

## Curriculum Vitæ - Laure BLANC-FERAUD



Born 27/08/1963, three children.

Senior scientist at CNRS (National Centre of Scientific Research), France  
I3S Laboratory – Informatique Signaux et Systèmes at Sophia Antipolis – France.

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### Education

2000: HDR Côte d'Azur University (UCA) "On some inverse Problems in image processing".

1989: PhD in image processing at Côte d'Azur University (UCA).

1986: Master in Mathematics and Automatic, Paris-Dauphine University.

### Professional appointments

1989-1990: CISI Engineer at Thomson Sintra ASM industrial society on Sonar imaging.

1990-: CNRS researcher, I3S laboratory (1990 : young researcher, 2003 : senior researcher DR2,  
2011 : senior researcher DR1).

### Research (keywords) :

- Research domain: Inverse problems; Image reconstruction, restoration and denoising; Classification; Segmentation; 3D imaging; Phase retrieval.
- Methods: Variational methods and Partial Derivative Equation; Sparse Estimation; (Non-)Convex optimization; Relaxation; Homotopy methods;  $\Gamma$ -convergence; Bayesian inference.
- Application fields: Microscopy for biology (super-resolution, image analysis and classification); Satellite and aerial imaging; Non destructive control; Magnetic field imaging; Computer tomography.

### Honors and Distinctions

- Elevated IEEE Fellow, class of 2022.
- Chair of the French national Artificial Intelligence Interdisciplinary Institute (3IA), 2019.
- Knight of the Legion of Honour 2015.
- French Science Academy Award Michel Montpetit 2013.
- Knight of the National Order of Merit 2011.
- PES 2010 and 2014 (Ministry of Education premium for distinguished research activity).
- Best Paper award *IEEE Trans. on Signal Proc.* en 1998.
- Best-Paper Runner-Up Award at IEEE ISBI 2022.

### Publications/Productions (Google Scholar h index: 34)

- 12 book chapters, more than 50 journals with lecture committee (including IEEE Trans. IP, IEEE PAMI, IJCV, SIAM Numerical Analysis, SIAM Imaging Sciences, JMIV,...)
- 130 communications in conferences with lecture committee
- 1 patent
- Invited and plenary talks (workshops, special sessions in conferences, scientific days): 34 including 15 plenaries.

### Recent Invited Talk

- PICO'22, Mines Paris, 10th Conference on Inverse Problems, Control and Shape Optimization, Caen, 25-27 Oct. 2022.
- Workshop AI for the Sciences, Mines Paris, Sophia Antipolis, 9-10 June 2022
- Workshop "Advanced optimization methods for inverse problems and applications to image microscopy", Firenze Italy, 22-23 November 2021.
- Keynote speaker at IEEE CAMA conference, Antibes France, 15-17 November 2021.

- AI/Bio workshop, one-day online workshop of three Lyon's federations, 1 October, 2021.
- One World IMAGINE seminar, 27 May, 2020 ([www.youtube.com/watch?v=TEWDHjOMrVQ](https://www.youtube.com/watch?v=TEWDHjOMrVQ)).
- NEUBIAS Conference, Network of BioImage Analysts, Bordeaux, 4-6 March, 2020.
- Summer School Sparsity4PSL, Inria Paris, 21 June 2019.
- Workshop on Comput. Methods for Inverse Problems in Imaging, Como Italy, 16-18 July 2018.
- OSA Imaging and Applied Optics Congress, Orlando, USA, 25-28 June 2018.
- Workshop on Sparsity in Applied Mathematics and Statistics, Brussels Belgium, 1-2 June 2017.

### **(International/National) Editorial Activities**

- (Int) Area Chair of IEEE Signal Processing Magazine for Feature Articles (2021-2023).
- (Int) Associate editor of the SIAM Imaging Sciences Journal (2013-2018).
- (Nat/Int) Editor for the Encyclopedia SCIENCES ISTE/WILEY since 2018. The publisher ISTE, in partnership with WILEY for a publication in English language has launched an ambitious program of production of an encyclopedia called SCIENCES which covers all fields of science, intended for a master/engineer level (see <https://www.istegroup.com/en/sciences/>). I am in charge of the Image domain for which I have defined 7 themes, found coordinators and defined about 15 books to be produced, ranging from image model, algorithms, sensors, information retrieval, 3D geometry, compression, coding and security, imaging in life sciences, telemedicine imaging.
- (Nat) Associate editor of the French journal Traitement du Signal (2013-2018).

