

Curriculum Vitae – Gaël RICHARD

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CURRENT POSITION

Professor, Head of the Image, Data, Signal department at Telecom ParisTech

The department gathers 130+ members including 40 permanent academic staff and over 80 PhD organized in 3 research/teaching groups: Signal, Statistics and Machine learning (S²A), Images, Modelling, Analysis, Geometry and Synthesis (IMAGES) and Multimedia (MM).

MAIN RESEARCH INTERESTS

Signal representations and signal models (Subspace methods, sparse representation, atomic decomposition, Non Negative Matrix factorization...),
Source Separation,
Machine learning methods for audio/music signals,
Music Information Retrieval (MIR), Music transcription,
Audio Coding, 3D Audio,
Multimedia and speech signal analysis.

PREVIOUS POSITIONS

2004 - Full professor at TELECOM ParisTech
2001 - 2004 Associate Professor in signal processing at TELECOM ParisTech
2000 - 2001 Software project leader at Philips Consumer Communications, France.
1997 - 2000 Project leader at Matra Nortel Communications and then L&H (France)
1994 - 1996 Post-Doc at CAIP center, Rutgers, Univ. , USA (supervision: Pr. James Flanagan).
1990 - 1994 Ph.D student at LIMSI-CNRS, on speech synthesis (supervision: Dr. d'Alessandro).
1989 - 1990 Master internship at KTH, Sweden on singing voice synthesis.

APPOINTMENTS HELD

2017- Member of strategic committee of Labex SMART (UPMC,..).
2016- Member of the scientific committee of Teralab – Big Data platform
2015 - Head of the *Image, Data, Signal* (IDS) department at Telecom ParisTech
2015 - Member of the steering committee of Telecom ParisTech
2015- Member of the steering committee of the Chair of Machine Learning for Big Data

2005 - 2015 Head of the « Audio, Acoustics and Optical Waves » research group
2013 - 2015 Elected member of the Academic Senate of University ParisSaclay
2006 - Elected member of the LTCI/CNRS research lab council
2011 Member of the Research council of Télécom ParisTech
2005 - Member of the Signal and Image department council
2005 – 2012 Member of the Teaching council of Telecom ParisTech

PROFESSIONAL MEMBERSHIP**Fellow IEEE member**

EURASIP member

AES member

Former ISCA member

EDUCATION

- 2017 « Auditeur » of the *Institut des Hautes Etudes pour la Science et la Technologie* (IHEST)
2001 « Habilitation à Diriger des Recherches », University Paris-Sud, Orsay.
1994 Ph. D in Computer Sciences of University Paris-Sud, Orsay
1990 Engineer degree of Télécom ParisTech.
1988 Master 1 in Electronics, Electrotechnics, Automatics, University of Paris Sud, Orsay

AWARDS

- 2017 « Chevalier de l'ordre des palmes académiques » (*Order of Academic Palms*)
2017 Fellow IEEE
2010 GdR-Isis/EEA/GRETSI's PhD award for former PhD student Nancy Bertin.
2006 ParisTech's Ph.D. Award for former PhD student Roland Badeau.
- 2018 Best Paper award, workshop NILM 2018 for the paper, S. Henriët, U. Simsekli, G. Richard, B. Fuentes, « Energy Disaggregation for Commercial Buildings: A Statistical Analysis », Austin, Tx, USA, 2018.
- 2012 Best paper award at AES convention for the paper: "N. Sturmel, A. Liutkus, J. Pinel, L. Girin, S. Marchand, G. Richard, R. Badeau and L. Daudet, (2012), Linear mixing models for active listening of music productions in realistic studio conditions, "132nd AES Convention", Budapest, Hungary.
- 2010 Best Young Researcher paper at CORESA2010 for the paper : C. Joder, S. Essid, and G. Richard, "Approche Hiérarchique pour un Alignement Musique-sur-partition efficace", In Proc. Compression et Représentation des Signaux Audiovisuels (CORESA), Lyon, France, October 2010.
- 2005 Best Paper award at CBMP'05 for the paper : O. Gillet and G. Richard, "Indexing and querying drum loops databases", International workshop on Content Based on Multimedia and Indexing (CBMP'05), Riga, Latvia, June 2005.

