS Paris-Saclay (2016)

- Examining board: Mila Nikolova (chair), Julie Delon, Laure Blanc-Réraud, Luis Alvarez, Pascal Monasse, Andrés Almansa, and Guillermo Sapiro

Qualifications *Professeur des universités*:

Section 26 - *Mathématiques appliquées et applications des mathématiques* (17126241750)

Beneficiary of the *Prime d'Encadrement Doctoral et de Recherche* in the period 2020-2024.

Research subjects: Remote sensing and 3D geometric modeling from satellite imagery. Stereovision and discrete optimization. Image and video processing and restoration. Variational methods and deep learning.

Publications:

- 27 in international journals (2×IJCV, 3×MMS, 13×IPOL, 4×SIIMS, JMIV, OSA, ...)
- 50 in peer reviewed conferences (3×CVPR, 10×ICIP, 2×ICCV, 2×BMVC, 2×EMMCVPR, 2×WACV, 6× ISPRS Annals, 12×IGARSS, VISAPP, ISPA, GRETSI, ...)
- 12 in proceedings of other conferences
- 3 patents

Supervised PhDs:

- Carlo de Franchis. *Earth Observation and Stereo Vision*. ENS-Cachan, Oct. 5, 2015. Co-supervisor (50-50) with Jean-Michel Morel. Currently: Technical lead at Kayros.
- Nicola Pierazzo. *Advances in image denoising*. ENS-Cachan, Sep. 20 2016. Co-supervisor (50-50) with Jean-Michel Morel. Currently: Research Engineer at Google.
- Martin Rais. *Fast and Accurate Image Registration Applications to On-board Satellite Imaging*. ENS-Cachan, Dec. 9 2016. Co-supervisor (25%) with Jean-Michel Morel and Bartolomeu Coll-Vicens. Currently: Senior Computer Vision Engineer at AutomaticTV.
- Thibaud Ehret. *Video denoising and applications*. ENS Paris-Saclay, Jun. 4 2020. Co-supervisor (20%) with Jean-Michel Morel and Pablo Arias. Currently: Research Scientist at Adobe.

- Jérémy Anger. *An inquiry into image and video deblurring: the details that make a difference*. ENS Paris-Saclay, Jun. 30 2020. Co-direction (33%) with Jean-Michel Morel and Enric Meinhardt. Currently: Research Scientist at Kayrros.
- Roger Marí. *3D reconstruction over time and detection of events from recurrent satellite imagery*. ENS Paris-Saclay, ends 2022. Co-direction (50-50) with Enric Meinhardt.
- Valery Dewil. *Une révolution: l'émergence de traitement vidéo aveugle et en ligne*. ENS Paris-Saclay, ends 2022. Co-direction (50-50) with Pablo Arias.
- Roland Akiki. *Estimation locale en temps et espace de petits mouvements de diffuseurs persistants par interférométrie*. CIFRE thesis with Kayrros. ENS Paris-Saclay, ends 2023. Co-direction (33%) with Jean-Michel Morel and Raphael Grandin.
- Ahmed Ben Saad. *Feeding CNNs with Domain Knowledge*. CIFRE thesis with Schlumberger. ENS Paris-Saclay, ends 2023. Co-direction (50-50) with Enric Meinhardt.
- Elyes Ouerghi. *Détection de sources d'émission de gaz à effet serre par imagerie satellitaire et modélisation atmosphérique*. ENS Paris-Saclay, ends 2023. Co-direction (50-50) with Thomas Lauvaux.
- Nguyen Ngoc Long. *Earth reconstruction in relief and super-resolution by satellite through deep learning*. ENS Paris-Saclay, ends 2023. Co-direction (40-60) with Pablo Arias.
- Zheng Zhe. *Efficient deep video restoration - exploring the untapped potential of recurrent networks*. ENS Paris-Saclay, starts September 2021 ends 2024. Co-direction (40-60) with Pablo Arias.

