Curriculum Vitae – Gaël RICHARD

French,
https://www.telecom-paris.fr/gael-richard?l=en
Current position: **Co-scientific director of Hi! PARIS,**
Professor at Télécom Paris, Institut Polytechnique de Paris

APPOINTMENTS HELD AND ACTIVITIES

Main responsabilities
- Executive director of Hi! PARIS (2020-2022)
- Head of the Image, Data, Signal department at Télécom Paris (2015-2021)
- Member of the steering committee of Télécom Paris (2015-2021)
- Head of the « Audio, Acoustics and Optical Waves » research team (2005-2015)
- Elected member of the Academic Senate of University ParisSaclay (2013-2015)
- Elected member of the LTCI research lab council (2006-2016)

External Committees, Expertise, Evaluation
- Senior Member of IEEE Signal Processing Magazine Editorial Board (2022 -)
- Chair of the IEEE Audio and Acoustic Signal Processing Technical Committee (2021 -2022)
- President of scientific council of EURECOM (2019-2022)
- President of the evaluation committee CE23 : « Artificial Intelligence » of ANR (2018-2019)
- Member of the EURASIP Special Area Team on *Acoustic, Sound and Music Signal Processing (2015 -2020)*
- Evaluation committee member for ANR (2010 – 2015) and European Commission (FP6,FP7,H2020)
- Associate Editor of the IEEE Transactions on Audio, Speech and Language Processing (2007-2010)
- Guest editor of 4 special issues in IEEE or EURASIP journals on *"Model-based and Data-Driven Audio Signal Processing* (2024), *"Sound Scene and Event Analysis"*(2017), *"Informed Acoustic Source separation"* (2013) et *"Music Signal Processing"* (2011)
- Conference organization (*General Chair*): ISMIR'18, WAASPA'15, WIAMIS'15, IWAENC'06
- **IEEE Fellow member, ELLIS Fellow, IMT-Académie des sciences Grand prix (2020)**

Research
- **Main research interests:** Audio signal representations and models, Source Separation, Machine learning methods for audio/music signals, Music Information Retrieval (MIR), Music transcription, Audio Coding, 3D Audio, Multimedia and speech signal analysis.
- **ERC Advanced grant 2022: Hi-Audio "*Hybrid Interpretable Deep neural Audio machines*"**
- Phd (co-)supervision: 43 graduated since 2005, 11 ongoing, 4 PhD prizes
- Many collaborative research projects/grants (Networks of excellence ITN-MIP Frontiers, IST-K-Space, FP7-3Dlife and regular projets FP7-LASIE, OSEO-QUAERO, ANR-Dream, ANR-Aida,..).
- 10 keynotes (incl. XAI workshop (ICASSP'24), DAfX'22, DCASE'16, IWAENC'14, AES'14, WIAMIS'12, JIM'10, DRMN'07)
- >300 papers : 70 journal papers, 10 book chapters, 238 conference papers, 11 patents 1770 citations, **h-index: 56***); 4 best paper awards*

Teaching
- Lectures, projects, responsibilities (between 90h to 220h teaching per year)
- Responsible of the course *Audio signal Analysis,* Master MVA, Univ. ParisSaclay
- **"*chevalier*" of the order of Academic palms**

PREVIOUS POSITIONS
- Associate Professor in signal processing at Télécom Paris (2001-2004)
- Software project leader at Philips Consumer Communications, France (2000-2001)
- Project leader at Matra Nortel Communications and then L&H (France) (1997-2000)
- Post-Doc at CAIP center, Rutgers, Univ., USA (supervision: Pr. James Flanagan) (1994-1996)

EDUCATION
- « Auditeur » of the national cycle of *Institution des Hautes Etudes en Sciences et Technologies* (2017)
- « Habilitation à Diriger des Recherches » (HDR), University Paris-Sud, Orsay (2001)
- Phd in computer sciences University Paris-Sud, Orsay, prepared at LIMSI-CNRS (1994)
- State Engineering Degree of Télécom Paris (1990)

SELECTION OF PUBLICATIONS

Bibliometry: https://scholar.google.fr/citations?user=xn70tPIAAAAJ

G. Richard, V. Lostanlen, Y-H. Yang, M. Müller. Model-Based Deep Learning for Music Information Research: : Leveraging diverse knowledge sources to enhance explainability, controllability, and resource efficiency,. *IEEE Signal Processing Magazine*, 2025.