EXTERNAL COMMITTEES AND SCIENTIFIC CONSULTANCY

- 2018 Member of the HCERES evaluation committee of UMR STMS Lab (Ircam, Paris)
2018 Expert for Academy of Finland (review panel)
2017 Scientific consultancy for Deezer, S.A., France
2017 CREATE Research Laboratory evaluation committee, Aalborg, Denmark
2016 Senior Research promotion evaluation committee (Ircam, Paris)
2015 - Member of the EURASIP Special Area Team on *Acoustic, Sound and Music Signal Processing*
2010 - Member of the IEEE Audio and Acoustic Signal Processing Technical Committee
2010 – 2015 Committee member, French Research Agency - CONTINT Programme
1998 - Expert for the European Commission projects evaluation (FP6, FP7, H2020)
2001 - Jury member of numerous PhD committees in France and Europe (UK, Finland, Sweden, Germany, Portugal, Italy, Denmark, Spain)
2001- Jury member in "Habilitation to supervise research – HDR" in France (S. Marchand, L. Girin, M. Chetouani, N. Evans, G. Peeters).

EDITING / REVIEWING

- 2017 Lead Guest editor of a special issue on "*Sound Scene and Event Analysis*" of the ACM/IEEE Transactions on Audio, Speech and Language Processing

- 2013 Guest-editor of a special issue on “*Informed Acoustic Source separation*” of the EURASIP Journal on Advances in Signal Processing.
- 2007 - 2011 Associate Editor of the IEEE Transactions on Audio, Speech and Language Processing
- 2010-2011 Guest-Editor of the special issue on “*Music Signal Processing*” of IEEE Journal of Selected Topics in Signal Processing
- 1994 - Regular reviewing for major conferences (Icassp, Eusipco, Ismir, Interspeech, Waspaa, ...)
- 1996 - Regular reviewing for major journals (IEEE transactions, Eurasip journals ...)

CONFERENCE CHAIRS

- 2018 (Co-)General chair of the International Society for Music Information Retrieval (ISMIR) conference (ISMIR-2018)
- 2015 (Co-)General chair of the IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA-2015)
- 2013 (Co-)General chair of the International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS-2013)
- 2006 (Co-)General chair of the International Workshop on Acoustic Echo and Noise Control (IWAENC-2006)
- 2018 Area Chair Eusipco-2018 conference
- 2017 Area chair for the IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA-2017)
- 2013 Area Chair, *Analysis of Speech, Audio Signals, Speech Coding, Speech Enhancement* for Conference of the International Speech Communication Association (INTERSPEECH 2013)
- 2013 - 2017 Area Chair, Audio and Acoustic Signal Processing for IEEE International Conference on Acoustics Speech and Signal Processing (ICASSP)

CONFERENCE TUTORIALS AND KEYNOTE TALKS

- 2016 Keynote talk on *Acoustic Scene and Events Recognition: How Similar is it to Speech Recognition and Music Genre Recognition?* at “International Workshop on Detection and Classification of Acoustic Scenes and Events(DCASE2016)”, Budapest, Hungary.
- 2015 Keynote talk on “Melody Extraction from music signals: “blind” and “informed” approaches” at 5th International Workshop on Folk Music Analysis (FMA 2015), Paris, France
- 2014 Keynote talk on “Informed Audio Source Separation” at the AES 53rd Conference on Semantic Audio, London, UK.
- 2014 Keynote talk on “Melody Extraction from Polyphonic Music Signals” at the International Workshop on Acoustic Echo and Noise Control (IWAENC 2014), Nice, France.
- 2012 Keynote talk on “Audio and Multimedia Music Signals Indexing” at the International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS-2012), Dublin, Ireland.
- 2010 Keynote talk on “Polyphonic music signals indexing” at Journées d’Informatique Musicale (JIM 2010), Rennes, France.;
- 2007 Keynote talk on “Recent advances in Digital Music Processing and Indexing” at Digital Music Research Network (DRMN+2), London , UK.
- 2014 Tutorial with A. Ozerov and A. Liutkus on “Informed Source separation” at the IEEE International Conference on Acoustics Speech and Signal Processing (ICASSP 2014), Florence, Italy
- 2011 Tutorial on “Multimedia Music Signal Processing” at the ACM Multimedia conference, Scottsdale, US.

