

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 responsibilities

- 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 projects 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 11239 citations, **h-index: 55**); *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>

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,

A. Liutkus and O. Cifka and S. Wu and U. Simsekli and Y. Yang and G. Richard "Relative positional encoding for transformers with linear complexity", International Conference 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 Transactions on Audio, Speech, and Language Processing*, vol. 28, pp. 2638-2650, 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", International Conference 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.

T. H. Nguyen; U. Şimşekli; G. Richard; A.T. Cemgil, "Efficient Bayesian Model Selection in PARAFAC via Stochastic Thermodynamic Integration", *IEEE Signal Processing Letters*, April 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," International Conference 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 Transactions on Audio, Speech and Language Processing*, 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.

M. Betser, P. Collen, G. Richard and B. David « Estimation of frequency for AM/FM models using the phase vocoder framework», *IEEE Transactions on Signal Processing*, Vol. 56, N°. 2, February 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