Paul Magron

INRIA Research Scientist

INRIA Nancy Grand-Est
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Current position

Since 10/2021 **Research scientist**, *INRIA Nancy Grand-Est, Multispeech team*, Nancy, France.
Audio signal processing: source separation, speech enhancement, music recommendation.
Phase and complex-valued data modeling for time-frequency analysis.
Statistical models, nonnegative matrix factorization, and deep learning for audio.

Professional experience

2019 - 2021 **Postdoctoral researcher**, *IRIT, Université de Toulouse, CNRS*, Toulouse, France.
Representation learning for content-aware music recommendation, as part of the ERC project FACTORY.
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, time-frequency analysis, probabilistic models (anisotropic Gaussian, alpha-stable), nonnegative matrix factorization.

04/2013 - 08/2013 **Research intern**, *Centro de Investigacion en Tecnologias de Audio*, Santiago, Chile.
Complex resonator acoustics, digital filter design, sound synthesis.

09/2011 - 08/2012 **Trainee engineer**, *Airbus - Propulsion Integration Domain*, Toulouse, France.
Propulsion systems weight management, modeling of water hammer pressure surge observed during engine start.

05/2010 - 07/2010 **Research Assistant**, *UR NAVIER Research Center*, Paris, France.
Straw balls as an ecological construction material - Mechanical analysis of composite panels.

Supervision

2019 - 2022 **Pierre-Hugo Vial - PhD student**, *IRIT, Université de Toulouse, CNRS*, Toulouse.
Topic: Phase retrieval based on non-quadratic divergences in audio.
Supervisors: Cédric Févotte, Thomas Oberlin, Paul Magron

03/2022 - 08/2022 **Louis Bahrman - M2 intern**, *INRIA Nancy - Grand Est*, Nancy.
Topic: Réparation de signaux audio par modèles compacts prenant en compte la phase.
Supervisors: Antoine Deleforge, Paul Magron

Teaching

Since 2021 **Teaching assistant**, *Université de Lorraine*, Nancy, France.
Neural networks (lab work), 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 (128h).
Nonnegative Matrix Factorization (lecture and lab work), fundamentals of psychoacoustics (lecture), first-year engineering student projects and final projects (supervision).

Awards

09/2018 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.

Fundings

02/2020 Short-term mobility grant from the Maupertuis program for France-Finland scientific collaboration.

Scientific services

Organizer — IEEE IJCNN 2021 Special session on Representation Learning for audio processing.

Reviewing — 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, 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.

Funding agencies: Czech Science Foundation.

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.

July 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**, *Université Pierre et Marie Curie, Télécom ParisTech 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 (advanced), C++ (beginner), Faust (to reactivate).

Natural — French (native), English (fluent), Spanish (fluent), Finnish (beginner).

Personal interests

Music — I've been playing the electric guitar for more than fifteen years, mostly in jazz and progressive rock/metal. I study music theory (*solfège*) at the conservatory.

Taekwondo — I've trained for eight years and am a black belt (1^{st} Dan). I competed in technical, sparring and self-defense competitions. I was an assistant teacher in my club in Finland.