Recent invited talks

- 2017 “Traitement des signaux numériques”, Rencontre Scientifique Innovation, PSA, Vélizy

- 2015 “Melody Extraction from Music Signals: “Blind” to “Informed” Approaches”, New York University, US.
- 2014 “A view on Greedy pursuits algorithms for representing audio signals”, Mitsubishi Electric Research Laboratories, Boston, US.
- 2014 Invited talk on “Informed Audio Source Separation” at the Speech and Audio in the Northeast workshop (SANE), Boston, US.
- 2013 « Should Computational Audio processing systems have ears and brain ? », Stimulus talk at Dagstuhl Seminar on “Computational audio analysis”
- 2013 “Some research in Audio, Music and Multimodal Signal Processing”, Fraunhofer Institute, Ilmenau, Germany
- 2012 “Greedy pursuits algorithms for representing audio signals: with applications to Compression, Source separation and Audio Fingerprint”, Berkeley University, US
- 2012 “Audio Processing Research and Technologies”, Korea University, Seoul, Korea.
- 2012 “Greedy pursuits algorithms for representing audio signals: with applications to Compression, Source separation and Audio Fingerprint”, University of California at Los Angeles, US
- 2012 “Research in audio Processing”, Technical University of Berlin, Germany
- 2011 “Multimodal Music Processing”, Dagstuhl Seminar, Germany
- 2010 “Research in audio Processing”, IRCAM, Paris, France
- 2010 “Transcription and Separation of the main melody”, Queen Mary University, London, UK
- 2009 “Beyond the bag-of frames approach for musical instrument recognition”, Aalborg University, Denmark.
- 2009 “Beyond the bag-of frames approach for musical instrument recognition”, Dublin City University, Ireland.
- 2009 “Beyond the bag-of frames approach for musical instrument recognition”, INESC Porto, Portugal.
- 2008 “Recent advances in Digital Music Processing and Indexing”, Acoustics’08 warm up, Paris, France
- 2008 “Novel approaches for musical instrument recognition”, Tampere University, Finland
- 2007 “Audio signal indexing”, Enterface’07 workshop, Istanbul, Turkey
- 2007 “Transcription and separation of drum signals from polyphonic music”, Enterface’07 workshop, Istanbul, Turkey
- 2007 “Audio signal indexing: Application to drum track separation and transcription”, Cambridge University, UK.
- 2007 “Audio signal indexing: Application to drum track separation and transcription”, Stanford University, US.
- 2006 “Drum signal processing and tempo extraction for Audio indexing”, University Pompeu Fabra, Barcelona, Spain.
- 2005 “Tempo extraction for Audio indexing”, Columbia University, New York, USA.
- 2005 “Musical instruments recognition and tempo extraction for Audio indexing”, CAIP center, Rutgers University, US.
- 2005 « Indexation des signaux audiofréquences :vue d’ensemble (in French) », Workshop of the French Acoustical Society, Paris, France.

Public Engagement

- 2008 Experimental conference with B. David at *Espace des Sciences Pierre Gilles de Gennes*, « Does the computer has the sense of rhythm and melody ? », ESPCI, Paris.
- 2004 Participation to the “Fête de la Science”, with a stand on « From rythme to music » at Cité des Science et de l’industrie (Museum), Paris, France. Broadcast on France Culture.

