

# Curriculum Vitae – Gaël RICHARD

## Adresse professionnelle

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## Adresse personnelle:

37 rue Chanzy, 78220 Viroflay

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## POSTE ACTUEL

### Professeur, Responsable du département Image, Données, Signal à Télécom ParisTech

*Le département regroupe plus de 130 personnes incluant 40 permanents dont 35 Enseignants-Chercheurs et plus de 80 doctorants organisés en 3 groupes d'enseignements et de recherche : Signal, Statistiques et Apprentissage (S2A), Images, Modélisation, Analyse, Géométrie Synthèse (IMAGES) et Multimedia (MM).*

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## THEMATIQUES DE RECHERCHE

Modèles et représentations de signaux (représentations parcimonieuses, analyse sinusoïdale, méthodes de décomposition, Factorisation en matrices non-négatives,...), Séparation de sources, Apprentissage et modèles pour les signaux audio, parole et musique, Informatique musicale, transcription musicale, Codage audio, 3D Audio, Analyse des signaux multimédia et parole.

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## POSTES PRECEDENTS

2004 - Professeur à Télécom ParisTech  
2001 - 2004 Maître de conférences à Télécom ParisTech  
2000 - 2001 Chef de projet à Philips Consumer Communications, France.  
1997 - 2000 Chef de projet à Matra Nortel Communications puis à L&H (France)  
1994 - 1996 Post-Doc au CAIP center, Université de Rutgers, USA (supervision: Pr. James Flanagan).  
1990 - 1994 Doctorant et enseignant à l'Université Paris XI (supervision: Dr. d'Alessandro).  
1989 - 1990 Stage au KTH, Suède

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## RESPONSABILITES

2017- Membre du comité d'orientation stratégique du Labex SMART (UPMC,...).  
2016- Membre du comité scientifique de Teralab – plateforme « Big Data »  
2015 - Responsable du département *Image, Données, Signal (IDS)* à Télécom ParisTech  
2015- Membre du comité de pilotage de la chaire « Machine Learning for Big Data »  
2015- Membre du Comité de Direction de Télécom ParisTech  
2011- Membre du comité de la recherche de Télécom ParisTech  
  
2005 - 2015 Responsable du groupe de recherche « Audio, Acoustique et Ondes »  
2013 - 2015 Membre élu du sénat académique de l'Université ParisSaclay  
2006 - 2016 Membre élu du conseil de laboratoire LTCI/CNRS  
2005 - Membre du conseil de département « Traitement du Signal et des Images »  
2005 – 2012 Membre du comité de l'enseignement de Telecom ParisTech

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**FORMATION**

- 2017 Auditeur du cycle national de l'Institut des Hautes Etudes pour la Science et la Technologie  
2001 « Habilitation à Diriger des Recherches », Université Paris-Sud, Orsay.  
1994 Doctorat en informatique de l'Université Paris-Sud, Orsay.  
1990 Diplôme d'ingénieur de Télécom ParisTech.  
1988 Maîtrise EEA de l'Université Paris-Sud, Orsay.

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**DISTINCTIONS, PRIX**

- 2017 Chevalier de l'ordre des palmes académiques  
2017 Fellow IEEE  
2010 Prix de thèse du GdR-Isis/EEA/GRETSI's pour l'étudiante N. Bertin en doctorat sous ma direction.  
2006 Prix de thèse de ParisTech Ph.D. pour l'étudiant R. Badeau en doctorat sous ma direction.  
2012 Prix du meilleur papier de la convention de l'AES pour le papier: "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, Hongrie.  
2010 Prix du meilleur papier « jeune auteur » de CORESE2010 pour le papier : 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, Octobre 2010.  
2005 Prix du meilleur papier à CBMI'05 pour le papier : O. Gillet and G. Richard, "Indexing and querying drum loops databases", International workshop on Content Based on Multimedia and Indexing (CBMI'05), Riga, Latvia, June 2005.

