

LORENA LEON

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RESEARCH INTERESTS

- Statistical Signal and Image Processing
- Bayesian Methods
- Multifractal Modeling and Analysis
- Machine Learning
- Multivariate Signal and Image Analysis
- Remote Sensing
- Biomedical Applications

EDUCATION

Ph.D. candidate

2019 - Present

IRIT Laboratory, University of Toulouse

Toulouse, France

Multifractal analysis for multivariate and non-homogeneous data with biomedical and remote sensing applications.

Advisors: J-Y. Tournet and H. Wendt

Master of Science in Applied Mathematics: Numerical Analysis

2016 - 2019

University of Havana

Havana, Cuba

Classification of Mass Malignancy in Digital Mammography through Multifractal Analysis.

Advisor: A.M. León Mecías

Bachelor of Science in Mathematics

2012 - 2016

University of Havana

Havana, Cuba

A Probabilistic Model for Mobile Robot Self-localization.

Advisor: Y. Almeida Cruz

PUBLICATIONS

Journal

1. L. Leon, H. Wendt, J.-Y. Tournet and P. Abry, "A Bayesian Framework for Multivariate Multifractal Analysis," in *IEEE Transactions on Signal Processing*, vol. 70, pp. 3663-3675, 2022

Conferences

4. H. Wendt, L. Leon, J.-Y. Tournet and P. Abry, "Multifractal anomaly detection in images via space-scale surrogates," *IEEE International Conference on Image Processing (ICIP)*, Bordeaux, France, Oct. 2022
3. L. Leon, H. Wendt, J.-Y. Tournet, P. Abry, "Estimation du paramètre de multifractalité : régression linéaire, maximum de vraisemblance ou inférence Bayésienne," *GRETSI Symposium Signal and Image Processing*, Nancy, France, Sept. 2022.
2. L. Leon, H. Wendt, J.-Y. Tournet and P. Abry, "A Comparison of Bayesian Estimators for the Parameters of the Bivariate Multifractal Spectrum," *European Signal Processing Conference (EUSIPCO)*, Belgrade, Serbia, Aug. 2022.
1. L. Leon, H. Wendt, J.-Y. Tournet and P. Abry, "Bayesian Estimation for the Parameters of the Bivariate Multifractal Spectrum," *European Signal Processing Conference (EUSIPCO)*, Dublin, Ireland, Aug. 2021.

HONORS AND AWARDS

CARMIN-IHP-CIMPA laureate

Jan. 7th - Apr. 5th, 2019

of "The mathematics of imaging" research program

Paris, France

The scientific program is available here

TEACHING

Assistant Professor

2016 - 2019

University of Havana

Havana, Cuba

Mathematical Analysis of real functions of one real variable and several variables, Linear Algebra, Numerical Analysis, Differential Equations

Student Teaching Assistant

2014 - 2016

University of Havana

Havana, Cuba

Calculus, Linear Algebra, Numerical Analysis

SCIENTIFIC ACTIVITIES

InnEO Summer school

Jul. 19th - 24th, 2021

R&D Institute of Transylvania University

Brasov, Romania

Subjects include: Machine Learning, Deep Learning and Earth Observation Applications. Practical sessions in Python and MATLAB. Open Science and Soft Skills development.

Research school: Mathematics, Signal Processing and Learning

Jan. 25th - 29th, 2021

CIRM

Marseille, France

Subjects include: Machine Learning, Signal Processing, Optimization, Reinforcement Learning, One Signal Processing View on Deep Learning. Practical sessions in Python.

Winter School: The mathematics of Imaging

Jan. 7th - 11th, 2019

CIRM

Marseille, France

Subjects include: Variational Methods and Convex Relaxation for Computer Vision, Practical Machine Learning for Imaging in Neuroscience, Sparsity in Imaging, Bayesian Methods in Imaging.

II Winter School in Computer Science: CSHab2018

Jan. 29th - Feb. 2nd, 2018

University of Havana

Havana, Cuba

Subjects include: Languages for Concurrency, Representation and Kernel Learning, Perspectives on Real-time Scheduling in the Wuthering Landscape of Parallel Computing.

Winter School: Mathematics and Physics meet

Feb. 26th - Mar. 3rd, 2017

University of Havana

Havana, Cuba

Subjects include: Tools for Signal Analysis and Quantum Physics, Semigroups and Spectral Theory.

TECHNICAL SKILLS

Languages: Matlab, Python

Technologies/Frameworks: L^AT_EX, Linux, GitHub, Microsoft Office

LANGUAGES

Spanish: Native proficiency

English: Full professional proficiency

French: Limited working proficiency