Research Report
2005-2009
~
Télécom ParisTech / LTCI

juillet 2009

Laboratoire Traitement et Communication de l'Information - UMR 5141
Télécom ParisTech - CNRS

Signal and Image Processing

Research Report 2005–2009
Télécom ParisTech / LTCI

Jul 2009

Contents

Signal and Image Processing (TSI)

The research topics covered by the Signal and Image Processing department at TELECOM ParisTech are: the study of image processing in its various formats, digital, optical... for different applications like medical imaging, remote sensing, fine arts..., the study of speech, music and sound.

After its reorganization at the beginning of 2007, the department is now organized into four groups:

- "Statistics and applications" - STA - is a group that is devoted to the applications of statistics and probability to the field of information processing. The research area covers a wide spectrum from the development of new techniques and new algorithms to various applications. The activities of the group comprises the following topics: statistical learning, independent data and complex random systems, methods and algorithms for cosmological data analysis, Markov Chain Monte-Carlo techniques, sequential Monte-Carlo techniques (particle filters), array processing, geolocalization, models estimation.

- "Image Processing and Interpretation" - TII - has, as its main purpose, the development of methodologies and theoretical tools for image processing, scene analysis and 3D objects. This implies global treatment of complex image processing problems, integrating multiple techniques that cover the path from raw data to high-level interpretation. The concerned applications are art items (sculptures, paintings), biomedical images, satellite images, natural scenes.

- "Audio, Acoustics and Waves" - AAO - conducts activities in signal processing having strong connections with the physical phenomenon that is at the source of the signals, whether acoustical or optical. In digital audio signal processing, the activities span the entire acquisition chain, from capture to analysis or transformation, transmission up to its restitution, with the goal of proposing solutions to the main problems centered around the sound, speech or music, in multimedia applications. In optical information processing, the group contribute to new detection schemes and to the characterization of new materials.

- "Multimedia" - MM- is a group that covers the life cycle of multimedia documents in the framework of a complete chain going from authoring tools for on-line and offline production of multimedia contents to multimodal interaction for the final user; this also includes automated processing like enhancement of degraded pictures, verification of the identity of the user, modification of auditive and visual appearance, image segmentation and pattern recognition. The group also works on techniques that allow the analysis, compression and robust transmission of these media in heterogeneous networks. It also works on the dynamic and distributed adaptation of the transmitted data flow (including meta-data and in particular those concerning the digital rights management) with respect to context, transport conditions and terminal type.

One research topic is common to all groups, this is indexation and data mining. Summarizing and extracting informations from multimodal databases requires statistical tool for learning and mining, which are among the activities of the STA group with a particular focus on text indexation

and retrieval. Indexing satellite images, extricating informations from primitives to semantic annotations is the main goal of the “Center of Competence”, a joint lab between CNES, DLR and the TII group. This group also develops the same kind of tools for biomedical images and for 3D objects. The AAO group is concerned by many aspects of music information retrieval: identification of rhythms, main melodies, instruments, styles, moods, tonalities either from plain audio or from mixed audio and video. Video signals are also a core activity in the MM group together with complex documents analysis (mixing printed texts, handwritten texts, pictures, graphics) and with multimodal analysis for biometry (voice, faces, fingerprints).

Our most recent recruitments were aimed towards the reinforcement of two topics: the first one is distributed sensor processing; the second one is 3D images and virtual worlds.

Permanent staff [*Institut ; CNRS*] ; post-docs	[32 ; 11.6] ; 8.4
PhDs	55.6
Defended PhDs	90
Defended HDR	8
Journal papers	291
Chapters and books	52
Conference papers	713
Patents and software	8
Contractual income 2005–2009 (june) [Private ; Public ; European] (k€)	[5865; 2747 ; 1782]

Chapter 1

Audio, Acoustical and Optical waves (AAO)

Head G. Richard (P)

Permanent staff R. Badeau (MC), B. David (MC), C. Févotte (CR2-CNRS, from 11/07), R. Frey (P, 40%), Y. Grenier (P), S. Maeda (DR CNRS), A. Maruani (P), D. Matignon (MC, -09/07), N. Moreau (P), S. Essid (IE, from 10/06), J. Prado (MC, on leave 06/07-09/08), I. Vasilescu (CR2-CNRS, -09/05), I. Zaquine (MC, 80 %).

PhD students S. Essid (10/02-12/05), R. Badeau (10/01-04/05), D. Bitault (10/02-10/05), A. Aissa El Bey (10/04-06/07), S. Fontana (10/04-07/08), M. Guillaume (10/03-11/06), N. Bertin (10/05-), M. Betser (10/04-06/08), C. Clavel (11/03-03/07), V. Emiya (10/04-10/08), J-L. Durrieu (01/07-), O. Gillet (12/03-06/07), P. Leveau (11/04-11/07), M. Ramona (10/06-), M. Alonso (10/02-11/06), C. Baras (10/02-06/06), A. Moreau (10/03-09/06), Q. He (11/05-10/08), J-L. Smirr (01/07-), E. Ravelli (10/05-10/08), C. Joder (11/07-), L. Oudre (10/07-), F. Vallet (11/07-), S. Gulluni (02/08-), R. Hennequin (10/08-), M. Maazaoui (01/09-).

PostDocs, engineers and sabbaticals S. Essid (Postdoc 9 months), C. Hory (Postdoc 16 months), C. Févotte (Postdoc 8 months), M. Christensen (Aalborg Univ. (DK) Sabb. 1 month), A. Ozerov (Postdoc 18 months), M. Lagrange (Postdoc,10/2008-), T. Fillon (Postdoc,10/2008-), B. Mathieu (Engineer,10/2008-), Y. Menesguen (PostDoc 6 months).

External collaborators L. Daudet (Univ. Paris VI), O. Derrien (Univ. of Toulon), E. Vincent (IRISA), L. Devillers (LIMSI-CNRS), T. Sikora (Technical Univ. of Berlin) ...

Permanent staff [*IT ; CNRS*] ; post-docs	[7.5 ; 1.5] ; 1.5
PhDs	10
Defended PhDs	18
Defended HDR	2
Journal papers [published, in press]	[53 ; 5]
Chapters and books [published, in press]	[3 ; 7]
Conference papers	136
Patents and software	2
Contractual income 2005–2009 (june) [Private ; Public ; European] (k€)	[560; 755 ; 356]

The AAO (**A**udio, **A**coustical and **O**ptical waves) research group gathers digital and optical signal processing activities with a strong reference to the physical properties of the acoustical and optical phenomena. The group is structured in two research projects:

- Audio Signal Processing (*AudioSig* project),
- Optical Signal Processing (*TOS* project)

1.1 Audio Signal Processing (*AudioSig* Project)

1.1.1 Objectives

The aim of this project is to develop digital audio signal processing methods in order to propose innovative solutions to the main problems linked to audio (speech, music,...) in multimedia applications. Our interests encompass the complete processing chain from sound capture and transmission to sound restitution. Work is both conducted on a methodological level to develop new sound representations and models especially for musical signals (Adaptive methods for high resolution sinusoidal components tracking, sparse representations, Non-Negative Matrix factorization, hierarchical models,...) and on their application to practical problems (watermarking, compression, EEG signal processing, automatic indexing). Audio indexing and retrieval currently is the central research theme of this project and includes topics such as broadcast streams segmentation into broad classes of audio events (speech/music/silence/singing,...), musical signals automatic analysis, decomposition and understanding (polyphonic audio source separation, rhythm extraction, multiple fundamental frequencies estimation, main melody extraction,...). A new transverse orientation has also gained more interest with the arrival in november 2007 of a new CNRS permanent researcher on the specific theme of statistical methods for audio signal processing.