Supervised Master M2 (MVA) Internships:

- Zhe Zheng. *Frame-recurrent CNNs for efficient video restoration*. 2021
- Matthieu Serfaty. *Evaluation automatique de la qualité image, par moyens classiques et par apprentissage profond*. 2021
- Mohamed Oumessaoud. *MTF estimation using CNNs*. 2020
- Ngoc Long Nguyen. *Multi-frame super-resolution of satellite images using neural networks*. 2020
- Elyes Ouerghi. *Détection de sources d'émission de gaz à effet de serre par imagerie satellitaire et modélisation atmosphérique*. 2020
- Valery Dewil. *Deep-video denoising with temporal consistency*. 2019
- Louis Vincent. *Optical flow and image matching in the presence of noise with application to video denoising*. 2019

Teaching:

- since 2016: Lecturer at **ENS Paris-Saclay** and **master MVA**
- 2014-2016: Lecturer at **École des Ponts ParisTech**
- 2011-2016: Lecturer and internship mentoring at **ENS-Cachan**
- 2005-2010: Lecturer and Teaching assistant at **Universitat Pompeu Fabra**, Barcelona
- 2005: Teaching assistant at **UdelaR**, Uruguay, Faculty of Engineering, Uruguay

Honors and Awards

- **2020-2024 Four-year grant for scientific excellence** (*PEDR, Prime d'Encadrement Doctoral et de Recherche*).
- **Best Student Paper Award EarthVision Workshop CVPR 2021** for the paper: N. L. Nguyen, J. Anger, A. Davy, P. Arias, G. Facciolo. Self-supervised multi-image super-resolution for push-frame satellite images. *EarthVision Workshop CVPR*, 2021.
- **Electronic Imaging 2018, IQSP best paper award**. G. Facciolo, G. Pacianotto, M. Renaudin, C. Viard, and F. Guichard. *Quantitative measurement of contrast, texture, color, and noise for digital photography of high dynamic range scenes*. IS&T EI 2018.
- **Winner of the IARPA Multi-View Stereo 3D Mapping Challenge**. C. de Franchis, E. Meinhardt, and G. Facciolo. Presented at the *IARPA's Multi View Stereo 3D mapping Challenge Workshop*, Washington DC, Nov 30, 2016.
- **Top 10% Paper Award** for the conference paper: N. Pierazzo, M. Lebrun, M. Rais, J.-M. Morel, and G. Facciolo. Non-local Dual Image Denoising. Presented in the *21th IEEE International Conference on Image Processing (ICIP)*, 2014.

Personal Information and Addresses

Gabriele Facciolo

Birth date: september 18th, 1978

Citizenship: Italian

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Current Situation

Since Sep 2018

Subject

Keywords

Professor of Applied Mathematics at Centre Borelli, ENS Paris-Saclay

Mathematics applied to image processing and computer vision

stereovision, satellite imaging, denoising, optic flow, machine learning, optimization

Education

2016

Habilitation à diriger des recherches, ENS Paris-Saclay (June 20, 2016)

Discipline: mathematics

Title: Geometry-aware patch modelling for 3D reconstruction and image denoising

Examining board: Mila Nikolova (chair), Julie Delon (rapporteur), Laure Blanc-Réraud (rapporteur), Luis Alvarez (rapporteur), Pascal Monasse, Andrés Almansa, Guillermo Sapiro

2005-2011

PhD in Information and Communication Technologies (*Summa cum Laude*),
Universitat Pompeu Fabra (UPF), Barcelona (March 3, 2011)

The PhD candidates at UPF must teach ~70 h/year, thus are also teaching assistants.

Title: Irregularly sampled image restoration and interpolation

Advisor: Prof. Vicent Caselles

Examining board: Jean-Michel Morel (chair, rapporteur), José Mazón Ruiz (rapporteur), Andrés Almansa (rapporteur)

2004-2005

Master in Computer Sciences,

FING, Universidad de la Republica Oriental del Uruguay

2001-2005

Worked as a full-time engineer at

ANTEL (Telecommunications company), Montevideo, Uruguay

1996-2001

Degree in Computer Engineering (eq. BAC+5),

FING, Universidad de la Republica Oriental del Uruguay

Specific skills

- **Image processing and computer vision:** data structures, stereo-vision, optical flow, 3D reconstruction, satellite imaging, variational methods, patch-based inpainting and denoising, image restoration and interpolation, video editing, discrete nonconvex optimization, Bayesian methods, variational nonlocal methods, applied Fourier analysis, deep learning
- **Coding/Unix:** C/C++, Python, Matlab/Octave, Bash, L^AT_EX, XHTML, CSS, JavaScript, OpenGL, git, Novell Certified Linux Administrator (ID: 10112069)
- **Languages:** Italian (native), Spanish (native), English (proficient), and French (proficient)

