

Clément GAULTIER

Ph.D. specialized in Acoustic & Audio Signal Processing
M.Sc. Research in Acoustics
Graduate Engineer specialized in Vibrations – Acoustics – Sensors

SCIENTIFIC BACKGROUND & INTERESTS

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|------------------|---|-------------------|--|
| Machine Learning | Sound Source Localization. 🎧 <ul style="list-style-type: none">○ Binaural sound source localization, HRTF○ Sound propagation modeling, acoustic sensing○ Virtually supervised learning, massive regression | Signal Processing | Acoustic and Audio. 🎧 <ul style="list-style-type: none">○ Multichannel sparse audio reconstruction, acoustic echo cancellation○ Time-frequency modeling○ Real-time algorithm design○ Distributed audio systems |
| Hearing Research | Speech in Noise. 🗣️ <ul style="list-style-type: none">○ Listening experiments, stimuli calibration○ Speech intelligibility○ Adaptation to noise | Others | Teaching. 📚 <ul style="list-style-type: none">○ Wave propagation physics (optics, acoustics, electromagnetics)○ Room acoustics students project mentoring○ Jury member for final year sound engineer students defence |

PROFESSIONAL EXPERIENCE

- Sept. 2019 – Feb. 2021 **Postdoctoral researcher**, *Orange, Orange Labs*, Cesson-Sévigné, Research.
- Project: Multichannel acoustic echo cancellation for ad-hoc distributed audio systems
 - low-latency AEC,
 - Room Impulse Responses measurements,
 - speaker localization through multilateration,
 - patent pending on real-time acoustic echo cancellation robust to acoustic path change and double-talk scenario.
- Feb. 2019–Aug. 2019 **Research Engineer**, *Inria Rennes research center*, Rennes, *Research & development*.
- Projects: audio restoration transfer of technology
 - pop noise removal,
 - multichannel declipping,
 - DSP algorithms code conversion,
 - listening tests.
- Nov. 2015–Jan. 2019 **Ph.D. student specialized in acoustic & audio signal processing**, *Inria Rennes research center*, Rennes, *Research*.
- Early stage researcher
 - Projects: acoustic & audio signal processing inverse problems
 - digital sound processing,
 - non-convex optimization algorithms,
 - machine learning for binaural sound source localization,
 - science popularization.
 - Teaching, mentoring & evaluation
 - Teaching wave propagation physics tutorials - acoustics, electromagnetics, optics - for second year students (INSA Rennes public school of engineering delivering a postgraduate degree in engineering),
 - Mentoring undergrads students on a room acoustics project,
 - Jury member for final year students graduating as sound engineers from ESRA Bretagne school.

- March 2015–Sept. 2015 **Postgraduate visiting student**, *Institute of Sound and Vibration Research*, Southampton, University of Southampton.
- Research work on the auditory system, hearing in noise, speech intelligibility, signal processing
 - Setting up listening experiments for people with normal hearing
 - noisy speech stimuli calibration,
 - ethical study / noise exposure validation,
 - statistical analysis,
 - participants recruitment.
- July 2014 **Industrial machine operator**, *Renault*, Le Mans, Renault Le Mans' Factory.
Production line loading, quality control tasks.
- July 2013 **Internship: worker**, *Renault*, Le Mans, Renault Le Mans' Factory.
Handling, cleaning and control.
- 2011–2014 June & July **Ticket inspector, controller**, *Automobile Club de l'Ouest*, Le Mans.
Hire based on personality, foreign language speaking skills to welcome a British public
Inform & inspect the tickets of car race spectators
- July & August 2010 **Temporary Worker**, *SCIE*, Trangé.
Part time work for an industrial oil recycling company
Stocktaking, storing, cleaning & dismanteling before warehouse relocation

EDUCATION & CERTIFICATIONS



- 2019 **Ph.D. specialized in acoustic & audio signal processing**, *Université de Rennes 1*, Rennes, *Research*.
Design and evaluation of sparse models and algorithms for audio inverse problems
- Graduated in: January 2019
 - Projects: acoustic & audio signal processing inverse problems
 - denoising, declipping, dereverberation,
 - structured (co)sparsity for time-frequency modeling,
 - non-convex optimization algorithms,
 - virtually supervised learning for binaural sound source localization.
 - multichannel real-time audio reconstruction
- 2015 **Master 2 Acoustics**, *Le Mans Université*, Le Mans, *Research, with Honours*.
- A University Master of Science under the authority of the French Ministry of Education and Research
 - Graduated in: October 2015
 - Specialized in: acoustics
 - Project: Characterization of inhomogeneous membranes vibrations (psychoacoustic descriptors, spectrum analysis, vibration behaviour)
- 2015 **Acoustics and vibrations graduate engineer**, *ENSIM - École Nationale d'Ingénieurs du Mans*, Le Mans, *Spécialité Acoustique - Vibration - Capteurs*.
- A selective Engineering School in three years under the authority of the French Ministry of Education and Research delivering a postgraduate degree in engineering
 - Graduated in: October 2015
 - Specialized in: vibration, acoustics, sensors
 - Projects: With ONERA the French Aerospace Lab (acoustic measurements, signal processing, BEM modelling, correlation techniques)
- 2010–2012 **Diplôme d'Études Universitaires Générales**, *Le Mans Université*, Le Mans, *Physique*.
- A two-year university degree specialized in: Computing, Optics, Mathematics, Mechanics
 - Projects: Creation of a graphic user interface to interact with a NAO robot through WiFi
- 2009–2010 **One year preparatory class**, *Lycée Montesquieu*, Le Mans.
- Specialized in: Mathematics, Physics and Engineering Sciences
- 2007–2009 **Baccalauréat Scientifique, section Européenne (mention bien)**, *Lycée Marguerite Yourcenar*, Le Mans, *with Second Class Honours*.
- French baccalaureate: French high school diploma (European section with additional courses taught in english)
 - Specialized in: Science (Mathematics, Physics, Earth & life science)