On a different level, the group has initiated the development of a multimedia indexing and mining platform (called PLATO) which now involves several other groups. This internal platform, targeted to researchers, aims at being an intelligent media library, at centralizing research software, processing tools and computation resources and at providing demonstrative and communication tools.

The project is also maintaining tight links and collaborations with both academics (Queen Mary university of London, Dublin City University, Technical University of Berlin, University Paris 6 (LAM), IRCAM, INRIA-IRISA, LABRI-CNRS,...) and industry (Thalès, FT R&D, RTL, INA, Audionamix,...).

1.1.2 Results

Audio and multimedia scenes analysis and indexing

Researchers R. Badeau, B. David, S. Essid, C. Févotte, Y. Grenier, J. Prado, G. Richard;

Highlights :

Collaborations: With industry (FT R&D, Thales, RTL, INA) and academics (TU Berlin, Queen Mary University, LAM-Paris 6, IRISA, IRCAM, LABRI,...)

Projects: Network of Excellence IST-Kspace (*Knowledge Space of Semantic Inference for Automatic Annotation and Retrieval of Multimedia Content*), ACI Musicdiscover (*Indexing*

and search in audio databases), ANR-Desam (*Decompositions in sound elements and musical applications*), IVMN-infom@gic, ANR Sarah (*StAndardisation of High-Definition Remastering*, OSEO-QUAERO (*towards multimedia and multilingual search engines for professional and general public applications*);
Prize: PhD prize "ParisTech 2006" (R. Badeau)

This activity is following several research axes. The first direction, which is on a rather methodological level, aims at developing generic signal models and representations with a specific focus on audio signals. Several very interesting results were obtained for the estimation and tracking of sinusoidal components of an audio signal (new estimators for amplitude and frequency modulated components in noise [16], efficient algorithms for the adaptive estimation and tracking of the signal subspace components [9][11]). An increased effort was also dedicated to sparse signal representations, such as based on Matching Pursuit or Non-negative Matrix factorisation (NMF)[27], that allow to decompose a signal using a limited number of atoms or basis functions. The applicability of these methods to generic problems such as scalable audio signal compression [43], audio source separation or music signal indexing was demonstrated by introducing specific constraints deduced from the audio signal properties (use of instrument specific atoms for music instrument recognition [39], use of harmonicity or temporal constraints for music transcription[163], use of source production or timbre models for source separation [103],...). This methodological effort explores both deterministic and statistical approaches.

The second direction concerns the different facets of audio indexing and audio source separation which are two intricate problems. Indeed, efficient source separation eases the transcription of the resulting sources and efficient audio indexing facilitates the source separation. In music signal transcription, the group is directly interested in the four main problems which are *multiple fundamental frequencies estimation* (e.g. detection of simultaneous notes in a polyphonic musical recording [106],[163]), *rhythmical information tracking* (tempo and beat estimation [5, 4], *harmonic information estimation* (recognition of the chords sequence) and *timbre recognition* (musical instrument recognition in polyphonic audio [24]). Source separation approaches were developed for specific music transcription tasks such as drum track transcription and resynthesis [29]) and main melody estimation (by use of a NMF-based source-filter model for separating the singing voice from the musical accompaniment [102]) but also for specific audio rendering tasks such as stereo signal remastering [42].

The third research direction is dedicated to the audio streams segmentation into broad classes of audio events with application to *broadcast multimedia streams* (speech/music segmentation [156], speech emotion recognition [46],[20] or TV show structuring) and *musical streams* (musical instrument recognition [25],[37], multimodal audio/video semantic alignment [30]). Our efforts in this field is now evolving towards the automatic classification- both supervised and unsupervised- of multi-modal (or multi-stream) data sequences, typically audiovisual streams. Our emphasis is targeted to the incorporation of prior knowledge on the nature and structure of the streams processed, typically temporal dependencies and/or inter-stream correlations/dependencies, both at the signal level and the semantic level, possibly using ancillary information attached to the content (available meta-data, tags, notices, etc.) and/or user interaction (relevance feedback). At the methodological level, a special interest has been directed to kernel-based methods (Support Vector Machines, sequence kernels, probabilistic distances, kernel change detection, kernel LDA,...) and more recently to hybrid kernel and Bayesian network based methods.

Whenever possible, the results obtained are submitted to national or international evaluation campaigns. In particular in 2008, the group has participated to the national *ESTER 2 campaign* (Audio stream segmentation : best algorithm for music/non music detection and 2nd best for speech/non speech detection), the *Sissec campaign* (best results in two audio source separation subtasks) and *MIREX* (best algorithm for main melody estimation in 2008).

Sound capture and rendering

Researchers B. David, Y. Grenier, J. Prado, G. Richard;

Highlights Joint PhD with University of Parme, Italy; contract with France Télécom on audio source separation in the automotive domain, CapDigital-ROMEO (*a project within "pôle de compétitivité CapDigital, lead by Aldebaran Robotics and aiming at creating a humanoid robot*)

The objective of this theme is to improve sound field analysis and synthesis capabilities by developing specific digital signal processing methods. In binaural reproduction, a new approach was introduced to rapidly acquire new Head Related Transfer Functions (HRTF) and to personalize the rendering system to a new listener [112]. Such a binaural reproduction system, where the acoustics of a room are simulated as perceived by the listener through his HRTF, was developed. Formal perception tests were also conducted in collaboration with the university of Parme to validate the different sound rendering methods proposed [87].

In sound capture, recent work permitted to propose a novel technic for automatic sound field analysis from a network of sensors (microphones) [122]. This approach refers to the classical multi-microphones beamforming and parametric spectral estimation principles. The sound field component in each direction is obtained from the maximization of the spatial resolution around the targeted direction. This filtering is directly expressed under the form of spheroidal functions. Current work tackles the difficult problem of humanoid robot audition which needs, using a limited number of sensors, to be robust to movements of the robot and to highly variable environments.

Concurrently, a novel approach for blind audio source separation from a network of sensors was introduced for the underdetermined case (e.g. less sources than sensors). This method combines a wavelet-based time frequency analysis with an automatic classification of the data vectors that represent the positions of each source [2]. We produced several variants of this approach, one of them being based on an empirical modal decomposition [45]. We have shown that our blind separation techniques could be embedded in a general framework characterized by the use of second order statistical properties of the signals [3]. Since our goal was to apply these techniques in the car environment, we had to take into account the properties of the acoustic channels between the position of each source and the microphones (each channel acts as a filter or a convolution between the source signal and the impulse response of the channel); for this reason, another variant of the separation technique, which takes into account the convolutions, was elaborated in the time-frequency domain[1].

Sound sources watermarking and compression

Researchers N. Moreau, G. Richard

Highlights : Media Puppet project, academic collaborations (Univ. of Toulon, INPG Grenoble, Univ. of Paris 6/LAM)

Originally, the focus in audio watermarking was on the technology performances improvement (in terms of bit rates/ratio of binary errors) by introducing new methods exploiting the fact that a watermarking system can be viewed as a communication channel with adjacent information [13]. Recently, the objective was refocused on robustness issues to take into account typical use cases (such as those provided by Mediametrie). In particular, specific effort was dedicated to allow the detection of a hidden signal for degraded recordings (low quality microphones) or degraded communications (due to reverberation in a set-up where the loudspeakers and microphone are separated by at least 1m50). This appears to be a difficult problem that can only be partially solved by adaptive equalisation technics.