K. Schulze-Forster, G. Richard, L. Kelley, C. Doire, R. Badeau. Unsupervised Music Source Separation Using Differentiable Parametric Source Models. *IEEE/ACM Trans. On ASLP*, 2023,

J Parekh, S Parekh, P Mozharovskyi, F d'Alché-Buc, G Richard, Listen to interpret: Post-hoc interpretability for audio networks with NMF, *Advances in Neural Information Processing Systems (NeurIPS),* 2022.

A. Liutkus, O. Cifka, S. Wu, U. Simsekli, Y. Yang and G. Richard "Relative positional encoding for transformers with linear complexity", *Int. Conf. on Machine Learning (ICML)* - Long paper presentation - 2021.

O. Cifka, U. Simsekli, G. Richard, "Groove2Groove: One-Shot Music Style Transfer with Supervision from Synthetic Data", *IEEE/ACM Trans. on Audio, Speech, and Language Processing*, vol. 28, pp. 2638-2650, 2020

JN Hurle, S Lattner, G Richard, DrumGAN: Synthesis of drum sounds with timbral feature conditioning using Generative Adversarial Networks, *Int. Society for Music Information Retrieval Conference (ISMIR)*, 2020.

Z. Duan, S. Essid, C. C. S. Liem, G. Richard, G. Sharma, "Audio-Visual Analysis of Music Performances", *IEEE Signal Processing Magazine,* vol. 36, no. 1, pp. 63-73, Jan. 2019.

U. Şimşekli, Ç. Yildiz, T. H. Nguyen, G. Richard, A. T. Cemgil, "Asynchronous Stochastic Quasi-Newton MCMC for Non-Convex Optimization*", Int. Conf. on Machine Learning (ICML)*, Stockholm, Sweden, 2018

S. Leglaive, R. Badeau and G.Richard, "Student's t Source and Mixing Models for Multichannel Audio Source Separation", *IEEE Transactions on Audio, Speech and Language Processing,* vol. 26, n° 5, pp. 1 15, 2018.

S. Parekh, S. Essid, A. Ozerov, N. Q. K. Duong, Patrick Pérez, Gaël Richard, "Weakly Supervised Representation Learning for Unsynchronized Audio-Visual Events", CVPR Workshop, Salt Lake City, 2018.

V. Bisot, R. Serizel, S. Essid, G. Richard, "Feature Learning with Matrix Factorization Applied to Acoustic Scene Classification", *IEEE/ACM Transactions on Audio, Speech, and Language Processing, Special Issue on Sound Scene and Event Analysis*, June 2017.

S Durand, J. Bello, S. Leglaive, B. David, G. Richard, "Robust Downbeat Tracking Using an Ensemble of Convolutional Networks", *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 25, no. 1, pp. 76-89, Jan. 2017.

U. Simsekli, R. Badeau, G. Richard and A. T. Cemgil, "Stochastic Quasi Newton Langevin Monte Carlo," *Int. Conf. on Machine Learning (ICML)*, New York, NY, USA, 2016.

H. Bai, G. Richard, L. Daudet "Late Reverberation Synthesis: From Radiance Transfer to Feedback Delay Networks", *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, 2015 vol. 23, n° 12,

G. Richard, S. Sundaram, S. Narayanan "An overview on Perceptually Motivated Audio Indexing and Classification", *Proceedings of the IEEE*, vol. 101, no. 9, pp. 1939-1954, Sept. 2013.

M. Mueller, D. Ellis, A. Klapuri, G. Richard, "Signal Processing for Music Analysis*", IEEE Journal on Selected Topics in Signal Processing,* October 2011.

J-L Durrieu, G. Richard, B. David, C. Févotte, Source/Filter Model for Unsupervised Main Melody Extraction From Polyphonic Audio Signals*, IEEE Trans. On ASLP*, Vol. 18, No 3, March 2010,

C. Clavel,I. Vasilescu, L. Devillers,G . Richard, T. Ehrette Fear-type emotion recognition for future audio-based surveillance systems, *Speech Communication*, Vol 50, pp. 487–503, 2008.

R. Badeau, B. David and G. Richard, "Fast Approximated Power Iteration Subspace Tracking", *IEEE Transactions on Signal Processing*, Volume 53, Issue 8, Part 1, Aug. 2005