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**COMITES EXTERNES, SOCIETES SAVANTES ET CONSEIL SCIENTIFIQUE**

- 2018 - Membre du comité d'évaluation HCERES du laboratoire STMS (Ircam, Paris)  
2018 Expert pour *l'Academy of Finland* (review panel)  
2017 - Conseil scientifique, Deezer S.A.  
2017 - **Fellow member de l'IEEE**,  
membre de EURASIP et AES.  
2017 Comité d'évaluation du laboratoire CREATE, Danemark  
2016 Comité d'évaluation/promotion au niveau directeur de recherche, IRCAM (Paris)  
2015 - Membre du comité *Acoustic, Sound and Music Signal Processing* de l'EURASIP  
2010 - Membre du comité technique *Audio and Acoustic Signal Processing* de l'IEEE  
2010 – 2015 Membre du comité de sélection de l'ANR - programme CONTINT  
1998 - Expert pour la commission européenne, évaluation de projets (FP6, FP7, H2020)  
2001 - Membre de nombreux jurys de thèses et HDR en France et Europe (UK, Finlande, Suède, Allemagne, Portugal, Italie, Danemark, Espagne, Pays-Bas)  
2001- Membre des jurys de "Habilitation à Diriger des Recherches – HDR" en France (S. Marchand, L. Girin, M. Chetouani, N. Evans, G. Peeters).

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**ACTIVITES D'EDITION ET DE RELECTURE**

- 2017 Editeur d'un numéro spécial sur "*Sound Scene and Event Analysis*" du journal « ACM/IEEE Transactions on Audio, Speech and Language Processing »  
2013 Editeur d'un numéro spécial sur "*Informed Acoustic Source separation*" du journal « EURASIP Journal on Advances in Signal Processing ».  
2007 - 2011 Editeur associé de la revue « IEEE Transactions on Audio, Speech and Language Processing »  
2010-2011 Editeur invité du numéro spécial sur "*Music Signal Processing*" de la revue « IEEE Journal of Selected Topics in Signal Processing »

- 1994 - Relecteur régulier pour des conférences majeures (Icassp, Eusipco, Ismir, Interspeech, Waspaa, ...)
- 1996 - Relecteur régulier pour des revues majeures (IEEE transactions, Eurasip journals ...)

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#### **IMPLICATION ET ORGANISATION DE CONFERENCES**

- 2018 *Co-)General chair* de la conférence International Society for Music Information Retrieval (ISMIR-2018)
- 2015 *(Co-)General chair* de la conférence « IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA-2015) »
- 2013 *(Co-)General chair* de la conférence « International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS-2013) »
- 2006 *(Co-)General chair* de la conférence « Workshop on Acoustic Echo and Noise Control (IWAENC-2006) »
- 2017 Area chair de la conférence IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA-2017)
- 2013 *Area Chair*, pour le domaine « Analysis of Speech, Audio Signals, Speech Coding, Speech Enhancement » de la conférence « International Conference of Speech Communication Association (INTERSPEECH 2013) »
- 2013 - 2016 *Area Chair*, pour le domaine « Audio and Acoustic Signal Processing » pour la conférence « IEEE International Conference on Acoustics Speech and Signal Processing (ICASSP) »