Professional experience

- since 2018 **Professor of Applied Mathematics at CMLA, ENS Paris-Saclay** (sep 2018– present)
Topic: Mathematics applied to image processing and computer vision.
- 2016-2018 **Associate Research Director at CMLA, ENS Paris-Saclay** (apr 2016 – aug 2018)
Topic: Mathematics applied to image processing and computer vision.
Collaborator: Prof. Jean-Michel Morel
- 2016-2018 **Image Science Researcher at DxO Labs** (apr 2016 – jun 2018)
Topic: Oversee the work of three to four small teams of engineers in the image processing and image quality evaluation departments. Advising on the design and specification of new algorithms and evaluation protocols.
Collaborators: Frédéric Guichard and Wolf Hauser
- since 2015 **Consultant for *Digital Sense Technologies***
Topic: Satellite imaging.
Collaborators: Javier Preciozzi and Adrian Marques
- 2014 **Consultant for *CS Systèmes d'information*** (sep–dec 2014)
Topic: Etude métiers Benchmark MEDICIS, Logiciel CNES de Traitement d'Images.
Supervisor: Myriam Cournet
- 2014-2016 **Post-doc at IMAGINE/LIGM, École des Ponts ParisTech** (jul 2014 – apr 2016)
Topic: High precision stereovision using noiseless images.
Collaborators: Prof. Pascal Monasse and Prof. Jean-Michel Morel
- 2013 **Invited at the TAMI Lab of Universitat Illes Balears, Palma de Mallorca** (sep 2013 – nov 2013)
Topic: Reliable stereo matching.
Collaborator: Antoni Buades
- 2011-2014 **Post-doc at CMLA, ENS-Cachan** (apr 2011 – jul 2014)
Topic: Mathematics applied to image processing and computer vision. Design and development of the state-of-the-art and online publication.
Collaborator: Prof. Jean-Michel Morel
- 2010 **Research staff at BarcelonaMedia** (sep–dec 2010)
Topic: Temporally consistent video inpainting.
Supervisor: Monica Caballero
- 2005-2011 **PhD in Information and Communication Technologies, Universitat Pompeu Fabra, Spain** (sep 2005 – mar 2011)
Title: Irregularly sampled image restoration and interpolation.
Advisor: Prof. Vicent Caselles
- 2001-2005 **Worked at ANTEL (Telecommunications company), Uruguay**
Role: Unix administrator and system integration engineer.
- 1999-2005 **Part-time jobs at Universidad de la Republica Oriental del Uruguay**
Roles: Sysadmin and system integration engineer.

Complete list of publications

I'm dividing the list of my scientific communications in four groups:

- International journals
- Peer reviewed international conferences (with proceedings)
- Patents
- Other publications
- Relevant invited talks to seminars, conferences, and workshops

Monographs

- [1] G. Facciolo. Geometry-aware patch modelling for 3D reconstruction and image denoising. *Mémoire d'Habilitation à Diriger des Recherches (HDR)*. École normale supérieure Paris-Saclay, June 20, 2016.
- [2] G. Facciolo. Irregularly sampled image resortation and interpolation. *PhD. Thesis. Universitat Pompeu Fabra, Departament de Tecnologies de la Informació i les Comunicacions*, March 3, 2011.

