

Paul Magron

INRIA Research Scientist

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Current position

Since 2021 **Research scientist**, *INRIA Nancy Grand-Est, Multispeech team*, Nancy, France.
Audio signal processing: sound source separation, speech enhancement, audio inpainting/restoration.
Phase and complex-valued data modeling for time-frequency analysis.
Statistical models, optimization, and machine/deep learning for audio.

Professional experience

- 2019 - 2021 **Postdoctoral researcher**, *IRIT, Université de Toulouse, CNRS*, Toulouse, France.
Representation learning for content-aware music recommendation.
Phase recovery with non-quadratic divergences in audio.
- 2017 - 2019 **Postdoctoral researcher**, *Tampere University*, Tampere, Finland.
Audio/music source separation, phase-aware probabilistic models, deep learning.
Real-time speech separation in a collaborative project with the Eriksholm Research Center (Denmark).
- 2013 - 2016 **Ph.D.**, *Télécom ParisTech, Signal and Image Processing department*, Paris, France.
Audio source separation, phase recovery, nonnegative matrix factorization, probabilistic models.
- 2013 **Research intern**, *Centro de Investigacion en Tecnologias de Audio*, Santiago, Chile.
Complex resonator acoustics, digital filter design, sound synthesis.
- 2011 - 2012 **Trainee engineer**, *Airbus - Propulsion Integration Domain*, Toulouse, France.
Propulsion systems weight management, modeling of the water hammer pressure surge at engine start.
- 2010 **Research Assistant**, *UR NAVIER Research Center*, Paris, France.
Mechanical analysis of straw balls composite panels.

Supervision

- PhD students **Nasser-Edine Monir**, *co-supervised with R. Serizel*, 2022 - 2025.
Multichannel speech enhancement for patients with auditory neuropathy spectrum disorders.
- Postdocs **Marina Krémé**, *co-supervised with A. Deleforge*, 2022 - 2024.
Phase retrieval and optimal transport for audio restoration.
- M2 interns **Louis Lalay**, *co-supervised with M. Sadeghi*, 2023.
Dictionary learning for deep speech separation.
- Louis Bahrman**, *co-supervised with A. Deleforge*, 2022.
Repairing audio signals using compact phase-aware models.

Teaching

- Since 2021 **Teaching assistant**, *Université de Lorraine*, Nancy, France.
Neural networks (lab work), automatic speech recognition (lab work)
- 2018 - 2019 **Teaching assistant**, *Tampere University*, Tampere, Finland.
Advanced audio signal processing (lecture, lab work, project supervision), Introduction to audio signal processing (lab work, project supervision).
- 2014 - 2016 **Teaching assistant**, *Télécom ParisTech*, Paris, France.
Nonnegative Matrix Factorization (lecture and lab work), fundamentals of psychoacoustics (lecture), first-year engineering student projects and final projects (supervision).

Distinctions

- 2020 Short-term mobility grant from the Maupertuis program for France-Finland scientific collaboration.
- 2018 Best Paper Award at IWAENC 2018 for the paper titled "Towards complex nonnegative matrix factorization with the beta-divergence", by P. Magron and T. Virtanen.

Scientific evaluation

- PhD jury **Pierre-Hugo Vial**, *IRIT, Université de Toulouse, CNRS*, Toulouse (examiner).
Topic: Phase retrieval and audio signal reconstruction with non-quadratic cost functions.
PhD supervised by Cédric Févotte and Thomas Oberlin; defended on November 29th, 2022.
- Reviewer Journals: IEEE Transactions on Audio, Speech, and Language Processing, IEEE Transactions on Signal Processing, IEEE Signal Processing Letters, IEEE Access, Eurasip journal, Speech communications, Multimedia Systems, Journal of Computational and Graphical Statistics, MDPI.
Conferences: IEEE International Conference on Audio, Speech, and Signal Processing (ICASSP), Digital Audio Effects (DAFx) conference, International Workshop on Acoustic Signal Enhancement (IWAENC), Interspeech.
- Projects Czech Science Foundation (Czech republic), MITACS program (Canada).
- Master thesis Reviewer for the ATIAM (Sorbonne University) and NLP (University of Lorraine) MSc programs.

Scientific services

- Organizer IEEE IJCNN 2021 Special session on Representation Learning for Audio Processing.
- Administrative Member of the INRIA commission for Scientific Information & Edition (IES) (since 2022).

Education

- 2013 - 2016 **Ph.D.**, *Télécom ParisTech, Signal and Image Processing department*, Paris, France.
Thesis: Phase recovery based on signal modeling: application to audio source separation.
- 2016 **Summer school in Image and Signal processing**, *GRETSI*, Peyresq, France.
Probabilistic modeling and Bayesian inference in signal and image processing.
- 2012 - 2013 **Master of sciences**, *Sorbonne University, Télécom Paris, and IRCAM*, Paris, France.
Acoustics, Signal Processing and Computer Science applied to Music (ATIAM).
Thesis: Modeling and simulation of the Antara, a Latin American closed-end pan flute.
- 2009 - 2011 **Engineering degree**, *École des Ponts ParisTech*, Paris, France.
Majors: materials, structures and fluids mechanics.
Minors: acoustics, thermodynamics, aerodynamics.
- 2007 - 2009 **Preparatory school to French “Grandes Écoles”**, *Lycée Pierre de Fermat*, Toulouse, France.
Majors: mathematics, physics and computer science.
- 2007 **Baccalaureate in sciences and mathematics**, *Lycée Pierre de Fermat*, Toulouse, France.
Major in mathematics, graduated with first class honors.

Languages

- Programming Python (advanced), Matlab/Octave (advanced), C++ (beginner), Faust (to reactivate).
- Natural French (native), English (fluent), Spanish (fluent), Chinese (beginner), Finnish (beginner).

Personal interests

- Music I have been playing the electric guitar for more than fifteen years, mostly in jazz and progressive rock/metal. I am a student at the conservatory, where I study in both the classical curriculum (music theory/*solfège* and composition) and the jazz department.
- Taekwondo I have trained for about ten years and am a black belt (1st Dan). I competed in technical and sparring competitions. I occasionally assist my instructor.