Some teaching courses

(between 90h to 220h teaching per year)

- 2007- Course in audio signal processing, Master MVA, ENS Cachan, Telecom ParisTech
- 2003- Course in audio signal processing, Master ATIAM, University Pierre et Marie Curie, Telecom ParisTech
- 2011-2014 Tutorship of Large-scale collaborative projects (Bachelor level).

- 2004-2014 Course in speech and Audio signal processing, Master IMA, University Pierre et Marie Curie, Telecom ParisTech
- 2001 -2015 Course in signal processing at Telecom ParisTech
- 2001-2015 Course in Speech and Audio Signal processing at Telecom ParisTech

Main research grants / contracts

- 2018-2022 European Training Network MIP-Frontiers (*New Frontiers in Music Information Processing*) 1 051k€ pour Télécom ParisTech
- 2017-2020 Research collaboration with car manufacturer PSA on “Speech intelligibility improvement in cars”, 70 k€ for Telecom ParisTech, with B. David.
- 2016-2020 International project ANR/Tubitak FBIMATRIX on “*Parallel and Distributed Markov Chain Monte Carlo for Bayesian Inference in Matrix and Tensor Factorization Models*”, 184 k€ for Telecom ParisTech, with U. Simsekli.
- 2016-2019 Research collaboration contract with Smart Impulse on *electric source separation*, xx k€ (amount on request).
- 2014-2018 European Project FP7-LASIE (*Large Scale Information Exploitation of Forensic Data*), 420 k€ for Telecom ParisTech, with S. Essid.
- 2014-2017 National Digiteo/Digicosme project, (*Expert knowledge for audio and musical signals*), 120 k€ for Telecom ParisTech with M. Kowalski (University Paris-Sud), H. Papadopoulos (CNRS).
- 2016 Research Collaboration contract with Technicolor, 45 k€ with S. Essid.
- 2013-2017 National Project ANR-AIDA (*Intelligible Car for Hearing Impaired*), 95 k€ for Telecom ParisTech.
- 2013-2016 Marie Curie International Outgoing Fellowships (IOF) program, (*Statistical models for musical signal processing*).
- 2013-2017 National Project ANR-Edison3D (*Editing and Rendering for next generation of 3D sound*), 458k€ for Telecom ParisTech.
- 2015 Futur & Ruptures project (*Deep Learning for Multiple Instrument Identification in Recorded Music*), 50k€.
- 2011-2015 European Project FP7-REVERIE (*REal and Virtual Engagement in Realistic Immersive Environments*), 604 k€ for Telecom ParisTech with S. Essid.
- 2011 Research Collaboration contract with Arkamys, 45 k€ with Y. Grenier
- 2011-2013 European FP7-Support Action, (*Towards Excellence in Media Computing and Communication*), 25 k€ for Telecom ParisTech.
- 2011 Research Collaboration contract with Audionamix, 15 k€
- 2010-2013 European Network of Excellence FP7-3DLife (*Bringing the Media Internet to Life*), 415 k€ for Telecom ParisTech with S. Essid.
- 2009-2013 National Project ANR-DREAM (*Active Music Listening*), 140k€ pour Telecom ParisTech.
- 2008-2013 French-German project QUAERO (*Multimedia document retrieval*), 800 k€ for Telecom ParisTech.
- 2007-2009 National project Infom@gic (*Audio indexing and Retrieval*), 75 k€ for Telecom ParisTech.
- 2006 Research Collaboration contract with RTL, 45 k€ for Telecom ParisTech.
- 2006-2008 European Network of Excellence FP6-K-SPACE (*Knowledge Space of Semantic Inference for Automatic Annotation and Retrieval of Multimedia Content*), 310 k€ for Telecom ParisTech.
- 2005-2007 National project ACI Big Data Musicdiscover (*Music Information Retrieval and Discovery*), 75 k€ for TelecomParisTech
- 2004 Research Collaboration contract with Thales and LIMSI, 20 k€ for Telecom ParisTech
- 2001-2002 National project RNRT-COHAIRTE (*Robust and Scalable coding of audiovisual sources with applications to Internet*), 100 k€ for Telecom ParisTech
- 2001-2004 European Project FP5-IST- JOCO (*JOint source-channel CODing-driven digital baseband design for 4G multimedia streaming*), 500 k€ for Philips.
- 2000-2003 European Project FP5-IST- INTERFACE (*Multimodal analysis/synthesis system for human INTERaction to virtual and augmented environments*), approx.. 200k€ for Matra-Nortel (*project transferred*)
- 2000-2003 European Project FP5-IST-BANCA (*Biometric Access Control for Networked and e-Commerce Applications*), 500 k€ for Matra Nortel (*project transferred*)