In audio compression, the work was mostly dedicated to low bit rate audio coding in the transform domain. On the one hand, specific effort was put to develop optimized quantization schemes for the MPEG Advanced Audio Coder (AAC) using a statistical subband model [585]. This approach was later extended to stereo signals for the MS-stereo mode of the AAC coder. In particular, the quantization error model introduced permits a global approach for coding both Middle and Side channels in the same process leading to improved efficiency without increase of complexity [21]. On the other hand, investigations were conducted to develop highly scalable transform coders which can seamlessly operate from very low bit rate up to transparency. To that aim, sparse overcomplete representations are used to decompose the audio signals over a redundant union of bases (such as Modified Discrete Cosine Transform bases at different scales) [43]. It was also shown that the high flexibility of the signal representations used in this coder allows to tackle various audio indexing tasks (such as beat tracking or musical genre recognition) directly in the transform domain [44].

Active noise control and biomedical signals analysis

Researchers J. Prado, Y. Grenier;

Highlights : External collaboration, ACI Abrupt (*Active Noise control of perceived background noise in call centers*)

In the framework of the ACI ABRUPT project, the activity focused on the development of appropriate methods for active noise control of background noise in call centers. For this purpose, a slightly modified GMDFα(Generalised Multi-Delay Filter) algorithm was used where the signal reconstruction by overlap and add was suppressed. Although this modification leads to slightly lower performances, it permits to obtain a lower complexity algorithm with still better noise suppression capabilities than time-domain approaches (such as FXLMS for example) especially in terms of signal processed bandwidth.

The other research direction is dedicated to the analysis of biomedical signals and especially electroencephalogram (EEG) signals recorded on asleep subjects using a single pair of sensors. Our approach to this problem has two technological breakthroughs since it aimed at an automated analysis (and not only visual) and uses a single channel EEG. The efficiency and robustness of the method developed have been measured and experimentally validated [173],[15]. The first goal of this method is to reduce the overall complexity (both in processing time and operation) of the standard approaches in order to obtain a hypnogram according to the rules of Rechtschaffen and Kales (R&K 1968) and that are adapted to the new rules of the American Academy of Sleep Medicine (AASM 2007). A hypnogram is a graphical representation of the sleep stages, from light sleep to deep sleep. Hence the method is able to control the drowsiness in real-time which has numerous industrial applications such as risky site monitoring or transport security (preliminary results are reported in [77]). Another direction of research targets the so call ”smart waking up” concept whose principle is to awaken a subject when the phase of sleep is the most favorable (light sleep or dream (REM stage)) to reduce the inertia of sleep. The sleep inertia is a transitional state of disorientation and confusion on awakening and may causes the degradation of mental performance. It was, in particular, shown that it is possible to optimize sleep to get the benefits (the recovery) without the disadvantages (torpor, sleep inertia).

Speech production

Researchers S. Maeda;

Highlights :

Collaborations: Collaboration With Department of Human Information Processing in ATR, Kyoto Japan and Phonetics and Phonology Laboratory (PPL), CNRS-University Paris 3.

Projects:IST-ASPI (Audiovisual to Articulatory Inversion), ANR-ARTIS (Articulatory inversion from audio-visual speech for augmented speech presentation), Experimental and Clinical phonetics with multi-instrumentations

In the context of the European project ASPI, we have investigated the acoustics characteristics of fricative sounds in various languages, which can be exploited in the acoustics-to-articulatory inversion. The combination of the high resolution MRI data recorded at ATR for the 3D vocal-tract shapes during the production of the fricatives and acoustic simulation have revealed that 1) distinctively different two classes of vocal tract configurations are used by French speakers to produce the same fricative consonant [159]; 2) a smooth change in the vocal-tract shape does not always produce a smooth spectral shape variation of the fricatives. Rather, in some regions the change produces a little spectral change whereas in other regions it causes an important spectral shape change. Interestingly the MRI observed vocal-tract shapes during fricatives tend to disperse in the stable regions, providing the evidence that the acoustic property of the vocal tract contributes to the specificity of the fricative sounds used in languages [141]; 3) we have developed relatively simple models of fricatives that can produce highly intelligible and naturally sounding fricatives in speech synthesis experiment [199].

In the follow up project, ARTIS, we are improving the acoustic modeling of fricatives and other consonants in order to fully exploit the advance in the MR imaging technique to measure detailed vocal-tract shapes. We expect that such modeling will allow us to gain the comprehensive understanding on the mapping between the vocal-tract shapes and the acoustic patterns of speech. The collaboration with Kiyoshi Honda (ATR) resulted in the invention of two non-invasive instruments: an external lighting and sensing PhotoGlottoGraph (ePGG) and a pneumotachograph with a disposal mask. The former is used to observe the activities of the larynx, abduction/adduction of the vocal folds during consonants and their oscillation during voicing. The latter one is used to measure the airflow passing through the vocal tract. These instruments will be used to evaluate the speech ability of patients in medical environments as well as in phonetic experiments [166]. Patent application for each of these two inventions is in progress with help from the CNRS.

1.2 Optical Signal Processing

Researchers R. Frey , A. Maruani , I. Zaquine ;

Highlights Institut TELECOM funding on the subject *Netwok functions for quantum information*
Ile de France Région funding on the subject *Quantum Interface for storage of long distance propagating photons* (collaboration with ”Institut d’Optique Graduate School”).

Objectives

In the domain of classical optical signal processing, diffraction gratings are a basic resource that can be used for a number of devices, ranging from filters to holographic memories. Significant advances can be made, as far as diffractive properties are concerned, if a clever combination of material choice, nonlinear effects and configuration can be found, which has been our main concern for many years.
A new research subject on quantum signal processing for quantum communications applications has started for two years, as in this field also, the need is great for new devices based on nonlinear optics.

Results

The investigation of new intracavity gratings configurations using Gaussian beams [19], gain media [41], thin gratings [52] has given rise to very efficient devices for optical signal processing

applications :
The experimental results obtained with a YAG micro-laser confirmed the theoretical predictions and the advantage of the intracavity gain medium [41]. The diffraction efficiency of the grating is increased by a factor 5000 and the angular selectivity by a factor 20. The developed models enable predictions on various devices from the infinitely thin grating [52] to the thick grating filling the whole cavity that was experimentally tested.
The 2D refractive index gratings, using the band edge resonance of the Bragg mirror to enhance the diffraction properties of the transverse diffraction grating have also been very successful. With the dual independently tunable optical parametric generator developed in our laboratory, a Bragg diffraction regime was observed together with a huge enhancement of the diffraction efficiency in these crystals, in spite of their micrometric size[33]. The simple analytical modeling developed for this kind of gratings can be most useful for the design of new devices [34].

The first achievement concerning quantum signal processing is the implementation of a continuous polarisation entangled photon pairs source at 810 nm, based on spontaneous parametric down-conversion [51]. It was setup for teaching purposes but its performances are comparable to the published results for comparable systems.

The next extraordinary challenge for quantum communication networks is the quantum repeater, including a quantum memory, a full Bell-state analysis and also an entanglement purification facility. The first issue is the compatibility between the long distance carrier photons at 1550 nm, with a bandwidth of 1 nm and the storage systems that operate below 900 nm, with a linewidth of only few hundreds of fm.
In this context, two key elements are a narrowband polarisation entangled photon pairs source and the corresponding wavelength changing interface that will preserve the bandwidth and polarisation of the photons. Nonlinear optics is at the heart of all these functions as spontaneous parametric down conversion will be used for the source, together with very complex filtering, and sum-frequency generation for the interface. An optical parametric oscillator will be setup as a specific narrow-band pumping source for the sum-frequency generation.
With the grants of Region Ile de France and Institut Telecom, the experiments on the quantum interface that will enable the storage of a telecom photon in a solid state quantum memory while preserving its polarization have been started.[180]. The investigation of the compatibility of a propagating qubit with the quantum memory has also led us to the project of designing a new narrow-band polarisation entangled photon pairs source. Future work will be conducted in collaboration with the IQ team of Romain Alléaume (INFRES department of Telecom ParisTech), the Laboratoire Aimé Cotton in Orsay and the LPMC of Nice University within the framework of the three years “eQUANET” ANR project (accepted in 2009). Preliminary experiments show that 20000 photon pairs should be available in the 40 MHz expected bandwidth.