### **International Conference organization and Program Committees**

- General chair of the IEEE ISBI 2021 in Nice, (<https://biomedicalimaging.org/2021/>). 800 participants.
- Program Chair of IEEE ISBI conference 2014 (700 participants),
- Tutorial chair of IEEE ISBI 2019.
- Conference Program Committee member (area chair) of the conferences/workshops LCI workshop@ICCV 2019, OSA Mathematics in Imaging 2019, IEEE ISBI (13-14- 17-18), MIA (12), RFIA (12), NCMIP (11-18), IMDSP(93).

### **Research management responsibilities and expertise (international)**

- Elected member of the Technical Committee IEEE BISP (Biomedical imaging signal processing), 2008-15, re-elected 2019.
- Reviewing of foreign research projects (Italy, Austria, Germany, Belgium, Swiss, Brazil, Tunisia)
- Regular reviewing for journals IEEE Trans on Image Processing, IEEE Trans. On Signal Processing, IEEE Trans. On Medical Imaging, IJCV, Eurasip Signal Processing, Inverse Problems, JMIV, Signal Image and Video Processing, Journal of the Optical Society of America, and conferences IEEE ISBI, ICASSP, ICIP, SPARS, ACVIS, NCMIP.
- Regular Session Chair at IEEE ICASSP and IEEE ISBI. Co-Chair of the panel discussion on "New Trends in Bio Imaging and Signal Processing" at IEEE ICASSP'11, with B. Lelieveldt, J-C. Olivo-Marin and M. Unser.

### **Research management responsibilities and expertise (national)**

- Director of CNRS GdR 720 ISIS (2012-2018). GdR ISIS is a CNRS French national structure for animation and networking of the scientific community in the scope of Information Signal Image and Vision grouping 3500 members through 165 academic French laboratories and about twenty contributing industrial partners. About 30 one-day workshops were organized annually on thematic ranging from Methods and models in signal and image processing, Image and Vision, Algorithm-architecture in signal and image processing, Telecommunications: compression, protection, transmission. To complete these thematic, I have created in 2018 a new group on learning for signal and image analysis. The majority of the scientific days included one or two tutorial presentations by invited international experts. In addition to these one-day workshops, 4 calls for proposals were able to fund small research projects favoring young researcher participation, interdisciplinary research or academic-industrial collaborations (around 80k€ per call).
- Organization of the annual summer school Peyresq (2006-2012 and 2020 postponed): major French summer school on image and signal processing. Creation of this annual summer school

with Patrick Flandrin in 2006. Various thematic has been proposed such as Communications, complex systems, inverse problems, simulation methods, source separation, 3D data compression, Signal and Image Processing for the co-design of innovative imaging systems... see <http://www.gretsi.fr/ecole-d-ete-de-peyresq.php>.

- Member of the Scientific Council of the National Institute of Information Science and their Interactions (INS2I) of CNRS (National Centre of Scientific Research) and invited member of the Scientific Council of the Institute of Engineering and Systems Science of CNRS (INSIS) 2010-2014.
- Member of the National Research Strategy working group of the Ministry of Higher Education and Research on Information Society and Communication (challenge number 7) in 2014.
- ANR (National Research Agency): Member of the evaluation program on Specific support for Defense Research and Innovation (2018-19), Member of the Scientific Steering Committee on Information Society and Communication (2013-16); Vice President of the Evaluation Committee on Hardware and software for systems and communications in 2013, member in 2012; Steering Committee of the Challenge Program (2008-09).
- HCERES/AERES (High Council for the Evaluation of Research and higher Education): president of the evaluation visiting committees of laboratories: LTCI (380 members) in 2018, LABSTICC (550 members) in 2016, member of the evaluation visiting committees of laboratories LJK 2015, CRISTAL 2013, LIRIS 2010, XLIM 2010.
- Member of the scientific councils of ITAV laboratory (Institute for Advanced Technologies in Life Sciences in Toulouse) 2013-18 and GreyC laboratory (Group of Research in Computer Science, Image, Automation and Instrumentation of Caen), 2013- 16.
- Member of the scientific committees of CNRS national structures GdR MSPC / MIA (until 2013) and GdR Microscopie fonctionnelle du vivant (2014-18).
- Member of a hundred PhD and HDR defense committees, of whom about sixty as reviewer.
- Regular reviewing for journals Traitement du Signal and conferences GRETSI.
- Member of hiring committees of professor or associate professor in image/signal processing, computer science and applied mathematics at several universities (Paris Descartes 2016 (president), IMT Toulouse 2015, Strasbourg university, Côte d'Azur university),
- Member of CNECA 2008-15 (hiring jury of associate and full professors in agricultural superior schools Bordeaux, Anger, Dijon).
- Member of board of directors of association GRETSI in Signal/Image processing in France, 2008-15.