International journals

- [3] Y. Guo, A. Davy, G. Facciolo, J.-M. Morel, Q. Jin. Fast, nonlocal and neural: a lightweight high quality solution to image denoising. *IEEE SPL*, 2021.
- [4] Q. Jin, Y. Guo, J.-M. Morel, G. Facciolo. A Mathematical Analysis and Implementation of Residual Interpolation Demosaicking Algorithms. *Image Processing on Line*, 2021.
- [5] R. Marí, C. de Franchis, E. Meinhardt, J. Anger, G. Facciolo. A Generic Bundle Adjustment Methodology for Indirect RPC Model Refinement of Satellite Imagery. *Image Processing on Line*, 2021.
- [6] J. Costes, G. Facciolo, R. Grompone von Gioi, J. Kherroubi, E. Meinhardt-Llopis and J.-M. Morel. A contrario dip picking for borehole imaging. *SEG Geophysics*, 2021.
- [7] A. Davy, T. Ehret, J.-M. Morel, P. Arias, and G. Facciolo. Video denoising by combining patch search and CNNs. *JMIV*, 2020.
- [8] J. Anger, G. Facciolo, and M. Delbracio. Blind Image Deblurring using the l0 gradient prior. *Image Processing On Line*, 2019.
- [9] T. Ehret and G. Facciolo. A study of two CNN demosaicking algorithms. *Image Processing On Line*, 2019.
- [10] M. di Martino, and G. Facciolo. An Analysis and Implementation of Multigrid Poisson Solvers With Verified Linear Complexity. *Image Processing On Line*, 2018.
- [11] J. Anger, G. Facciolo, and M. Delbracio. Recovering the blur kernel from natural image statistics: An analysis of the Goldstein-Fattal method. *Image Processing On Line*, 2018.
- [12] T. Briand, G. Facciolo, and J. Sánchez. Improvements of the Inverse Compositional Algorithm for Parametric *Image Processing On Line*, 2018.
- [13] G. Facciolo, N. Pierazzo, and J.-M. Morel. Conservative Scale Recomposition for Multiscale Denoising (The Devil is in the High Frequency Detail). *SIAM Journal on Imaging Sciences* [impact factor 2.485], 2017.
- [14] N. Pierazzo, J.-M. Morel, and G. Facciolo. Multi-Scale DCT Denoising. *Image Processing On Line*, 2017.
- [15] N. Pierazzo, J.-M. Morel, and G. Facciolo. Data Adaptive Dual Domain Denoising: a Method to Boost State of the Art Denoising Algorithms. *Image Processing On Line*, 2017.

- [16] M. Rais, J.-M. Morel, C. Thiebaut, J.-M. Delvit, and G. Facciolo. Improving wavefront sensing with a Shack-Hartmann device. *OSA Applied Optics*, [Impact Factor: 1.598], Vol. 55, Issue 28, pp. 7836-7846, 2016.
- [17] J. M Di Martino, G. Facciolo, and E. Meinhardt. Poisson Image Editing. *Image Processing On Line*, 6, pp. 300–325, 2016.
- [18] M. Rais, J.-M. Morel, C. Thiebaut, J.-M. Delvit, and G. Facciolo. Improving the accuracy of a Shack-Hartmann wavefront sensor on extended scenes. *IOP Publishing, Journal of Physics: Conference Series*, [Impact Factor: 0.45], Volume 756, Number 1, 2016.
- [19] C. de Franchis, E. Meinhardt, D. Greslou, and G. Facciolo. Attitude Refinement for Orbiting Push-broom Cameras: a Simple Polynomial Fitting Method. *Image Processing On Line*, 5, pp. 328-361, 2015.
- [20] V. Fedorov, G. Facciolo, and P. Arias. Variational Framework for Non-Local Inpainting. *Image Processing On Line*, 5, pp. 362-386, 2015.
- [21] V. Fedorov, P. Arias, R. Sadek, G. Facciolo, and C. Ballester. Linear Multiscale Analysis of Similarities between Images on Riemannian Manifolds: Practical Formula and Affine Covariant Metrics. *SIAM Journal on Imaging. Sciences*, [impact factor 2.27], 8(3), 2021-2069. 2015.
- [22] A. Buades and G. Facciolo. Reliable multi-scale and multi-window stereo matching.. *SIAM Journal on Imaging. Sciences*, [impact factor 2.27], 8(2), 888-915 2015.
- [23] C. Ballester, F. Calderero, V. Caselles, and G. Facciolo. Multiscale Analysis of Similarities between Images on Riemannian Manifolds. *Multiscale Modeling & Simulation, SIAM*, [impact factor 1.795], 12, 616-649, 2014.
- [24] G. Facciolo, N. Limare, and E. Meinhardt. Integral Images for Block Matching. *Image Processing On Line*, 4, 344-369, 2014.
- [25] R. Sadek, G. Facciolo, P. Arias, and V. Caselles. A variational model for Gradient-Based video editing. *International Journal of Computer Vision*, [impact factor 3.533], 103, 127-162, 2013.
- [26] J. Sánchez, E. Meinhardt, and G. Facciolo. TV-L1 optical flow estimation. *Image Processing On Line*, 3, 137-150, 2013.
- [27] P. Arias, V. Caselles, G. Facciolo, V. Lazcano, and R. Sadek. Nonlocal variational models for inpainting and interpolation. *Mathematical Models and Methods in Applied Sciences*, [impact factor 1.874], 22, 1230003, 2012.
- [28] P. Arias, V. Caselles, and G. Facciolo. Analysis of a Variational Framework for Exemplar-Based Image Inpainting. *Multiscale Modeling & Simulation, SIAM*, [impact factor 1.562], 10, 473-514, 2012.
- [29] P. Arias, G. Facciolo, V. Caselles, and G. Sapiro. A variational framework for Exemplar-Based image inpainting. *International Journal of Computer Vision*, [impact factor 3.741], 1-29, Jan. 2011.
- [30] V. Caselles, G. Facciolo, and E. Meinhardt. Anisotropic Cheeger Sets and Applications. *SIAM Journal on Imaging. Sciences*, [impact factor 4.656], 2, 1211-1254, 2009.
- [31] G. Facciolo, A. Almansa, J.-F. Aujol, and V. Caselles. Irregular to Regular Sampling, Denoising, and Deconvolution. *Multiscale Modeling & Simulation, SIAM*, [impact factor 2.198], 7, 1574-1608, 2009.

