

Position

Assistant Professor

September 2023 – ...

IMT ATLANTIQUE / LAB-STICC · BRAIN TEAM

Brest, France

- Research domain Audio and Music Signal Processing, Machine & Deep Learning, Low-Rank Factorization, Multi-linear Algebra
- Teaching Artificial Intelligence, Programming, Signal Processing.

Research Summary

Ph.D.

October 2019 - December 2022

IRISA / UNIV. RENNES 1 · PANAMA TEAM

Rennes, France

- Domain Signal Processing (“Signal, Image, Vision”)
- Title Unsupervised Machine Learning paradigms for the representation of music similarity and structure.
- Supervision Jérémy E. COHEN, Nancy BERTIN, Frédéric BIMBOT
- Keywords Music Structure Analysis; Unsupervised Machine Learning; Numerical Optimization; Music Information Retrieval
- Online resource <https://hal.science/tel-03937846>

Research Master's degree

2018 - 2019

INSA RENNES / UNIV. RENNES 1

Rennes, France

- Domain Machine and Deep Learning
- Title Multi-channel automatic music transcription using tensor algebra.
- Supervision Jérémy E. COHEN, Nancy BERTIN
- Online resource <https://hal.science/hal-03301448>

Selected Publications

- ◇ **A. Marmoret**, J.E. Cohen, F. Bimbot. “Barwise Music Structure Analysis with the Correlation Block-Matching Segmentation Algorithm”. *Transactions of the International Society for Music Information Retrieval*, 2023.
- ◇ **A. Marmoret**, J.E. Cohen, N. Bertin, F. Bimbot. “Uncovering Audio Patterns in Music with Nonnegative Tucker Decomposition for Structural Segmentation”. In *21st International Society for Music Information Retrieval, ISMIR*, 2020.

Ph.D. Supervision

- Jonathan Lys 2024 – 2027 · IMT Atlantique. “Exploring diversity in few-shot learning.”
- Lucie Jean-Labadie 2024 – 2027 · Univ. Sorbonne. “Description of underwater soundscapes using deep learning.”
- Ulysse Lefeuvre 2024 – 2027 · L-Acoustics. “Impact émotionnel et physiologique des paramètres de sonorisation de la musique en contexte écologique”.

Research contracts

- ANR JCJC (PI) 2026 – 2029 “MusAIC – Steerable and Interpretable Music Analysis through Hybrid Models.”

Reviews

- EURASIP Journal on Audio, Speech, and Music Processing 2024
- ICASSP (International Conference) 2024, 2025
- ISMIR (International Conference) 2024, 2025
- WASPAA (International Conference) 2025
- ANR (French funding agency) 2024

Talks

- Centrale Nantes, SIMS team 2024, Nantes, France
- ENSTA, OSE team 2024, Brest, France
- IMT Atlantique, BRAIN team 2023, Brest, France
- Pint of Science (Scientific Vulgarization) 2023, Rennes, France
- CREATIS, Univ. Lyon 2023, Lyon, France.
- Queen Mary University, C4DM group 2022, London, UK

Publication list

International Journal

- Published
 - ◇ **A. Marmoret**, J.E. Cohen, F. Bimbot. “Barwise Music Structure Analysis with the Correlation Block-Matching Segmentation Algorithm”. *Transactions of the International Society for Music Information Retrieval*, 2023.

International Conferences and Workshops

- Published
 - ◇ **A. Marmoret**, J.E. Cohen, F. Bimbot. “Convolutional Block-Matching Segmentation Algorithm with Application to Music Structure Analysis”. In *IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, WASPAA*, 2023.
 - ◇ **A. Marmoret**, J.E. Cohen, F. Bimbot. “Barwise Compression Schemes for Audio-Based Music Structure Analysis”. In *19th Sound and Music Computing Conference, SMC*, 2022.
 - ◇ H. Wu, **A. Marmoret**, J.E. Cohen. “Semi-Supervised Convolutional NMF for Automatic Piano Transcription”. In *19th Sound and Music Computing Conference, SMC*, 2022.
 - ◇ **A. Marmoret**, J.E. Cohen, N. Bertin, F. Bimbot. “Uncovering Audio Patterns in Music with Nonnegative Tucker Decomposition for Structural Segmentation”. In *21st International Society for Music Information Retrieval, ISMIR*, 2020.