PhD students graduated (30 graduated, 4 ongoing)

- 2017- Thanh-Huy Nguyen, “Parallel and Distributed Markov Chain Monte Carlo for Bayesian Inference in Matrix and Tensor Factorization Models”, co-supervised with U. Simsekli (Telecom ParisTech)
- 2017- E. Gentet, « Amélioration de l’intelligibilité en contexte bruité automobile », co-supervised with B. David (Telecom ParisTech) and V. Roussarie (PSA)
- 2017- S. Henriet, « Analyse et séparation de sources d’intensités électriques », co-supervised with U. Simsekli (Telecom ParisTech) et B. Fuentes (Smart Impulse)
- 2016- S. Parekh, « Models for audiovisual objects discovery, localization and extraction », co-supervised with S. Essid (Telecom ParisTech), A. Ozerov (Technicolor)
- 2014-2018 V. Bisot, « Multimodal analysis and indexing of complex urban scenes », co-supervised with S. Essid (Telecom ParisTech)
- 2014-2018 T. Jansoone, « Multimodal analysis and recognition of social signals : application to the synthesis of social attitudes of an animated agents », Co-supervised with C. Clavel (Telecom Paristech), K. Bailly (University Pierre and Marie Curie).
- 2014-2017 S. Leglaive, « Under-determined audio source separation in reverberant environment », co-supervised with R. Badeau (Telecom ParisTech).
- 2014-2017 C. Laroche, « Sparse approaches for music transcription », co-supervised with H. Papadopoulos (CNRS), M. Kowalski (University Paris-Sud)
- 2013-2017 S. Durand, “Automatic music transcription”, Co-supervised with B. David (Telecom ParisTech)
- 2012-2016 A.C Conneau, “Dynamic identification of emotional state by analysis of heterogenous biological signals », co-supervised with S. Essid (Telecom ParisTech)
- 2012-2016 H. Bai, “Hybrid models for sound reverberation”, co-supervised with L. Daudet (University Paris 6).
- 2011-2015 X. Jaureguiberry, “Fusion for audio source separation”, co-supervised with E. Vincent (INRIA, Nancy).
- 2011-2015 A. Masurelle, “Multimodal action and dance steps recognition”, co-supervised with S. Essid (Telecom ParisTech)
- 2011-2014 N. Lopez, « Monochannel approaches for speech dereverberation », co-supervised with Y. Grenier (Telecom Paristech).
- 2010-2013 S. Fenêt, “Audio-Fingerprints and Associated Indexing Strategies for the Purpose of Large-Scale Audio-Identification”, co-supervised with Y. Grenier (Telecom Paristech).
- 2009-2013 R. Foucard, “Multilevel fusion by boosting for automatic tagging”, co-supervised with S. Essid (Telecom ParisTech)
- 2009-2013 B. Fuentes, “Latent component probabilistic analysis and its adaptation to music signals. Application to automatic music transcription and source separation” co-supervised with R. Badeau (Telecom ParisTech).
- 2010-2012 A. Liutkus, “Gaussian processes for source separation and posterior source coding”, co-supervised with R. Badeau (Telecom ParisTech).
- 2009-2012 M. Moussallam, “Sparse and herarchical representations for archival and compression of audio scenes”, co-supervised with L. Daudet (Univ. Paris 6).
- 2008-2011 S. Gulluni “An interactive system for electro-acoustic music analysis”, co-supervised with S. Essid (Telecom ParisTech), O. Buisson, E. Favreau (INA)
- 2007-2011 C. Joder, “Audio-to-score temporal alignment with discriminative graphical models”, co-supervised with S. Essid (Telecom ParisTech)
- 2007-2011 F. Vallet, “Automatic structuring of TV talk shows”, co-supervised with S. Essid (Telecom ParisTech), J. Carrive (INA).
- 2007-2010 J-L Durrieu, “Automatic transcription and separation of the main melody in polyphonic music signals”, co-supervised with B. David.
- 2006-2010 M. Ramona, “Automatic classification of broadcast audio streams with Support Vector Machines”, co-supervised with B. David.
- 2006-2009 V. Nguyen, “Study of characteristics of the vietnamese language for its synthesis and its automatic recognition : Static and dynamic aspects”, co-supervised with R. Carré (CNRS), E. Castelli (MICA, Vietnam).