1.3 References

1.3.1 ACL: Articles in ISI-Indexed Journals

[1] A. Aissa El Bey, K. Abed-Meraim, and Y. Grenier. Blind separation of underdetermined convolutive mixtures using their time-frequency representation. *IEEE Transactions on Audio, Speech & Language Processing*, 15(5): 1540–1550, July 2007.
[2] A. Aissa El Bey, N. Linh-Trung, K. Abed-Meraim, A. Belouchrani, and Y. Grenier. Underdetermined blind separation of nondisjoint sources in the time-frequency domain. *IEEE Transactions on Signal Processing*, 55(3): 897–907, Mar. 2007.
[3] A. Aissa El Bey, K. Abed-Meraim, Y. Grenier, and Y. Hua. A general framework for second order blind separation of stationary colored sources. *Signal Processing*, 88(9):2123–2137, Sept. 2008.
[4] M. Alonso, G. Richard, and B. David. Accurate tempo estimation based on harmonic+noise decomposition. *Eurasip Journal on Advances in Signal Processing*, Jan. 2007.

[5] M. Alonso, G. Richard, and B. David. Tempo estimation for audio recordings. *Journal of New Music Research*, 36 (1):17–26, Mar. 2007.

[6] R. Badeau and R. Boyer. Fast multilinear singular value decomposition for structured tensors. *SIAM Journal on Matrix Analysis and Applications*, 30(3):1008–1021, Sept. 2008.

[7] R. Badeau, B. David, and G. Richard. Fast approximated power iteration subspace tracking. *IEEE Transactions on Signal Processing*, 53(8 part 1):2931–2941, Aug. 2005.

[8] R. Badeau, B. David, and G. Richard. A new perturbation analysis for signal enumeration in rotational invariance techniques. *IEEE Transactions on Signal Processing*, 54(2):450–458, Feb. 2006.

[9] R. Badeau, B. David, and G. Richard. High resolution spectral analysis of mixtures of complex exponentials modulated by polynomials. *IEEE Transactions on Signal Processing*, 54(4):1341–1350, Apr. 2006.

[10] R. Badeau, B. David, and G. Richard. Cramér-Rao bounds for multiple poles and coefficients of quasipolynomials in colored noise. *IEEE Transactions on Signal Processing*, 56(8):3458–3467, Aug. 2008.

[11] R. Badeau, G. Richard, and B. David. Fast and stable yast algorithm for principal and minor subspace tracking. *IEEE Transactions on Signal Processing*, 56(8):3437–3446, Aug. 2008.

[12] R. Badeau, G. Richard, and B. David. Performance of ESPRIT for estimating mixtures of complex exponentials modulated by polynomials. *IEEE Transactions on Signal Processing*, 56(2):492–504, Feb. 2008.

[13] C. Baras, N. Moreau, and P. Dymarki. Controlling the inaudibility and maximizing the robustness in an audio annotation watermarking system. *IEEE Transactions on Audio, Speech and Language Processing*, 14(5):1772–1782, Sept. 2006.

[14] C. Berthomier, X. Drouot, M. Herman-Stoïca, P. Berthomier, J. Prado, O. Benoît, J. Mattout, and M. P. D'Ortho. Wake-rem-nrem automatic classification based on a single eeg channel: Epoch by epoch comparison with human sleep scoring in patients. *Journal of Sleep Research*, Sept. 2006.

[15] C. Berthomier, X. Drouot, M. Herman-Stoïca, J. Prado, J. Mattout, and M. P. D'Ortho. Automatic analysis of single-channel sleep eeg: Validation in healthy individuals. *Journal of Sleep research*, 30(11):1587–1595, 2007.

[16] 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*, 56(2):505 – 517, Feb. 2008.

[17] D. Bitauld, L. Menez, I. Zaquine, A. Maruani, and R. Frey. Diffraction of Gaussian beams on intracavity bragg gratings. *Journal of the Optical Society of America B*, 22(6):1153–1160, June 2005.

[18] D. Bitauld, I. Zaquine, A. Maruani, and R. Frey. Uniform response high resolution tunable optical filtering using a grating-assisted acousto-optic device. *Optics Express*, 13(17):6438–6444, Aug. 2005.

[19] D. Bitauld, I. Zaquine, A. Maruani, and R. Frey. Numerical analysis of a high resolution fast tunable filter based on an intracavity bragg grating. *Applied Optics*, 46(21):4728–4735, July 2007.

[20] C. Clavel, I. Vasilescu, L. Devillers, G. Richard, and T. Ehrette. Fear-type emotion recognition for future audio-based. *Speech Communication*, 50(6):487–503, June 2008.

[21] O. Derrien and G. Richard. A new model-based algorithm for optimizing the mpeg-aac in ms-stereo. *IEEE Transactions on Audio, Speech and Language Processing*, 16(8):1373–1382, Nov. 2008.

[585] O. Derrien, P. Duhamel, M. Charbit, and G. Richard. A new quantization optimization algorithm for the mpeg advanced audio coder using a statistical sub-band model of the quantization noise. *IEEE Transactions on Audio, Speech and Language Processing*, 14(4):1328–1339, July 2006.

[23] K. Ege, X. Boutillon, and B. David. High-resolution modal analysis. *Journal of Sound and Vibration*, May 2009.

[24] S. Essid, G. Richard, and B. David. Instrument recognition in polyphonic music based on automatic taxonomies. *IEEE Transactions on Audio, Speech, and Language Processing*, 14(1):68–80, Jan. 2006.

[25] S. Essid, G. Richard, and B. David. Musical instrument recognition by pairwise classification strategies. *IEEE Transactions on Audio, Speech, and Language Processing*, 14(4):1401– 1412, July 2006.

[26] C. Févotte, B. Torrésani, L. Daudet, and S. J. Godsill. Sparse linear regression with structured priors and application to denoising of musical audio. *IEEE Trans. Audio, Speech and Language Processing*, 16(1):174–185, Jan. 2008.

[27] C. Févotte, N. Bertin, and J.-L. Durrieu. Nonnegative matrix factorization with the Itakura-Saito divergence. With application to music analysis. *Neural Computation*, 21(3), Mar. 2009.

[28] O. Gillet and G. Richard. Drum loops retrieval from spoken queries. *Journal of Intelligent Information Systems - Special issue on Intelligent Multimedia Applications*, 24(2/3):159–177, Mar. 2005.

[29] O. Gillet and G. Richard. Transcription and separation of drum signals from polyphonic music. *IEEE Transactions on Audio, Speech and Language Processing*, 16(3):529 – 540, Mar. 2008.

[30] O. Gillet, S. Essid, and G. Richard. On the correlation of automatic audio and visual segmentations of music videos. *IEEE Trans. on Circuit and Systems for Video Technology*, Mar. 2007.

[31] M. Guillaume and Y. Grenier. Sound field analysis based on analytical beamforming. *EURASIP Journal on Advances in Signal Processing*, 2007, Aug. 2007.

[32] Q. He, I. Zaquine, A. Maruani, and R. Frey. Band edge induced bragg diffraction in 2d photonic crystals. *Optics Letters*, 31(9):1184–1186, May 2006.

[33] Q. He, I. Zaquine, R. Frey, R. Andre, and G. Roosen. Efficient bragg diffraction in thin semiconductor 2d gratings. *Optics Letters*, 33(23):2868–2870, Dec. 2008.