National (French) Conference

- Published
 - ◇ B. Padeloup, **A. Marmoret**. “Raining Words : Les modèles d’ASR peuvent-ils retranscrire les sous-genres de Metal?”. In *GRETSI’25 - XXXe Colloque Francophone de Traitement du Signal et des Images*, 2025.
 - ◇ M. Delabaere, L. Miqueu, M. Moreno, *et al.* “AutoMashup : Automatic Music Mashups Creation”. In *GRETSI’25 - XXXe Colloque Francophone de Traitement du Signal et des Images*, 2025.
 - ◇ L. Jean-Labadye, G. Dubus, D. Cazau, *et al.* “Apprentissage par transfert pour la détection et la classification automatiques de grandes baleines dans l’océan austral”. In *GRETSI’25 - XXXe Colloque Francophone de Traitement du Signal et des Images*, 2025.
 - ◇ **A. Marmoret**, F. Voorwinden, V. Leplat, J.E. Cohen, F. Bimbot. “Nonnegative Tucker Decomposition with Beta-divergence for Music Structure Analysis of audio signals”. In *GRETSI’22 : XXVIIIème Colloque Francophone de Traitement du Signal et des Images*, 2022.

Open-Source Toolboxes

- nmf_audio_benchmark https://github.com/ax-le/nmf_audio_benchmark
 - ◇ Toolbox aimed at facilitating the benchmarking of NMF-based techniques in the context of audio processing.
 - ◇ Contains NMF methods, task definitions with code, and dataset handlers.
 - ◇ Made with the objective of collaborative addition of content.
- nn_fac https://github.com/ax-le/nn_fac
 - ◇ Toolbox of nonnegative factorization techniques, for both matrices (NMF) and tensors (NN-CP, NN-PARAFAC2 and NTD).
 - ◇ These decompositions are computed by solving NNLS (NonNegative Least Squares) problems on every factor when optimizing with respect to the Euclidean norm, or with Multiplicative Updates subject to each factor when optimizing the Beta-divergences.
- as_seg https://github.com/ax-le/as_seg
 - ◇ Toolbox containing segmentation algorithms for autosimilarity matrices, in particular the CBM (Convolutional Block Matching) algorithm.
 - ◇ The toolbox contains tutorial and experimental Notebooks, showcasing its mode of operation and experimental results.
- MusicOnPolytopes <https://github.com/ax-le/MusicOnPolytopes>
 - ◇ Code associated with the polytopical framework, used as a structural segmentation criterion for symbolic music.
 - ◇ See our preprint “Polytopical Analysis of Music” (arXiv:2212.11054) for more details.

Teaching Experience

Project Supervisor

IMT ATLANTIQUE

2023 – ...

Brest, France

- Level Engineering students
- Groups by year
 - ◊ 2023 : 4 groups
 - ◊ 2024 : 2 groups
 - ◊ 2025 : 3 groups

Introduction to Artificial Intelligence • Teacher

IMT ATLANTIQUE

2023 – ...

Brest, France

- Level 2nd & 3rd year Engineering students
- Topics Artificial Intelligence; Python; Machine & Deep Learning.
- Link to the class <https://github.com/brain-bzh/introduction-to-ai>

Introduction to the theory and practice of Machine Learning • Teacher

IMT ATLANTIQUE

2024 – ...

Brest, France

- Level 2nd & 3rd year Engineering students (TAF MCE)
- Topics Machine Learning, notably Statistical (Bayesian) formalism.

Algorithmics & Programming • Teacher

IMT ATLANTIQUE

2023 & 2025 – ...

Brest, France

- Level 1st year Engineering students
- Topics Algorithmics; Programming; Python; Graph Theory.
- Link to the class <https://hub.imt-atlantique.fr/ueinfo-fise1a/s5/index.html>

Electrical Engineering • Teacher

IMT ATLANTIQUE

2025

Brest, France

- Level 1st year Engineering students
- Topics Signal Processing; Practical Session on Audio.

Ecological Transition • Teaching Assistant

IMT ATLANTIQUE

2025 – ...

Brest, France

- Level 1st year Engineering students
- Topics Moving Debate and Formation to the Ecological Crisis.

High-Scale Statistical Learning and Recommendation System • Teaching Assistant

ENSAI

2022

Rennes, France

- Level Master 1 and 2
- Topics Linear algebra; Numerical optimization; Low-rank approximation; Recommendation systems.

Advanced Database • Teaching Assistant

ISTIC / UNIV. RENNES 1

2020

Rennes, France

- Level Master 1 (MIAGE)
- Topics OLAP; NoSQL : Apache Pig; Spark; Neo4j.

Supervision

Jonathan Lys

PH.D. (ADVISOR) – DIRECTOR : V. GRIPON. CO-ADVISOR : B. PASDELOUP

October 2024 - ...

IMT Atlantique - France

Exploring diversity in few-shot learning.

Ulysse LEFEUVRE

PH.D. (ADVISOR) – DIRECTOR : N. FARRUGIA, L. ARNAL. CO-ADVISOR : N. EPAIN

October 2024 - ...

L-Acoustics / Institut Pasteur / IMT Atlantique - France

Impact émotionnel et physiologique des paramètres de sonorisation de la musique en contexte écologique.