Peer reviewed international conferences

- [32] N. L. Nguyen, J. Anger, A. Davy, P. Arias, G. Facciolo. Self-supervised multi-image super-resolution for push-frame satellite images *CVPR Earth Vision Workshop*, 2021. **Best Student Paper Award.**
- [33] E. Ouerghi, T. Ehret, C. de Franchis, G. Facciolo, T. Lauvau, E. Meinhardt, J.-M. Morel. Detection of methane plumes in hyperspectral images from Sentinel-5P by coupling anomaly detection and pattern recognition *ISPRS Annals*, 2021.
- [34] J. Anger, T. Ehret, G. Facciolo. Parallax estimation for push-frame satellite imagery: application to super-resolution and 3D surface modeling from Skysat products *IGARSS*, 2021.

- [35] E. Ouerghi, T. Ehret, C. de Franchis, G. Facciolo, T. Lauvaux, E. Meinhardt, J.-M. Morel. Detection of methane emissions using pattern recognition *IGARSS*, 2021.
- [36] M. Rodriguez, J. Anger, C. de Franchis, C. Hessel, G. Facciolo, R. Grompone, J.-M. Morel. A CNN cloud detector for panchromatic satellite images. *IGARSS*, 2021.
- [37] C. Hessel, C. de Franchis, G. Facciolo, J.-M. Morel. A global registration method for satellite image serie. *IGARSS*, 2021.
- [38] R. Akiki, R. Grandin, C. de Franchis, G. Facciolo, J.-M. Morel. A comparative study of deramping techniques for Sentinel-1 TOPS in the context of interferometry. *IGARSS*, 2021.
- [39] R. Marí, C. de Franchis, E. Meinhardt-Llopis, G. Facciolo. Automatic Stockpile Volume Monitoring using Multi-view Stereo from SkySat Imagery. *IGARSS*, 2021.
- [40] R. Akiki, R. Marí, C. de Franchis, J.-M. Morel, G. Facciolo. Robust Rational Polynomial Camera Modelling for SAR and Pushbroom Imaging. *IGARSS*, 2021.
- [41] N. L. Nguyen, J. Anger, A. Davy, P. Arias, G. Facciolo. Proba-V-ref: Repurposing the Proba-V challenge for reference-aware super resolution. *IGARSS*, 2021.
- [42] A. Ben Saad, S. Drouyer, B. Hell, S. Gavaille, S. Gaiffas, G. Facciolo. A review on Contrastive Learning methods and applications to Roof-type classification on Aerial Images. *IGARSS*, 2021.
- [43] V. Dewil, J. Anger, A. Davy, T. Ehret, G. Facciolo, and P. Arias. Self-supervised training for blind multi-frame video denoising. *WACV*, 2021.
- [44] M. Rodriguez, G. Facciolo, R. Grompone, P. Musé, J. Delon, and J.-M. Morel. CNN-assisted Coverings in the Space of Tilts: Best Affine Invariant Performances with the Speed of CNNs. *ICIP*, 2020.
- [45] Q. Jin, G. Facciolo, and J.-M. Morel. A Review of an Old Dilemma: Demosaicking First, or Denoising First?. *CVPR NTIRE Workshop*, 2020.
- [46] J. Anger, T. Ehret, C. de Franchis, and G. Facciolo Fast and Accurate Multi-Frame Super-Resolution of Satellite Images. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, 2020.
- [47] M. d’Autume, A. Perry, J.-M. Morel G. Facciolo, and E. Meinhardt Stockpile monitoring using linear Shape-from-Shading on PlanetScope imagery. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, 2020.
- [48] A. Tadros, S. Drouyer, G. Facciolo, and R. Grompone von Gioi Circular-shaped object detection in low resolution satellite images. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, 2020.
- [49] C. Hessel, R. Grompone von Gioi, J.-M. Morel, G. Facciolo, P. Arias, and C. de Franchis Relative Radiometric Normalization Using Several Automatically Chosen Reference Images for Multi-Sensor, Multi-Temporal Series. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, 2020.
- [50] M. Rodriguez, G. Facciolo, R. Grompone von Gioi, P. Muse, and J. Delon. Robust estimation of local affine maps and its applications to image matching. *WACV*, 2020.
- [51] E. Zalczer, F.-X. Thomas, L. Chanas, G. Facciolo, and F. Guichard. Depth Map Quality Evaluation for Photographic Applications. *IS&T International Symposium on Electronic Imaging (EI 2020)*, 2020.
- [52] T. Ehret, A. Davy, P. Arias, and G. Facciolo. Joint demosaicing and denoising by overfitting to bursts of raw images. *ICCV*, 2019.
- [53] R. Marí, C. de Franchis, E. Meinhardt, and G. Facciolo. To Bundle Adjust or Not: A Comparison of Relative Geolocation Correction Strategies for Satellite Multi-View Stereo. *ICCV 3DRW Workshop*, 2019.
- [54] A. Davy, T. Ehret, J.-M. Morel, P. Arias, and G. Facciolo. A Non-Local CNN for Video Denoising. *IEEE ICIP*, 2019.