[34] Q. He, I. Zaquine, R. Frey, and G. Roosen. Bragg diffraction in thin 2d refractive index modulated semiconductor samples. *Journal of the Optical Society of America B*, 26(3):390–396, Mar. 2009.

[35] T. Hélie and D. Matignon. Diffusive reprentations for the analysis and simulation of flared acoustic pipes with visco-thermal losses. *Mathematical Models and Methods in Applied Sciences (M3AS)*, 16(4):503–536, Apr. 2006.

[36] T. Hélie and D. Matignon. Representations with poles and cuts for the time-domain simulation of fractional systems and irrational transfer functions. *Signal Processing (SP)*, 86(10):2516–2528, Oct. 2006.

[37] C. Joder, S. Essid, and G. Richard. Temporal integration for audio classification with application to musical instrument classification. *IEEE Transaction on Audio, Speech and Language Processing*, 17(1):174–186, Jan. 2009.
[38] J. Kergomard, V. Debut, and D. Matignon. Resonance modes in a 1d medium with two purely absorbing boundaries: calculation methods, orthogonality and completeness. *Journal of the Acoustical Society of America (JASA)*, 119(3):1356–1367, Mar. 2006.
[39] P. Leveau, E. Vincent, G. Richard, and L. Daudet. Instrument-specific harmonic atoms for mid-level music representation. *IEEE Transactions on Audio, Speech and Language Processing*, Jan. 2008.
[40] A. Moreau, I. Zaquine, A. Maruani, and R. Frey. Efficient Bragg-like operation of intracavity low efficiency plane gratings. *Journal of the Optical Society of America B*, 22(11):2289–2294, Nov. 2005.
[41] A. Moreau, Q. He, I. Zaquine, A. Maruani, and R. Frey. Intracavity gain gratings. *Optics Letters*, 32(3):208–210, Feb. 2007.
[42] A. Ozerov and C. Févotte. Multichannel nonnegative matrix factorization in convolutive mixtures for audio source separation. *IEEE Trans. Audio, Speech and Language Processing*, 2010.
[43] E. Ravelli, G. Richard, and L. Daudet. Union of mdct bases for audio coding. *IEEE Transactions on Audio, Speech and Language Processing*, 16(8):1361–1372, Nov. 2008.
[44] E. Ravelli, G. Richard, and L. Daudet. Audio signal representations for indexing in the transform domain. *IEEE Transactions on Audio, Speech and Language Processing*, Dec. 2009.

1.3.2 ACLN: Articles in Other Refereed Journals

[45] A. Aissa El Bey, K. Abed-Meraim, and Y. Grenier. Underdetermined blind audio source separation using modal decomposition. *EURASIP Journal on Audio, Speech & Music Processing*, 2007:1–15, Mar. 2007.
[46] C. Clavel, I. Vasilescu, G. Richard, and L. Devillers. Du corpus émotionnel au système de détection : le point de vue applicatif de la surveillance dans les lieux publics. *Revue en Intelligence Artificielle (RIA)*, 20(4-5):529–551, Sept. 2006.
[47] Y. Grenier. Interfaces audio aes/ebu. In *Editions Techniques de l'Ingénieur*. Editions Techniques de l'Ingénieur, 2005.
[48] T. Hélie, D. Matignon, and R. Mignot. Criterion design for optimizing low-cost approximations of infinite-dimensional systems: towards efficient real-time simulation. *International Journal of Tomography and Statistics*, 7(7):13–18, Sept. 2007.
[49] H. Kim, K. Honda, and S. Maeda. Stroboscopic cine-mri study on the phasing between the tongue and the larynx in korean three-way phonation contrast. *Journal of Phonetics*, 33(1):1–26, Jan. 2005.
[50] D. Matignon and C. Prieur. Asymptotic stability of linear conservative systems when coupled with diffusive systems. *European Series in Applied and Industrial Mathematics: Control, Optimization and Calculus of Variations (ESAIM:COCV)*, 11(3):487–507, July 2005.
[51] Y. Menesguen, J. L. Smirr, G. Pillet, R. Alleaume, A. Maruani, I. Zaquine, R. Frey, and L. Jacubowiez. Source de photons intriqués en polarisation : travaux pratiques de physique quantique. *Bulletin de l'Union des Physiciens*, 102:61–80, Nov. 2008.
[52] A. Moreau, I. Zaquine, A. Maruani, and R. Frey. Réseaux minces de diffraction en régime de bragg. *Journal de Physique IV*, 135:239, Oct. 2006.
[53] J. Prado. Introduction à matlab. In *Techniques de l'Ingénieur*, chapter dossier AF1450, Vol papier n^{o}AFM3. 2005.

1.3.3 ACTI: Articles in Proceedings of International Conferences

[54] A. Aissa El Bey, K. Abed-Meraim, and Y. Grenier. Blind separation of audio sources using modal decomposition. In *ISSPA'05*, volume 2, pages 451–454, Sydney (Australie), Aug. 2005.
[55] A. Aissa El Bey, K. Abed-Meraim, and Y. Grenier. Blind separation of audio sources convolutive mixtures using parametric decomposition. In *IWAENC'05*, volume 1, pages 161–164, Eindhoven (Pays-bas), Sept. 2005.
[56] A. Aissa El Bey, K. Abed-Meraim, and Y. Grenier. Underdetermined blind source separation of audio sources in time-frequency domain. In *SPARS'05*, volume 1, pages 115–118, Rennes, France, Nov. 2005.
[57] A. Aissa El Bey, K. Abed-Meraim, and Y. Grenier. Iterative blind source separation by decorrelation: algorithm and performance analysis. In *14th European signal processing conference (EUSIPCO)*, Florence, Italie, Sept. 2006.
[58] A. Aissa El Bey, K. Abed-Meraim, and Y. Grenier. On the identifiability testing in blind source separation using resampling technique. In *6th International Conference on Independent Component Analysis and Blind Source Separation*, number LCNS 3889, pages 755–764, Charleston, SC, USA, Mar. 2006.
[59] A. Aissa El Bey, H. Bousbia-Salah, K. Abed-Meraim, and Y. Grenier. Audio source separation using sparsity. In *IWAENC'06*, Paris, France, Sept. 2006.
[60] A. Aissa El Bey, K. Abed-Meraim, and Y. Grenier. Blind audio source separation using sparsity based criterion for convolutive mixture case. In *7th International Conference on Independent Component Analysis and Blind Source Separation*, London, UK, Sept. 2007.
[61] A. Aissa El Bey, K. Abed-Meraim, and Y. Grenier. Underdetermined blind separation of audio sources from the time-frequency representation of their convolutive mixtures. In *ICASSP'07*, volume 1, pages 153–156, Hawaii (USA), Apr. 2007.

[62] A. Aissa El Bey, K. Abed-Meraim, and Y. Grenier. Underdetermined audio source separation using fast parametric decomposition. In *ISSPA'07*, Sharjah (United Arab Emirates), Feb. 2007.

[63] M. Alonso, G. Richard, and B. David. Extracting note onsets from musical recordings. In *IEEE-ICME*, Amsterdam, NL, July 2005.

[64] J. Altuna, B. Mulgrew, R. Badeau, and V. Atxa. A fast adaptive method for subspace based blind channel estimation. In *ICASSP'06*, volume IV, pages 1121–1124, Toulouse, France, May 2006.

[65] R. Badeau and B. David. Weighted Maximum Likelihood Autoregressive and Moving Average Spectrum Modeling. In *ICASSP'08*, pages 3761–3764, Las Vegas, Nevada, USA, Apr. 2008.

[66] R. Badeau, B. David, and G. Richard. Yet another subspace tracker. In *ICASSP'05*, volume 4, pages 329–332, Philadelphie, Pennsylvanie, USA, Mar. 2005.