- 2005-2009 N. Bertin, "Non-negative matrix factorizations : constrained and probabilistic approaches and application to automatic transcription of polyphonic music", co-supervised with R. Badeau (Telecom ParisTech).
- 2005-2008 E. Ravelli, "Audio signal representations with overcomplete transforms for coding and indexing", co-supervised with L. Daudet (Univ. Paris 6).
- 2004-2008 M. Betser, "Sinusoidal modeling and applications to audio indexing", co-supervised with B. David (Telecom ParisTech) and P. Collen (Orange Labs).
- 2004-2007 P. Leveau, "Structured sparse decomposition : application to object representation of music : signal models, algorithms and applications", co-supervised with L. Daudet (Univ. Paris 6).
- 2004-2007 C. Clavel, "Acoustic analysis and recognition of fear-type emotions occurring in abnormal situations, co-supervised with L. Devillers (Univ. ParisXI) and S. Sedogbo (Thales)
- 2003-2007 O. Gillet, "Drum signal analysis : applications to music video analysis", Telecom ParisTech.
- 2002-2006 S. Essid, "Automatic classification of audio signals : machine recognition of musical instrument, Co-supervised with B. David (Telecom ParisTech)
- 2002-2006 M. Alonso, "Extraction of metrical information from acoustic music signals", Co-supervised with B. David (Telecom ParisTech)
- 2001-2005 R. Badeau, "High resolution methods for estimating and tracking modulated sinusoids : Application to music signals, Co-supervised with B. David (Telecom ParisTech)

LIST OF PUBLICATIONS

230+ papers including 66 journal and book chapters, 10 patents and over 170 conference papers.
(6537 citations, h-number = 43, Source Google Scholar, April 2018)

Journals/Book Chapter (66)

Clément Laroche, Matthieu Kowalski, Hélène Papadopoulos and Gaël Richard, (2018), "Hybrid Projective Nonnegative Matrix Factorization with Drum Dictionaries for Harmonic/Percussive Source Separation", ACM/IEEE Transactions on Audio, Speech and Language Processing (à paraître).

Thanh Huy Nguyen; Umut Şimşekli; Gaël Richard; Ali Taylan Cemgil, "Efficient Bayesian Model Selection in PARAFAC via Stochastic Thermodynamic Integration", IEEE Signal Processing Letters, April 2018

Simon Leglaive, Roland Badeau and Gaël Richard, (2018), "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.

B. Pardo, A. Liutkus, Z. Duan, G. Richard, Applying source separation to music; in Audio Source Separation and Speech Enhancement, E. Vincent, T. Virtanen, S. Gannot, Eds., Wiley International, 2018.