- [55] M. Rodriguez, G. Facciolo, R. Grompone von Gioi, P. Muse, J.-M. Morel, and J. Delon. SIFT-AID: Boosting SIFT with an Affine Invariant Descriptorbased on Convolutional Neural Networks. *IEEE ICIP*, 2019.
- [56] J. Anger, M. Delbracio, and G. Facciolo. Efficient Blind Deblurring Under High Noise Levels. *IEEE ISPA*, 2019.
- [57] T. Ehret, A. Davy, J.-M. Morel, G. Facciolo, and P. Arias, Model-blind Video Denoising Via Frame-to-frame Training. *CVPR*, 2019.
- [58] P. Chiberre, E. Meinhardt-Llopis, C. de Franchis, and G. Facciolo, 3D Modeling of Earth’s Surface: Study of the Antarctica. *IGARSS*, 2019.
- [59] J. Anger, C. de Franchis, and G. Facciolo, Assessing the Sharpness of Satellite Images: Study of the Planetscope Constellation. *IGARSS*, 2019.
- [60] J. Anger, M. Delbracio, and G. Facciolo. Modeling realistic degradations in non-blind deconvolution. *IEEE ICIP*, 2018.
- [61] P. Arias, G. Facciolo, and J.-M. Morel. A Comparison of Patch-Based Models in Video Denoising. *IEEE IVMSW Workshop*, 2018.
- [62] G. Facciolo, G. Pacianotto, M. Renaudin, C. Viard, and F. Guichard. Quantitative measurement of contrast, texture, color, and noise for digital photography of high dynamic range scenes. *IS&T International Symposium on Electronic Imaging (EI 2018)*, 2018. **IQSP Best Paper Award**.
- [63] G. Facciolo, C. de Franchis, and E. Meinhardt. Automatic 3D Reconstruction from Multi-Date Satellite Images. *Earth Vision Workshop CVPR*, 2017.
- [64] B. Rajaei, R. Grompone, G. Facciolo, and J.-M. Morel. Straight Subjective Contour Detector. *IEEE International Symposium on Image and Signal Processing and Analysis (ISPA)*, 2017.
- [65] V. Fedorov, P. Arias, G. Facciolo, and C. Ballester. Exemplar-Based Image Inpainting Using an Affine Invariant Similarity Measure. *Computer Vision, Imaging and Computer Graphics Theory and Applications. VISIGRAPP 2016, Revised Selected Papers. Communications in Computer and Information Science, vol 693. Springer, Cham*, 2017.
- [66] M. Renaudin, A.-C. Vlachomitrou, G. Facciolo, W. Hauser, C. Sommelet, C. Viard, F. Guichard. Towards a quantitative evaluation of multi-imaging systems. *IS&T International Symposium on Electronic Imaging (EI 2017)*, 2017.
- [67] M. Rais, J.-M. Morel, C. Thiebaut, J.-M. Delvit, and G. Facciolo. Improving the accuracy of a Shack-Hartmann wavefront sensor on extended scenes. *In 6th International Workshop on New Computational Methods for Inverse Problems (NCIMP)*, 2016. (ORAL PRESENTATION)
- [68] V. Fedorov, P. Arias, G. Facciolo, and C. Ballester. Affine Invariant Self-Similarity for Exemplar-Based Inpainting. *In International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISAPP)*, 2016. (ORAL PRESENTATION)
- [69] N. Pierazzo, J.-M. Morel, and G. Facciolo. Optimizing the Data Adaptive Dual Domain Denoising Algorithm. *In Progress in Pattern Recognition, Image Analysis, Computer Vision, and Applications (CIARP)*, Springer, 2015. (ORAL PRESENTATION)
- [70] M. Rais, J.-M. Morel, and G. Facciolo. Iterative Gradient-Based Shift Estimation: To Multiscale or Not to Multiscale?. *In Progress in Pattern Recognition, Image Analysis, Computer Vision, and Applications (CIARP)*, Springer, 2015.
- [71] G. Facciolo, C. de Franchis, and E. Meinhardt. MGM: A Significantly More Global Matching for Stereovision. *26th British Machine Vision Conference (BMVC)*, 2015. (ORAL PRESENTATION)
- [72] N. Pierazzo, M. Rais, J.-M. Morel, and G. Facciolo. DA3D: Fast and Data Adaptive Dual Domain Denoising. *22th IEEE International Conference on Image Processing (ICIP)*, 2015. (ORAL PRESENTATION)
- [73] N. Pierazzo, M. Lebrun, M. Rais, J.-M. Morel, and G. Facciolo. Non-local Dual Image Denoising. *21th IEEE International Conference on Image Processing (ICIP)*, 2014. (ORAL PRESENTATION) **Top 10% Paper Award**.

