

CORBINEAU MARIE-CAROLINE

Ph.D. student in Mathematics and Computer Science

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EDUCATION

Ph.D. student in Maths and Computer Science

Centre de Vision Numérique, CentraleSupélec, Université Paris-Saclay

Oct 2016 – Ongoing Gif-sur-Yvette, France

Fast proximal optimization algorithms for machine learning and image processing.

Advisors: Jean-Christophe Pesquet and Emilie Chouzenoux

- Proximal algorithms, interior point methods, optimization-based neural networks, image processing.

M.Sc. with thesis in Aerospace Engineering

University of Illinois at Urbana-Champaign (UIUC)

Sep 2014 – Jun 2016 Illinois, USA

Engineer Degree

Institut Supérieur de l'Aéronautique et de l'Espace (ISAE)-SUPAERO

Sep 2012 – Jun 2014 Toulouse, France

Undergraduate Program in Maths and Physics (MPSI/MP*)

Lycée Clemenceau

Sep 2010 – Jun 2012 Nantes, France

PROJECTS

Master's Thesis

University of Illinois at Urbana-Champaign (UIUC)

Sep 2015 – May 2016 Illinois, USA

Deployment and on-orbit shape modifications for a large space telescope using magnetostriction.

Advisors: Victoria L. Coverstone and Melville P. Ulmer.

Funded by APERTURE, a NASA Innovative Advanced Concept.

Estimator for tidal accelerations on Mars (InSight NASA mission)

Institut Supérieur de l'Aéronautique et de l'Espace (ISAE)-SUPAERO

Sep 2013 – Jun 2014 Toulouse, France

Modelling of tidal Martian surface accelerations; development of a Kalman filter to retrieve Mars' Love numbers from the seismometer signal.

Advisors: Naomi Murdoch and David Mimoun.

EXPERIENCE

Teaching Assistant

CentraleSupélec, Université Paris-Saclay

Nov 2016 – Mar 2019 Gif-sur-Yvette, France

- Foundations of Distributed and Large Scale Computing Optimization*, for third year and master students, three times in 2017, 2018 and 2019 (TD, 11h)
- Advanced Optimization*, for second year students, three times in 2016, 2017 and 2018 (TD, 15h)

Research Assistant

University of Illinois at Urbana-Champaign (UIUC)

January 2016 – May 2016 Illinois, USA

Responsible of a five-person team. Advisor: Victoria L. Coverstone.

Teaching Assistant

University of Illinois at Urbana-Champaign (UIUC)

Sep 2015 – Dec 2015 Illinois, USA

Orbital Mechanics, for undergraduate and graduate students (TD)

Intern

Airbus

Jul 2013 (1 month) Nantes, France

Technical drawing with CATIA

COMPUTER SKILLS

Python Matlab Notions in Java

Some Python libraries

PyTorch, Numpy, SciPy, PyWavelets

OS

Misc.

Ubuntu, Windows

Office, \LaTeX , CATIA, Solid Edge

LANGUAGES

French



English



Spanish



Italian



PUBLICATIONS

Journal Preprints

- C. Bertocchi, E. Chouzenoux, M.-C. Corbineau, J.-C. Pesquet, and M. Prato. "Deep unfolding of a proximal interior point method for image restoration". In: *arXiv preprint arXiv:1812.04276* (2018).
 - E. Chouzenoux, M.-C. Corbineau, and J.-C. Pesquet. "A proximal interior point algorithm with applications to image processing". In: *HAL preprint hal:02120005* (2019).
 - M.-C. Corbineau, D. Kouamé, E. Chouzenoux, J.-Y. Tourneret, and J.-C. Pesquet. "Preconditioned P-ULA for joint deconvolution-segmentation of ultrasound images". In: *arXiv preprint arXiv:1903.08111* (2019).
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Conference Proceedings

- M.-C. Corbineau, E. Chouzenoux, and J.-C. Pesquet. "Geometry-texture decomposition/reconstruction using a proximal interior point algorithm". In: *Proceedings of the 10th IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM)*. Sheffield, UK, July 2018, pp. 435–439.
- M.-C. Corbineau, E. Chouzenoux, and J.-C. Pesquet. "PIPA: a new proximal interior point algorithm for large-scale convex optimization". In: *Proceedings of the 43rd IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. Calgary, Canada, Apr. 2018, pp. 1343–1347.

REVIEWER ACTIVITIES

I have acted as reviewer for the following journals and conferences:

- *Computer Vision and Image Understanding (CVIU)*, Elsevier
- *Signal Processing: Image Communication (SPIC)*, Elsevier
- *Journal of Mathematical Imaging and Vision (JMIV)*, Springer
- *Joint Urban Remote Sensing Event (JURSE 2019)*, conference

FELLOWSHIPS

AE Block Grant Fellowship

Dpt. of Aerospace Engineering at UIUC

 2015

 Illinois, USA

TALKS

Joint geometry-texture decomposition and reconstruction of CT scans using a proximal interior point algorithm

Young Researchers in Imaging Seminars – Institut Henri Poincaré

 February 27, 2019  Paris, France

Proximal interior point algorithm for large scale image processing problems

Mini-Symposium: Approaches for fast optimisation in imaging and inverse problems, SIAM Conference on Imaging Science

 June 7, 2018

 Bologna, Italy