R. Serizel, V. Bisot, S. Essid, G. Richard, Acoustic Features for Environmental sound Analysis, in Computational Analysis of Sound Scenes and Events, T. Virtanen, D. Ellis, M. Plumbley Eds., Springer International Publishing AG, 2017. pp 71-101, 2018.

K. Nathwani, G. Richard, B. David, P. Prablanc, V. Roussarie, Speech Intelligibility Improvement in Car Noise Environment by Voice Transformation, Speech Communication, May 2017.

T. Janssoone, C. Clavel, K. Bailly et G. Richard, "Règles d'associations temporelles de signaux sociaux pour la synthèse d'un Agent Conversationnel Animé: Application aux attitudes sociales", Revue d'Intelligence Artificielle (in French). 2017.

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. Fenet, R. Badeau, G. Richard, "Reassigned Time-Frequency Representations of Discrete Time Signals and Application to the Constant-Q Transform", Signal Processing, 132 (2017) 170–176.

- 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*, 2016 (accepted)
- S. Leglaive, R. Badeau, G. Richard, "Multichannel Audio Source Separation with Probabilistic Reverberation Priors", *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, Vol. 24, no. 12, December 2016
- X. Jaureguiberry, E. Vincent and G. Richard, (2016), "Fusion methods for speech enhancement and audio source separation", *ACM/IEEE Transactions on Audio, Speech and Language Processing*.
- A. Masurelle, A. Rida Sekkat, S. Essid, G. Richard, « TPT-Dance&Actions : un corpus multimodal d'activités humaines », *Revue Traitement du signal – no 4/2015*, pp. 443-475.
- 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, pp. 2260 - 2271.
- J. Salomon, E. Gomez, D. Ellis, G. Richard, "Melody Extraction from Polyphonic Music Signals: Approaches, Applications and Challenges", *IEEE Signal Processing magazine*, Vol 31, Issue 2, pp 118-134, March 2014
- M. Moussallam, A. Gramfort, L. Daudet, G. Richard, "Blind Denoising with Random Greedy Pursuits", *IEEE Signal Processing letters*, Vol. 21, N° 11, Nov. 2014
- C. Joder, S. Essid, G. Richard, "Learning Optimal Features for Polyphonic Audio-to-Score Alignment," *Audio, Speech, and Language Processing, IEEE Transactions on* , vol.21, no.10, pp.2118,2128, Oct. 2013
- G. Richard, S. Sundaram, S. Narayanan "An overview on Perceptually Motivated Audio Indexing and Classification", *Proceedings of the IEEE*, 2013.
- B. Fuentes, R. Badeau et G. Richard, (2013), "Harmonic Adaptive Latent Component Analysis of Audio and Application to Music Transcription", *IEEE Transactions on Audio, Speech and Language Processing*, Vol 21, N°9, Sept. 2013
- O. Derrien, R. Badeau, G. Richard, "A Parametric Audio Coding with Exponentially Damped Sinusoids, *IEEE Transactions on Audio, Speech and Language Processing*, Vol 21, N° 7, July 2013.
- A. Ozerov, A. Liutkus, R. Badeau et G. Richard, "Coding-based Informed Source Separation: Nonnegative Tensor Factorization Approach. *IEEE Transactions on Audio, Speech and Language Processing*, Vol 21, N°8, Aout 2013.
- M. Ramona, G. Richard, B. David "Multiclass Feature Selection with Kernel Gram-matrix-based criteria", *IEEE Transactions on Neural Networks and Learning Systems*, vol.PP, no.99, pp.1, 0 doi: 10.1109/TNNLS.2012.2201748
- A. Liutkus, J. Pintel, R. Badeau, L. Girin and G. Richard, Informed source separation through spectrogram coding and data embedding, *Signal Processing*, August 2012, vol. 92, n° 8, pp. 1937-1949
- S. Essid, G. Richard, "Fusion of Multimodal Information in Music Content Analysis", in *Multimodal Music Processing, Dagstuhl Follow-Ups*, Ed. M. Muller, M. Goto, M. Schedl, Schloss Dagstuhl--Leibniz-Zentrum fuer Informatik, 2012
- F. Vallet, S. Essid, J. Carrive and G. Richard, High-level TV talk show structuring centered on speakers' interventions, In book: *TV Content Analysis: Techniques and Applications*, Y. Kompatsiaris, B. Meriardo and S. Lian (Eds.), CRC Press, Taylor Francis LLC, 2012.
- M. Moussallam, L. Daudet, G. Richard, "Matching pursuits with random sequential subdictionaries", *Signal Processing*, 2012, <http://dx.doi.org/10.1016/j.sigpro.2012.03.019>