- [74] C. de Franchis, E. Meinhardt, J. Michel, J.-M. Morel, and G. Facciolo. On stereo-rectification of pushbroom images. *21th IEEE International Conference on Image Processing (ICIP)*, 2014.
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- [95] A. Chen, J. Darbon, C. de Franchis, G. Facciolo, E. Meinhardt, J. Michel, and J.-M. Morel. Numerical simulation of landscape evolution and water run-off on digital elevation models obtained from pléiades. *Revue Française de Photogrammétrie et de Télédétection*, 2014.
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Relevant participations to workshops, symposiums and seminars

- [101] 10/9/2021: Invited talk at the workshop Deep neural networks for inverse problems in satellite imagery, on *Self-supervised multi-frame denoising and super-resolution*. France.
- [102] 23-26/7/2021: Invited talk at the International Conference of Union of Mathematical Imaging (UMI2021), on *Self-supervised multi-frame denoising and super-resolution*. Inner Mongolia University, Hohhot, China.
- [103] 13/4/2021: Invited talk at : journée traitement du signal et IA, on *Self-supervised video denoising, demosaicking and super-resolution* . CEA DAM Saclay, France.
- [104] 5–6/9/2019: Invited talk *A small revolution in space imaging* at the conference *New Challenges in Insurance*, Paris, France.
- [105] 23–26/4/2019: Invited course on *Procesamiento de Imágenes Satelitales a Gran Escala*. Curso de Posgrado y Actualización, FING, UdelAR, Uruguay.
- [106] 18/10/2018: Invited talk at Workshop CCRT on *machine learning and reproducible research tools*. Centre de Calcul Recherche et Technologie, Bruyères-le-Châtel, France.
- [107] 6/9/2018: Invited talk *Les mathématiques de la vision en relief*, at Journée Portes Ouvertes 2018 CMLA, ENS Paris-Saclay.
- [108] 5/6/2018: SIAM Conference on Imaging Science (IS18): *MiniTutorial: Automated 3D reconstruction from satellite images*, University of Bologna, Bologna, Italy
- [109] 26–27/3/2018: Invited speaker at the *11th Financial risks international forum (RISKS 2018)*, CCI Paris Ile-de-France, France
- [110] 22/9/2017: Invited speaker at the Huawei Future ISP Technology Workshop, Nice

