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

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

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

Supervision

2022 - 2025 **Nasser-Edine Monir - PhD student**, *INRIA Nancy - Grand Est*, Nancy.
Topic: Multichannel speech enhancement for patients with auditory neuropathy spectrum disorders
Supervisors: Romain Serizel, Paul Magron

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 - **Louis Bahrman - M2 intern**, *INRIA Nancy - Grand Est*, Nancy.
08/2022 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), 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 (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: Czech Science Foundation (Czech republic), MITACS program (Canada).

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 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've trained for about ten years and am a black belt (1st Dan). I competed in technical and sparring competitions. I support my teacher as teaching assistant.