[67] R. Badeau, G. Richard, and B. David. Fast adaptive esprit algorithm. In *SSP'05*, Bordeaux, France, July 2005.

[68] R. Badeau, B. David, and G. Richard. YAST algorithm for minor subspace tracking. In *ICASSP'06*, volume III, pages 552–555, Toulouse, France, May 2006.

[69] R. Badeau, B. David, and G. Richard. Conjugate gradient algorithms for minor subspace analysis. In *ICASSP'07*, volume 3, pages 1013–1016, Honolulu, Hawaii, USA, Apr. 2007.

[70] R. Badeau, V. Emiya, and B. David. Expectation-maximization algorithm for multi-pitch estimation and separation of overlapping harmonic spectra. In *ICASSP'09*, pages 3073–3076, Taipei, Taiwan, Apr. 2009.

[71] W. Bailer, E. Dumont, S. Essid, and B. Mérialdo. A collaborative approach to automatic rushes video summarization. In *IEEE ICIP Workshop on Multimedia Information Retrieval: New Trends and Challenges*, Oct. 2008.

[72] C. Baras and N. Moreau. An audio spread-spectrum data hiding system with an informed embedding strategy adapted to a Wiener filtering based receiver. In *IEEE International Conference on Multimedia and Exposition (ICME)*, Amsterdam, NL, July 2005.

[73] C. Baras, N. Moreau, and P. Dymarki. Comparative study of two informed embedding strategies for audio spread-spectrum data hiding systems. In *EUSIPCO*, Antalya, Turquie, Sept. 2005.

[74] C. Berthomier, X. Drouot, M. Herman-Stoïca, J. Prado, J. Mattout, and M. P. D'Ortho. A wake-rem-nrem automatic analysis using a single eeg channel: Epoch by epoch comparison with human sleep scoring in healthy subjects. In *First Congress of the World Association of Sleep Medicine (WASM)*, Berlin, Allemagne, Oct. 2005.

[75] C. Berthomier, X. Drouot, M. Herman-Stoïca, J. Prado, J. Mattout, and M. P. D'Ortho. Single channel based brain monitoring: Sleep/wakefulness classification. In *International conference on Monitoring sleep and sleepiness - from physiology to new sensors*, Bâle, Suisse, May 2006.

[76] C. Berthomier, X. Drouot, M. Herman-Stoïca, J. Prado, J. Mattout, and M. P. D'Ortho. Real-time automatic measurement of recorded sleep time. In *American College of Chest Physicians (ACCP) congress : CHEST*, number 694S, Chicago, US, Oct. 2007.

[77] C. Berthomier, A. Muzet, P. Berthomier, J. Prado, and J. Mattout. Real-time automatic measurement of drowsiness based on a single eeg channel. In *European Sleep Research Society*, Glasgow Scotland, Sept. 2008.

[78] N. Bertin, R. Badeau, and G. Richard. Blind signal decompositions for automatic transcription of polyphonic music: NMF and K-SVD on the benchmark. In *ICASSP'07*, volume 1, pages 65–68, Honolulu, Hawaii, USA, Apr. 2007.

[79] N. Bertin, C. Févotte, and R. Badeau. A tempering approach for Itakura-Saito non-negative matrix factorization. With application to music transcription. In *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP'09)*, pages 1545–1548, Taipei, Taiwan, Apr. 2009.

[80] M. Betser, P. Collen, and G. Richard. Frequency estimation based on adjacent dft bins. In *EUSIPCO-2006*, Florence, Italie, Sept. 2006.

[81] M. Betser, P. Collen, G. Richard, and B. David. Review and discussion on classical stft-based frequency estimators. In *International Convention of the Audio Engineering Society (AES)*, Paris, France, May 2006.

[82] D. Bitauld, I. Zaquine, A. Maruani, and R. Frey. A fast tunable high resolution filter. In *Conference on lasers and electro-optics*, number CI-4-TUE, Munich (Allemagne), June 2005.

[83] D. Bitauld, I. Zaquine, A. Maruani, and R. Frey. Grating-assisted acousto-optic filtering. In *Photonics*, page 7, Prague, République Tchèque, June 2005.

[84] R. Blouet, G. Rapaport, I. Cohen, and C. Févotte. Evaluation of several strategies for single sensor speech/music separation. In *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP'08)*, Las Vegas, USA, Apr. 2008.

[85] R. Boyer and R. Badeau. Adaptive multilinear SVD for structured tensors. In *ICASSP'06*, volume III, pages 880–883, Toulouse, France, May 2006.

[86] R. Boyer, K. Abed-Meraim, and L. De Lathawer. Delayed exponential fitting by best tensor rank-(r1,r2,r3) approximation. In *Proc. IEEE Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP)*, May 2005.

[87] A. Capra, S. Fontana, F. Adriaensen, A. Farina, and Y. Grenier. Listening tests of the localization performance of stereodipole and ambisonic systems. In *123rd Convention of the Audio Engineering Society*, New York, USA, Oct. 2007.

[88] C. Clavel, T. Ehrette, and G. Richard. Events detection for an audio-based surveillance system. In *IEEE-ICME*, Amsterdam, July 2005.

[89] C. Clavel, I. Vasilescu, L. Devillers, G. Richard, T. Ehrette, and C. Sedogbo. The safe corpus: illustrating extreme emotions in dynamic situations. In *LREC Workshop Corpora and Emotion*, Gênes, Italie, May 2006.

[90] C. Clavel, I. Vasilescu, G. Richard, and L. Devillers. Fear-type emotions in the safe corpus : annotation issues. In *LREC*, Gênes, Italie, May 2006.

[91] C. Clavel, I. Vasilescu, G. Richard, and L. Devillers. Voiced and unvoiced content of fear-type emotions in the safe corpus. In *Speech Prosody 2006*, Dresden, Germany, May 2006.