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#### **TUTORIELS ET CONFERENCES INVITEES (KEYNOTES)**

- 2016 Conférence (Keynote) sur *Acoustic Scene and Events Recognition: How Similar is it to Speech Recognition and Music Genre Recognition?* à « International Workshop on Detection and Classification of Acoustic Scenes and Events », Budapest, Hongrie.
- 2015 Conférence (Keynote) sur *Melody Extraction from music signals: "blind" and "informed" approaches* à « 5th International Workshop on Folk Music Analysis (FMA 2015) », Paris, France
- 2014 Conférence (Keynote) sur « *Informed Audio Source Separation* » at the « AES 53rd Conference on Semantic Audio », Londres, UK.
- 2014 Conférence (Keynote) sur « *Melody Extraction from Polyphonic Music Signals* » à « International Workshop on Acoustic Echo and Noise Control (IWAENC 2014) », Nice, France.
- 2012 Conférence (Keynote) sur *Audio and Multimedia Music Signals Indexing* à « International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS-2012) », Dublin, Irlande.
- 2010 Conférence (Keynote) sur *olyphonic music signals indexing* aux « Journées d'Informatique Musicale (JIM 2010) », Rennes, France.;
- 2007 Conférence (Keynote) sur *Recent advances in Digital Music Processing and Indexing* à « Digital Music Research Network (DRMN+2) », Londres , UK.
- 2014 Tutoriel avec A. Ozerov et A. Liutkus sur « Séparation de sources informée » à « IEEE International Conference on Acoustics Speech and Signal Processing (ICASSP 2014) », Florence, Italy
- 2011 Tutoriel sur « *Multimedia Music Signal Processing* » à « ACM Multimedia conference », Scottsdale, USA.

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#### **Séminaires récents**

- 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: avec 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: avec 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.

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### ***Vulgarisation***

- 2008 Conférence expérimentale avec B. David à l’Espace des Sciences Pierre Gilles de Gennes, « L’ordinateur a le sens du rythme et de la mélodie ? », ESPCI, Paris.
- 2004 Participation à la “Fête de la Science”, avec un stand sur « Du rythme à la musique » à la Cité des Science et de l’industrie, Paris, France. Diffusé sur France Culture.

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### ***Enseignement (quelques exemples de cours récents)***

*(200h entre 1990 et 1994 et entre 90h et 220h d’enseignement annuel entre 2001 et 2016)*

- 2007-2016- Cours en traitement du signal audio, Master MVA, ENS Cachan, Telecom ParisTech
- 2003-2015 Cours en traitement du signal musical, Master ATSI, Université Paris-Saclay
- 2003-2015 Cours en traitement du signal audio, Master ATIAM, Université Pierre et Marie Curie, Telecom ParisTech
- 2011-2014 Encadrement de projets collaboratifs – 1<sup>ère</sup> année école d’ingénieur.
- 2004-2014 Cours en traitement de la parole et du signal audio, Master IMA, Université Pierre et Marie Curie, Telecom ParisTech
- 2001 -2016 Cours en traitement du signal à Telecom ParisTech
- 2001-2016 Cours en traitement du signal audio et parole à Telecom ParisTech

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## ***Principaux projets de recherche***