- S. Essid, X. Lin, M. Gowing, G. Kordelas, A. Aksay, P. Kelly, T. Fillon, Q. Zhang, A. Dielmann, V. Kitanovski, R. Tournemene, A. Masurelle, E. Izquierdo, N. E. O'Connor, P. Daras, G. Richard, "A multi modal dance corpus for research into interaction between humans in virtual environments", *Journal on Multimodal User Interfaces*, 2012,7 (1-2). pp. 157-170. ISSN 1783-7677.
- A. Liutkus, J. Pinel, R. Badeau, L. Girin, G. Richard, Informed source separation through spectrogram coding and data embedding, *Signal Processing*, September 2011.
- P. Dymarski, N. Moreau, G. Richard, Greedy sparse decompositions: A comparative study, *EURASIP Journal on Advances in Signal Processing*, 2011:34
- J-L Durrieu, B. David, G. Richard, A musically motivated mid-level representation for pitch estimation and musical audio source separation, *IEEE Journal on Selected Topics in Signal Processing*, October 2011.
- M. Mueller, D. Ellis, A. Klapuri, G. Richard, Signal Processing for Music Analysis", *IEEE Journal on Selected Topics in Signal Processing*, October 2011.
- C. Joder, S. Essid, G. Richard, A Conditional Random Field Framework for Robust and Scalable Audio-to-Score Matching, *IEEE Transactions on Audio, Speech and Language Processing*, vol.19, no.8, pp.2385-2397, Nov. 2011.
- A. Liutkus, R. Badeau, G. Richard, Gaussian Processes for Underdetermined Source Separation, *IEEE Transactions on Signal Processing*, vol.59, no.7, pp.3155-3167, July 2011.
- R. Benmokhtar, B. Huet, G. Richard, T. Declerck and S. Essid, Feature Extraction for Multimedia Analysis, Chapitre 4., *Multimedia Semantics: Metadata, Analysis and Interaction*, Ed. Wiley, 2011.
- S. Essid, M. Campedel, G. Richard, T. Piatrik, R. Benmokhtar and B. Huet Machine Learning Techniques for Multimedia Analysis. Chapitre 5., *Multimedia Semantics: Metadata, Analysis and Interaction*, Ed. Wiley, 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, pp564-575.
- C. Clavel, G. Richard, " Reconnaissance acoustique des émotions", Chapter 5 in *Systèmes d'Interaction Emotionnelle*, Editor: C. Pelachaud, Hermès, 2010 (in French).
- E. Ravelli, G. Richard, L. Daudet, Audio signal representations for indexing in the transform domain, *IEEE Transactions on Audio, Speech and Language Processing*, Vol. 18, No 3, March 2010, pp 434- 446
- M. Lagrange, M. Raspaud, R. Badeau, G. Richard, "Explicit modeling of temporal dynamics within musical signals for acoustical unit similarity," *Pattern Recognition Letters*, Sept. 2009.
- C. Joder, S. Essid, G. Richard, Temporal integration for audio classification with application to musical instrument classification, *IEEE Transactions on Audio, Speech and Language Processing*, Vol. 17, N° 1, pp 174-186, Jan. 2009
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