[92] C. Clavel, L. Devillers, G. Richard, I. Vasilescu, and T. Ehrette. Abnormal situation detection and analysis through fear-type acoustic manifestations. In *ICASSP'07*, Honolulu, Hawai, Apr. 2007.
[93] G. Cornuz, E. Ravelli, P. Leveau, and L. Daudet. Object Coding of Harmonic Sounds using Sparse and Structured Representations. In *10th Int. Conference on Digital Audio Effects (DAFx-07)*, Bordeaux, France, Sept. 2007.
[94] B. David and R. Badeau. Fast sequential LS estimation for sinusoidal modeling and decomposition of audio signals. In *WASPAA 2007*, pages 211–214, New Paltz, New York, USA, Oct. 2007.
[95] B. David, R. Badeau, and G. Richard. HRHATRAC algorithm for spectral line tracking of musical signals. In *ICASSP'06*, volume III, pages 45–48, Toulouse, France, May 2006.
[96] B. David, V. Emiya, R. Badeau, and Y. Grenier. Harmonic plus noise decomposition: Time-frequency reassignment versus a subspace-based method. In *120th Convention of the Audio Engineering Society*, Paris, France, May 2006.
[1001] J. Dellière, A. Maruani, H. Maître, and P. Benjamin. A full electromagnetic SAR image simulator for urban structures. In *4th IEEE-GRSS - ISPRS workshop - URBAN 2007*, Paris (France), Apr. 2007.
[1002] J. Dellière, A. Maruani, H. Maître, P. Benjamin, and J. P. Piau. A full electromagnetic SAR simulator for urban structures. In *Physics in Signal and Image Processing, PSIP'07*, Mulhouse, Jan. 2007.
[99] J.-F. Deü and D. Matignon. A coupled Nemark-diffusive scheme for fractionally damped oscillators. In *8th International Conference on Mathematical and Numerical Aspects of Waves*, pages 526–528, Reading, United Kingdom, July 2007.
[100] E. Dumont, B. Merialdo, S. Essid, W. Bailer, D. Byrne, H. Bredin, N. E. O'Connor, G. J. F. Jones, M. Haller, A. Krutz, T. Sikora, and T. Piatrik. A collaborative approach to video summarization. In *SAMT 2008, 3rd International Conference on Semantic and Digital Media Technologies*, Koblenz, Germany, Dec. 2008.
[101] E. Dumont, B. Merialdo, S. Essid, W. Bailer, H. Rehatschek, D. Byrne, H. Bredin, N. E. O'Connor, G. J. F. Jones, A. F. Smeatonand, M. Haller, A. Krutz, T. Sikora, and T. Piatrik. Rushes video summarization using a collaborative approach. In *TRECVID 2008, ACM International Conference on Multimedia Information Retrieval 2008*, Vancouver, BC, Canada, Nov. 2008.
[102] J.-L. Durrieu, G. Richard, and B. David. Singer melody extraction in polyphonic signals using source separation methods. In *ICASSP'08*, Las Vegas, Nevada, USA, Apr. 2008.
[103] J.-L. Durrieu, A. Ozerov, C. Févotte, G. Richard, and B. David. Main instrument separation from stereophonic audio signals using a source/filter model. In *European Signal Processing Conference (EUSIPCO)*, Glasgow,Scotland, Aug. 2009.
[104] J.-L. Durrieu, G. Richard, and B. David. An iterative approach to monaural musical mixture de-soloing. In *IEEE International Conference on Acoustics, Speech and Signal Processing*, Taipei, Taiwan, Apr. 2009.
[105] V. Emiya, B. David, and V. Gibiat. Two representation tools to analyse non-stationary sounds in a perceptual context. In *Forum Acusticum 2005*, Budapest, Hongrie, Aug. 2005.
[106] V. Emiya, R. Badeau, and B. David. Multipitch estimation of inharmonic sounds in colored noise. In *10th Int. Conf. on Digital Audio Effects (DAFx-07)*, pages 93–98, Bordeaux, France, Sept. 2007.
[107] V. Emiya, B. David, and R. Badeau. A parametric method for pitch estimation of piano tones. In *ICASSP'07*, volume 1, pages 249–252, Honolulu, Hawaii, USA, Apr. 2007.
[108] V. Emiya, R. Badeau, and B. David. Automatic transcription of piano music based on HMM tracking of jointly-estimated pitches. In *EUSIPCO 2008*, Lausanne, Switzerland, Aug. 2008.
[109] S. Essid, G. Richard, and B. David. Instrument recognition in polyphonic music. In *ICASSP'05*, Philadelphie, US, Mar. 2005.
[110] S. Essid, G. Richard, and B. David. Hierarchical classification of musical instruments on solo recordings. In *ICASSP'06*, Toulouse, France, May 2006.
[111] C. Févotte and F. Theis. Pivot selection strategies in jacobi joint block-diagonalization. In *7th International Conference on Independent Component Analysis and Signal Separation (ICA'07)*, Londres (United-Kingdom), Sept. 2007.
[112] S. Fontana, Y. Grenier, and A. Farina. A system for head related impulse responses rapid measurement and direct customization. In *120th Convention AES*, Paris, France, Oct. 2006.
[113] S. Fontana, A. Farina, and Y. Grenier. Binaural for popular music: a case of study. In *13th International Conference on Auditory Display*, Montréal, Canada, June 2007.
[114] O. Gillet and G. Richard. Automatic transcription of drum sequences using audiovisual features. In *ICASSP'05*, Philadelphie, US, Mar. 2005.
[115] O. Gillet and G. Richard. Indexing and querying drum loops databases. In *CBMI*, Riga, Lettonie, June 2005.
[116] O. Gillet and G. Richard. Comparing audio and video segmentations for music videos indexing. In *IEEE International Conference on Acoustics, Speech, and Signal Processing, ICASSP'06*, Toulouse, France, May 2006.
[117] O. Gillet and G. Richard. Drum track transcription of polyphonic music signals using noise subspace projection. In *6th International Conference on Music Information Retrieval, ISMIR 2005*, London, UK, Sept. 2005.
[118] O. Gillet and G. Richard. Enst-drums: an extensive audio-visual database for drum signals processing. In *7th International Conference on Music Information Retrieval, ISMIR 2006*, Victoria, Canada, Oct. 2006.
[119] O. Gillet and G. Richard. Supervised and unsupervised sequence modelling for drum transcription. In *International Congress on Music Information Retrieval (ISMIR)*, Vienne, Autriche, Sept. 2007.
[120] O. Gillet and G. Richard. Extraction and remixing of drum tracks from polyphonic music signals. In *IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, WASPAA'05*, New Paltz, USA, Oct. 2005.
[121] S. J. Godsill, A. T. Cemgil, C. Févotte, and P. J. Wolfe. Bayesian computational methods for sparse audio and music processing. In *Proc. 15th European Signal Processing Conference (EUSIPCO'07)*, Poznan (Poland), Sept. 2007.