- 2017-2020 Contrat de recherche collaborative avec PSA sur “amelioration de l’intelligibilité de la parole en context automobile”, 70 k€ pour Telecom ParisTech, avec B. David.
- 2017-2021 European Training Network MIP-Frontiers (*New Frontiers in Music Information Processing*) 1 051 k€ pour Télécom ParisTech
- 2016-2020 Projet international 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 Contrat de recherche collaborative et encadrement de thèse avec Smart Impulse on *electric source separation*, xx k€ (amount on request).
- 2014-2018 Projet européen FP7-LASIE (*Large Scale Information Exploitation of Forensic Data*), 420 k€ pour Telecom ParisTech, avec S. Essid.
- 2014-2017 Projet national Digiteo/Digicosme (*Expert knowledge for audio and musical signals*), 120 k€ pour Telecom ParisTech avec M. Kowalski (Université Paris-Sud), H. Papadopoulos (CNRS).
- 2016 Contrat de recherche collaborative avec Technicolor, 45 k€ pour Télécom ParisTech avec S. Essid.
- 2013-2017 Projet ANR-AIDA (*Intelligible Car for Hearing Impaired*), 95 k€ pour Telecom ParisTech.
- 2013-2016 Programme « Marie Curie International Outgoing Fellowships (IOF) » *Statistical models for musical signal processing*) avec H. Papadopoulos.
- 2013-2017 Projet ANR-Edison3D (*Editing and Rendering for next generation of 3D sound*), 458k€ pour Télécom ParisTech.
- 2015 Projet « Futur & Ruptures », *Deep Learning for Multiple Instrument Identification in Recorded Music*, 50k€.
- 2011-2015 Projet européen FP7-REVERIE (*REal and Virtual Engagement in Realistic Immersive Environments*), 604 k€ pour Telecom ParisTech avec S. Essid.
- 2011 Contrat de recherche collaborative avec Arkamys, 45 k€ pour Télécom ParisTech avec Y. Grenier
- 2011-2013 Projet européen (Support Action), « *Towards Excellence in Media Computing and Communication* », 25 k€ pour Telecom ParisTech.
- 2011 Contrat de recherche collaborative avec Audionamix, 15 k€
- 2010-2013 Réseau d’excellence européen FP7-3DLife (*Bringing the Media Internet to Life*), 415 k€ pour Telecom ParisTech avec S. Essid.
- 2009-2013 Projet ANR-DREAM (*Active Music Listening*), 140k€ pour Telecom ParisTech.
- 2008-2013 Projet franco-allemand QUAERO (*Multimedia document retrieval*), 800 k€ pour Telecom ParisTech.
- 2007-2009 Projet Infom@gic (*Audio indexing and Retrieval*), 75 k€ pour Telecom ParisTech.
- 2006 Contrat de recherche collaborative avec RTL, 45 k€ pour Telecom ParisTech.
- 2006-2008 Réseau d’excellence européen FP6-K-SPACE (*Knowledge Space of Semantic Inference for Automatic Annotation and Retrieval of Multimedia Content*), 310 k€ pour Telecom ParisTech.
- 2005-2007 Projet ACI Big Data Musicdiscover (*Music Information Retrieval and Discovery*), 75 k€ pour TelecomParisTech
- 2004 Réseau d’excellence européen avec Thales et LIMSI, 20 k€ pour Telecom ParisTech
- 2001-2002 Projet RNRT-COHAIRTE (*Robust and Scalable coding of audiovisual sources avec applications to Internet*), 100 k€ pour Telecom ParisTech
- 2001-2004 Projet européen FP5-IST- JOCO (*JOint source-channel COding-driven digital baseband design for 4G multimedia streaming*), 500 k€ pour Philips.
- 2000-2003 Projet européen FP5-IST- INTERFACE (*Multimodal analysis/synthesis system for human INTERaction to virtual and augmented environments*), approx.. 200k€ pour Matra-Nortel (project transféré)
- 2000-2003 Projet européen FP5-IST-BANCA (*Biometric Access Control for Networked and e-Commerce Applications*), 500 k€ pour Matra Nortel (project transféré)

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## ***Encadrement de thèses de doctorat (27 diplômés, 6 en cours)***

- 2017- Thanh-Huy Nguyen, “Méthodes parallèles distribuées de Monte-Carlo par Chaînes de Markov pour l’inférence Bayésienne de Modèles à Factorisation de tenseurs”, co-supervisé par Umut Simsekli (Telecom ParisTech)