- [111] 22/07/2017: Popularization article in the DAP magazine (Data Analytics Post): *Les mathématiques donnent du relief aux images de la terre.*
- [112] 22/6/2017: Invited speaker at the CNES CCT 3D Reconstruction Workshop, Toulouse
- [113] 6/12/2016: Meeting MISS: *How to win the IARPA Challenge*, CMLA
- [114] 17/11/2016: “Dagstuhl Seminar #16462: Inpainting-Based Image Compression”. *IPOL: Image Processing On Line*, Schloss Dagstuhl - Leibniz-Zentrum für Informatik
- [115] 13/10/2016: “Séminaire Images Optimisation et Probabilités”. *MGM: A Significantly More Global Matching for Stereovision*, Institut de Mathématiques de Bordeaux, Bordeaux
- [116] 15/07/2015: [Encounter on space imaging science - between Beijing Institute of Space Mechanics & Electricity \(BISME\), Research Center for Space Optical Engineering, Dept. of Astroautics, Harbin Institute of Technology and, CMLA ENS-Cachan with the participation of CNES.](#) *”A perspective on image denoising”*, G. Facciolo, CMLA.
- [117] 24/06/2015: Meeting MISS: <http://dev.ipol.im/~facciolo/rosetta/doc/>”*Reconstruction 3D du site d’atterrissage final de Philae*”, C. de Franchis, G. Facciolo, E. Meinhardt-Llopis, J.-M. Morel, E. Jurado, R. Garmier, C. Delmas, and P. Gaudon. CESBIO, Toulouse.
- [118] 05/03/2015: Séminaire de Mathématiques Appliquées au Traitement d’Images (SMATI Seminar), *Data Adaptive Dual Domain Denoising*, LTCI, Telecom ParisTech
- [119] 03/07/2014: Rencontre de Technologies Spatiales (RTS): “Extraction d’informations des images”: *Multi-Scale Multi-Window ’our last’ word on stereovision*, CNES, Toulouse
- [120] 03/06/2014: IMAGINE Seminar: *Satellite Stereo Pipeline s2p*, ENPC
- [121] 09/01/2014: DTIC Seminar: *Reproducible Research, IPOL, and Satellite Stereo Image*, UPF, Barcelona
- [122] 04/10/2013: Technicolor Seminar: *Temporally consistent gradient based video editing*, Rennes, France
- [123] 22~27/07/2013: Fondation des Treilles seminar participation: *Acting the universality of image science / Reproducible Research in Signal, Image, and Geometric Processing*, Tourtour, France
- [124] 11/04/2013: Oxford Future of Science conference: Rigour and Openness in 21st Century Science: *IPOL: Image Processing On Line; Beyond Traditional Articles*, Oxford, UK
- [125] 29/05/2012: Groupe de travail “Statistique et imagerie” CEREMADE: *Analysis of a variational framework for exemplar based image inpainting*, Université Paris-Dauphine
- [126] 20/05/2012: SIAM Conference on Imaging Science, in Mini-Symposium: “Recent Advances in Patch-based Image Processing”: *Analysis of a Variational Framework for Exemplar Based Image Inpainting*, Philadelphia, PA
- [127] 12/08/2011: Santaló’s Summer School on Mathematical Models in Image Processing and Computer Vision: *Temporally consistent gradient domain video editing*, UIMP, Santander, Spain
- [128] 30/01/2011: MFO Workshop “Trends in Mathematical Imaging and Surface Processing”: *A variational framework for exemplar-based image inpainting* (with P. Arias, V. Caselles, and G. Sapiro), Oberwolfach, Germany
- [129] 06/04/2010: IIE Seminar: *Geodesic Neighborhoods for piecewise affine interpolation of sparse data*, FING, Montevideo, Uruguay