Lucie JEAN-LABADYE

PH.D. (ADVISOR) – DIRECTOR : N. FARRUGIA, O. ADAM. CO-ADVISOR : D. CAZAU

October 2024 - ...
Univ. Sorbonne / ENSTA / IMT Atlantique - France

Description of underwater soundscapes using deep learning.

Mahamat Nour Bachar MAHAMAT

MASTER 2 INTERNSHIP – CO-SUPERVISION : D. CAZAU

May - September 2025
Univ. Angers / IMT Atlantique - France

Factorisations de rang faible non-négatives pour le suivi de la biodiversité marine par acoustique passive sous marine.

Michael MORENO BUSTOS

MASTER 1 INTERNSHIP – CO-SUPERVISION : N. FARRUGIA

May - August 2024
IMT Atlantique - France

AutoMashup - automatically creating musically relevant mashups.

Florian VOORWINDEN

MASTER 2 INTERNSHIP – CO-SUPERVISION : J.E. COHEN

February - June 2021
IRISA/ENS Rennes - France

Metrics and representations for Nonnegative Tucker Decomposition applied in music structure inference

Scientific Presentations

Seminar • SIMS Team • Centrale Nantes

Low-rank Factorization for Unsupervised Audio Signal Processing

March 2024
Nantes, France

Seminar • OSE Team • ENSTA Bretagne

Low-Rank Factorization for Unsupervised Automatic Audio Signal Processing.

February 2024
Brest, France

Scientific vulgarization • Pint of Science

Des Machines Mélomanes : l'Intelligence Artificielle permet-elle de développer des machines qui comprennent la musique ?

May 2023
Rennes, France

Seminar • BRAIn Team • IMT Atlantique

Low-Rank Factorization for the Representation of Music Similarity and the Estimation of Structure.

March 2023
Brest, France

Seminar • Myriad team • CREATIS

Unsupervised Machine Learning paradigms for the representation of music similarity and structure.

February 2023
Lyon, France

Seminar • Center for Digital Music • Queen Mary University

Unsupervised Barwise Music Compression for Pattern Uncovering and Structural Segmentation.

March 2022
London, United-Kingdom

Research Contracts

ANR JCJC • Principal Investigator

MusAIC - "Steerable and Interpretable Music Analysis through Hybrid Models"

2026 - 2029

Diplomas

Ph.D.

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- Online resource <https://hal.science/hal-03301448>

Engineering School

2015 - 2018

MINES DOUAI (BECAME IMT NORD-EUROPE SINCE)

Douai, France

- Domain Computer Science

Engineering School - International Exchange

September 2017 - January 2018

POLYTECHNIQUE MONTRÉAL

Montréal, Canada

- Domain Computer Science

“Classes Préparatoires aux Grandes Ecoles”

2013 - 2015

DUPUY DE LÔME HIGH SCHOOL

Lorient, France

- Domain MPSI/MP (Mathematics)

Scientific Baccalaureate (A-levels)

2013

SAINT-LOUIS HIGH SCHOOL

Lorient, France

- Mention “Bien” – European English

“BAFA” (French diploma of youth worker)

2014-2015

ECLAIREURS DE FRANCE

Lorient, France

Industrial Work Experience

Final Engineering School Internship

February - July 2018

SOPRA STERIA

Rennes, France

- Main mission Innovation in Telecom (agile environment).
- Job objectives
 - ◊ Design and development of prototypes aimed at Telecom business (Augmented Reality, Machine Learning, BlockChain, ...),
 - ◊ Implementation of the technical environment (continuous integration).

Engineer Assistant Internship

May - August 2017

INFOVISA

Lorient, France

- Main mission Web development.
- Job objectives
 - ◊ Development (in Java/J2EE) of a middleware between a distributed application and several WebServices,
 - ◊ Deployment of the solution with a precise documentation.

Technician Internship

May - August 2018

BLUE SOLUTIONS, BOLLORÉ GROUP

Quimper, France

- Main mission Assistance to engineers and technicians in machine quality-control and maintenance.
- Job objectives
 - ◊ Development of quality-control VBA macros,
 - ◊ SolidWorks designs and assemblies,
 - ◊ Day-to-day assistance to the installation of a lithium extruder.

Music

Drums Main Instrument. 20 years of practice. 2 EPs recorded.

Bass 5 years of practice.

Piano Beginner

Event Organization

Scientific vulgarization – Univ. Rennes 1 <i>Journée Science et Musique.</i>	<i>2019 & 2021 (October)</i> <i>Rennes, France</i>
In-School Student Music Festival <i>L’Art Scène Festival</i>	<i>2016 & 2017 (May)</i> <i>Douai, France</i>
Local Music Festival <i>Mai du Son</i>	<i>2011 & 2012 & 2013 (May)</i> <i>Ploemeur, France</i>