- 2017- E. Gentet, « Amélioration de l'intelligibilité en contexte bruité automobile », co-encadré avec B. David (Telecom ParisTech) et V. Roussarie (PSA)
- 2017- S. Henriët, « Analyse et séparation de sources d'intensités électriques », co-encadré avec U. Simsekli (Telecom ParisTech) et B. Fuentes (Smart Impulse)
- 2016- S. Parekh, « Models for audiovisual objects discovery, localization and extraction », co-encadré avec S. Essid (Telecom ParisTech), A. Ozerov (Technicolor)
- 2014- V. Bisot, « Multimodal analysis and indexing of complex urban scenes », co-encadré avec S. Essid (Telecom ParisTech)
- 2014- T. Jansoone, « Multimodal analysis and recognition of social signals : application to the synthesis of social attitudes of an animated agents », Co-encadré avec C. Clavel (Telecom Paristech), K. Bailly (Université Pierre and Marie Curie).
- 2014-2017 S. Leglaive, « Under-determined audio source separation in reverberant environment », co-encadré avec R. Badeau (Telecom ParisTech).
- 2014-2017 C. Laroche, « Sparse approaches for music transcription », co-encadré avec H. Papadopoulos (CNRS), M. Kowalski (University Paris-Sud)
- 2013-2017 S. Durand, « Automatic music transcription », Co-encadré avec B. David (Telecom ParisTech)
- 2012 -2016 A.C Conneau, « Dynamic identification of emotional state by analysis of heterogenous biological signals », co-encadrée avec S. Essid (Telecom ParisTech)
- 2012-2016 H. Bai, « Hybrid models for sound reverberation », co-encadré avec L. Daudet (Université Paris 6).
- 2011-2015 X. Jaureguiberry, « Fusion for audio source separation », co-encadré avec E. Vincent (INRIA, Nancy).
- 2011-2015 A. Masurelle, « Multimodal action and dance steps recognition », co-encadré avec S. Essid (Telecom ParisTech)
- 2011-2014 N. Lopez, « Monochannel approaches for speech dereverberation », co-encadré avec Y. Grenier (Telecom Paristech).
- 2010-2013 S. Fenêt, « Audio-Fingerprints and Associated Indexing Strategies for the Purpose of Large-Scale Audio-Identification », co-encadré avec Y. Grenier (Telecom Paristech).
- 2009-2013 R. Foucard, « Multilevel fusion by boosting for automatic tagging », co-encadré avec 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-encadré avec R. Badeau (Telecom ParisTech).
- 2010-2012 A. Liutkus, « Gaussian processes for source separation and posterior source coding », co-encadré avec R. Badeau (Telecom ParisTech).
- 2009-2012 M. Moussallam, « Sparse and herarchical representations for archival and compression of audio scenes », co-encadré avec L. Daudet (Univ. Paris 6).
- 2008-2011 S. Gulluni « An interactive system for electro-acoustic music analysis », co-encadré avec S. Essid (Telecom ParisTech), O. Buisson, E. Favreau (INA)
- 2007-2011 C. Joder, « Audio-to-score temporal alignment avec discriminative graphical models », co-encadré avec S. Essid (Telecom ParisTech)
- 2007-2011 F. Vallet, « Automatic structuring of TV talk shows », co-encadré avec 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-encadré avec B. David.
- 2006-2010 M. Ramona, « Automatic classification of broadcast audio streams avec Support Vector Machines », co-encadré avec 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-encadré avec 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-encadrée avec R. Badeau (Telecom ParisTech).
- 2005-2008 E. Ravelli, « Audio signal representations avec overcomplete transforms for coding and indexing », co-encadré avec L. Daudet (Univ. Paris 6).
- 2004-2008 M. Betser, « Sinusoidal modeling and applications to audio indexing », co-encadré avec 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 occuring in abnormal situations, co-encadrée avec 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-encadré avec B. David (Telecom ParisTech)
- 2002-2006 M. Alonso, "Extraction of metrical information from acoustic music signals", Co-encadré avec B. David (Telecom ParisTech)
- 2001-2005 R. Badeau, "High resolution methods for estimating and tracking modulated sinusoids : Application to music signals, Co-encadré avec B. David (Telecom ParisTech)

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## **PUBLICATIONS**

230+ articles incluant 63 revues et chapitres de livres, 9 brevets et plus de 170 articles de conférences  
*6315 citations, h-number = 43, Source Google Scholar, Janvier 2018)*

### **Revues, Chapitres de livre (63)**

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, 2017. To Appear

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. To Appear

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. Pinel, 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

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