### Research management responsibilities (local)

- President of the Scientific Council of "Networks, Information and Digital Society" department (named Academy) of the Idex UCA JEDI of Côte d'Azur University (2015-2017). This is one of the 5 academies, or scientific pillar, of the University Côte d'Azur (UCA). It deals with communication networks, processing and modeling of digital information and the study of social changes brought about by the digital revolution. The scientific council includes more than 20 members and have managed calls for research projects for a budget of 1,2M€ over the 3 years.
- Member of the Scientific Council of 3IA Côte d'Azur (Artificial Intelligence Interdisciplinary Scientific Institute of Côte d'Azur), in charge of Computational biology axis) 2018-.
- Member of the Côte d'Azur University Academic council 2015-17.
- Co-leader of the MORPHEME team (I3S/Inria/iBV) from 2011 and of Ariana team (I3S/Inria) 1998-2010.
- Member of INRIA Sophia Antipolis Méditerranée project committee board 2010-14.
- Assistant Director of Laboratory I3S, UMR CNRS 7271 (250 members) 2004-07.
- Member of the Scientific Committee of doctoral school (ED STIC) of UCA 2004-07.
- Member of local committee INRIA (research project founding allocation 2002-06, doc and post-doc founding allocation 06-08).

### Contracts

- 8 contracts with companies (CNES, SAGEM-DS, Astrium/EADS, CS-SI, SFIM)

### Fundings

- Leader of 3 bilateral international collaborations (Columbia, Italy, USA) and participation to 6 international programs.
- Leader of 6 national collaboration programs (including 2 ANR and one FUI) and participation to 4 other programs (ANR, ACI, AS).

### Supervision

22 PhD plus 2 PhD in progress.

The thesis of A. Bechensteen obtained the Award of the doctoral school EDSTIC in the Automatic and Signal and Image Processing area.

The thesis of E. Soubies obtained the Award of the Mathematical Image and Applications Germano-French Thesis prize in 2018.

The thesis of J.F. Aujol obtained the Award of the Signal-Image-Vision French Thesis prize (Club EEA, GRETSI, GdR ISIS) in 2005.

Becoming of former PhD students: 4 were hired as researchers at CNRS, one is researcher at LCPC, 6 were hired in large French companies (TAS, General Electric, Philips, Amadeus), some others were hired at university or in startup.

Supervision of 6 post-doctorates and 40 M.Sc. internships.

### Teaching and educational activities

#### Summer schools

- (int) IEEE EMBS International Summer School on Biomedical Imaging 2019: Postponed to 2022.
- (Int) Summer School Sparsity4PSL, invited talk, 24-27 juin 2019.
- (Nat) School ISIS/Gretsi (major French image and signal processing summer school): Porquerolles May 2010 and Peyresq July 2009.
- (Nat) Interdisciplinary school in Functional Microscopy in BIOlogy (MIFOBIO) Carqueiranne, sept. 2008.
- (Int) Summer school: Mathematical methods for multi-channel image processing, Beijing, Chine, 2006.
- (Nat) Spring school of French Optics Society (SFO): Imagery and information, Les Houches, 2004.
- (Nat) School of GdR Physics of the interior of stars, September 1997.

#### University and superior school teaching (recent)

- Master MSc Data Science and AI, UCA, responsible of module Inverse Problems in Imaging and AI (30h).
- Master IFI, Engineer school PolyTech' Sophia Antipolis, Responsible of module Advanced Image Processing (20hCM, teaching 8h CM).
- Master international Computational Biology and Medecine (Biocomp), module Biological Image restoration, 12hCM (09-17).
- Master Pro ISAB, department of Biology UFR Sciences of UNS, (8h CM).

#### Research dissemination

- Emission de radio RFI « autour de la question », invitée le 29 juin 2022 (50mn, [écouter](#))
- Seminar at ED STIC, May 2017
- Seminar at Lycée Centre International de Valbonne, octobre 2019
- AI Chair presentation in YouTube en français (<https://www.youtube.com/watch?v=Z8Ci0LuanJw>) en (<https://www.youtube.com/watch?v=WoFtoRVIQe4>)