LANGUAGES



- English Fluent ○ *Obtained from doing numerous trips in English-speaking countries (England, Wales, Malta, Canada)*
○ *Scored 945 out of 990 and 900 out of 990 points on TOEIC certification in 2012 and 2014*
- French Native language
- Spanish Basic knowledge

COMPUTER SKILLS



- Programming C, C++, bash, python, distributed computing (OAR, Slurm), Docker Scientific softwares MatLab, Labview, COMSOL, LMS VirtualLab, LMS TestLab
- Operating Systems macOS, Linux, Windows Office softwares Microsoft Suite, LibreOffice Suite, \LaTeX
- Computer Assisted Design SolidWorks, Catia Web Html, CSS, WordPress, Jekyll

INTERESTS



- 2008–Now **Club Alpin Français, Block'Out, Southampton Climbing Club.**
Rock-climbing, bouldering, skiing in mountain sport associations and climbing gyms
- 2012–2015 **Club VASI, Vibration, Acoustics, Signal,** Université du Mans, France.
Student association, modeling, design and realization of electroacoustic projects (speaker systems, amplifiers...).
- July 2012 **École de musique de l'Antonnière, Sarthe, FRANCE.**
Project: Setting up of a music summer camp with acting, music, songs and a background story
- 2010–2012 **University Jazz Band.**
Playing the saxophone, performing concerts
- 1999–2009 **Music Schools.**
Learning & playing the saxophone, singing in a choir

SCIENTIFIC COMMUNICATIONS



- C. Gaultier**, S. Kitić, R. Gribonval, and N. Bertin, “Sparsity-based audio declipping methods: selected overview, new algorithms, and large-scale evaluation,” *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 29, pp. 1174–1187, 2021.
- S. Kitić, **C. Gaultier**, and G. Pallone, “A comparative study of multilateration methods for single-source localization in distributed audio,” in *Conference of Open Innovations Association, FRUCT*, no. 27. FRUCT Oy, 2020, pp. 328–336.
- C. Gaultier**, “Design and evaluation of sparse models and algorithms for audio inverse problems,” Ph.D. dissertation, Université de Rennes 1, Jan. 2019.
- R. Lebarbenchon, E. Camberlein, D. Di Carlo, **C. Gaultier**, A. Deleforge, and N. Bertin, “Evaluation of an open-source implementation of the SRP-PHAT algorithm within the 2018 locata challenge,” in *2018 16th International Workshop on Acoustic Signal Enhancement (IWAENC), LOCATA Challenge*. IEEE, 2018.
- C. Gaultier**, N. Bertin, and R. Gribonval, “CASCADE: Channel-Aware Structured Cospase Audio DEclipper,” in *2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. IEEE, 2018, pp. 571–575.
- C. Gaultier**, N. Bertin, S. Kitić, and R. Gribonval, “A modeling and algorithmic framework for (non) social (co) sparse audio restoration,” 2017.
- C. Gaultier**, S. Kitić, N. Bertin, and R. Gribonval, “AUDASCITY: AUdio Denoising by Adaptive Social Cosparsity,” in *2017 25th European Signal Processing Conference (EUSIPCO)*. IEEE, 2017, pp. 1265–1269.
- C. Gaultier**, S. Kitić, N. Bertin, and R. Gribonval, “Cospase denoising: The importance of being social,” in *The Signal Processing with Adaptive Sparse Structured Representations (SPARS) workshop*, 2017.
- S. Kataria, **C. Gaultier**, and A. Deleforge, “Hearing in a shoe-box: binaural source position and wall absorption estimation using virtually supervised learning,” in *2017 IEEE International Conference on Acoustics, Speech and Signal Processing*. IEEE, 2017, pp. 226–230.
- C. Gaultier**, S. Kataria, and A. Deleforge, “VAST: The Virtual Acoustic Space Traveler dataset,” in *International Conference on Latent Variable Analysis and Signal Separation*. Springer, 2017, pp. 68–79.
- R. Gokula, **C. Gaultier**, J. J. M. Monaghan, and S. Bleack, “Acclimatization to different english accents for enhanced speech intelligibility in noise in individuals with normal hearing,” in *Basic Auditory Science Meeting*. British Society of Audiology, 2015.