[122] M. Guillaume and Y. Grenier. Sound field analysis with a two-dimensional microphone array. In *ICASSP*, volume V, pages 321–324, Toulouse, France, May 2006.
[123] M. Guillaume and Y. Grenier. Sound field analysis based on generalized prolate spheroidal wave sequences. In *120th Convention of the Audio Engineering Socitety*, Paris, FRANCE, May 2006.
[124] M. Guillaume and Y. Grenier. Experimental 3d sound field analysis with a microphone array. In *28th International Conference of the AES*, Pitea, Sweden, July 2006.
[125] M. Guillaume, Y. Grenier, and G. Richard. Iterative algorithms for multichannel equalization in sound reproduction systems. In *ICASSP'05*, Philadelphie, US, Mar. 2005.
[126] H. Haddar, J.-R. Li, and D. Matignon. Efficient solution of a wave equation with fractional order dissipative terms. In *8th International Conference on Mathematical and Numerical Aspects of Waves*, pages 529–531, Reading, United Kingdom, July 2007.
[743] Z. Harchaoui, F. Vallet, A. Lung-Yut-Fong, and O. Cappé. A regularized kernel-based approach to unsupervised audio segmentation. In *ICASSP 2009*, pages 1665–1668, Taiwan, Apr. 2009.
[128] Q. He, I. Zaquine, A. Maruani, S. Massenot, R. Chevallier, and R. Frey. Diffraction enhancement in 2d photonic crystals. In *European Optical Society Annual Meeting*, volume TOM3, page 193, Paris France, Oct. 2006.
[129] Q. He, I. Zaquine, R. Andre, G. Roosen, and R. Frey. Bragg diffraction regime in thin semiconductor 2d refractive index gratings. In *PR 09*, Bad Honnef, Allemagne, June 2009.
[130] T. Hélie, D. Matignon, and R. Mignot. Criterion design for optimizing low-cost approximations of infinite-dimensional systems: towards efficient real-time simulation. In *IFAC workshop on Control Applications of Optimisation (CAO'06)*, pages 368–373, Cachan, France, Apr. 2006.
[131] C. Hory and W. J. Christmas. Cepstral features for classification of an impulse response with varying sample size dataset. In *EUSIPCO 2007*, pages 1546–1550, Poznan, Pologne, Sept. 2007.
[132] C. Joder, S. Essid, and G. Richard. Alignment kernels for audio classification with application to music instrument recognition. In *EUSIPCO 2008*, Lausanne, Suisse, Aug. 2008.
[133] J. Kergomard, D. Matignon, and V. Debut. Waves in a 1d-medium with two resistive terminations: completeness of the modes. In *WAVES'05: 7th Int. Conf. on Mathematical and Numerical Aspects of Wave Propagation*, pages 273–275, Providence (Rhode Island, USA), June 2005.
[134] S. Krstulovic, R. Gribonval, P. Leveau, and L. Daudet. A comparison of two extensions of the matching pursuit algorithm for the harmonic decomposition of sounds. In *IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, (WASPAA05)*, Mohonk (NY) - USA, Oct. 2005.
[135] M. Lardeur, S. Essid, G. Richard, M. Haller, and T. Sikora. Incorporating prior knowledge on the digital media creation process into audio classifiers. In *IEEE International Conference on Acoustics, Speech and Signal Processing*, Taipei, Taiwan, Apr. 2009.
[136] J.-L. Le Carrou, F. Gautier, and R. Badeau. Theoretical and experimental investigations of harp's sympathetic modes. In *ICA 2007*, Madrid, Spain, Sept. 2007.
[137] P. Leveau and L. Daudet. Multi-resolution partial tracking with modified matching pursuit. In *14th European Signal Processing Conference (EUSIPCO)*, Florence (Italy), Sept. 2006.
[138] P. Leveau, S. Essid, G. Richard, L. Daudet, and B. David. On the usefulness of differentiated transient/steady-state processing in machine recognition of musical instruments. In *AES convention*, Barcelone, May 2005.
[139] P. Leveau, E. Vincent, G. Richard, and L. Daudet. Mid-level sparse representations for timbre identification: design of an instrument-specific harmonic dictionary. In *1st Workshop on Learning the Semantics of Audio Signals*, Athènes, Grèce, Dec. 2006.
[140] P. Leveau, D. Sodoyer, and L. Daudet. Automatic Instrument Recognition in a Polyphonic Mixture using Sparse Representations. In *8th Int. Conf. on Music Information Retrieval (ISMIR 2007)*, Vienne, Autriche, Sept. 2007.
[141] S. Maeda and M. Toda. Quantal aspects of non anterior sibilant fricatives: A simulation study. In *7th International Seminar on Speech Production (ISSP)*, pages 573–580, July 2006.
[142] D. Matignon. Diffusive representation for fractional Laplacian and other non-causal pseudo-differential operato rs. In *IFAC workshop on Control of Distributed Parameter Systems (CDPS'07)*, pages 19–20, Namur, Belgique, July 2007.
[143] D. Matignon. Asymptotic stability of the Webster-Lokshin model. In *Mathematical Theory of Networks and Systems*, page CDROM 11p, Kyoto, Japan, July 2006.
[144] K. Mcguinness, O. Gillet, N. O'Connor, and G. Richard. Visual analysis for drum sequence transcription. In *European Signal Processing Conference (Eusipco)*, Poznan, Pologne, Sept. 2007.
[145] R. Mignot, T. Hélie, and D. Matignon. Waveguide modeling of lossy flared acoustic pipes: derivation of a Kelly-Lochbaum structure for real-time simulations. In *IEEE Workshop on Applications of Signal Processing to Audio and Acoustics*, page 4, New Paltz, USA, Oct. 2007.
[146] A. Moreau, I. Zaquine, A. Maruani, and R. Frey. Diffraction regime of an intracavity thin grating. In *Conference on Lasers and Electro-Otpics*, number CK-4-WED, Munich (Allemagne), June 2005.
[147] A. Moreau, I. Zaquine, A. Maruani, and R. Frey. Intracavity thin diffraction gratings. In *Photonics*, page 83, Prague, République Tchèque, June 2005.
[148] A. Moreau, Q. He, I. Zaquine, A. Maruani, and R. Frey. Intracavity bragg diffraction in microlasers. In *European Optical Society Annual Meeting*, volume TOM6, page 45, Paris France, Oct. 2006.
[149] A. Moreau, Q. He, I. Zaquine, A. Maruani, and R. Frey. Gain grating in a nd:yvo4 microlaser. In *Conference on Lasers and Electrooptics*, Baltimore, May 2007.
[150] I. Potamitis and A. Ozerov. Single channel source separation using static and dynamic features in the power domain. In *EUSIPCO, 16th European Signal Processing Conference*, Laussane, Switzerland, Aug. 2008.
[151] M. Ramona, G. Richard, and B. David. Vocal detection in music with support vector machines. In *ICASSP'08*,

Las Vegas, USA, Apr. 2008.
[152] E. Ravelli, G. Richard, and L. Daudet. Extending transform coding to very lowbirates using overcomplete dictionaries. In *IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)*, New Paltz, US, Oct. 2007.
[153] E. Ravelli, G. Richard, and L. Daudet. Matching pursuit in adaptive dictionaries for scalable audio coding. In *EUSCIPCO*, Lausanne, Suisse, Sept. 2008.
[154] E. Ravelli, G. Richard, and L. Daudet. Fast mir in a sparse transform domain. In *ISMIR*, Philadelphie, USA, Sept. 2008.
[155] G. Richard, P. Leveau, L. Daudet, S. Essid, and B. David. Towards polyphonic musical instrument recognition. In *International Congress on Acoustics (ICA)*, Madrid, Sept. 2007.
[156] G. Richard, M. Ramona, and S. Essid. Combined supervised and unsupervised approaches for automatic segmentation of radiophonic audio streams. In *ICASSP'07*, Honolulu, Hawai, Apr. 2007.
[770] W. Souidene, A. Aissa El Bey, K. Abed-Meraim, and A. Beghdadi. Blind image separation using sparse representation. In *14th International Conference on Image Processing ICIP*, San Antonio, Texas, USA, Sept. 2007.
[158] V. Y. F. Tan and C. Févotte. Automatic relevance determination in nonnegative matrix factorization. In *Workshop on Signal Processing with Adaptative Sparse Structured Representations (SPARS'09)*, St-Malo, France, Apr. 2009.
[159] M. Toda, S. Maeda, M.Aron, and M. Berger. Modeling subject-specific formant transition patterns in /asha/ sequences. In *8th International Seminar on Speech Production (ISSP)*, pages 357–360, July 2008.
[160] K. Trabelsi, T. Hélie, and D. Matignon. Time-domain simulation of functions and dynamical systems of Bessel type. In *8th International Conference on Mathematical and Numerical Aspects of Waves*, pages 547–549, Reading, United Kingdom, July 2007.
[161] I. Venturini. Reality Preserving Fractional Discrete Cosine Transforms. In *Electronic imaging and the Visual Arts 2006*, Florence, Italy, Apr. 2006.
[162] I. Venturini. Oracle attacks and covert channels. In *International Workshop on Digital Watermarking, IWDW 2005*, Siena, Italy, Sept. 2005.
[163] E. Vincent, N. Bertin, and R. Badeau. Harmonic and inharmonic nonnegative matrix factorization for polyphonic pitch transcription. In *ICASSP'08*, pages 109–112, Las Vegas, Nevada, USA, Apr. 2008.
[164] S. Wegener, M. Haller, J.-J. Burred, T. Sikora, S. Essid, and G. Richard. On the robustness of audio features for musical instrument classification. In *EUSCIPCO*, Lausanne, Suisse, Sept. 2008.
[165] P. Wilkins, T. Adamek, D. Byrne, G. Jones, H. Lee, G. Keenan, K. Mcguinness, N. E. O'Connor, A. F. Smeaton, A. Amin, Z. Obrenovic, R. Benmokhtar, E. Galmar, B. Huet, S. Essid, R. Landais, F. Vallet, G. T. Papadopoulos, S. Vrochidis, V. Mezaris, I. Kompatsiaris, E. Spyrou, Y. Avrithis, R. Morzinger, P. Schallauer, W. Bailer, T. Piatrik, K. Chandramouli, E. Izquierdo, M. Haller, L. Goldmann, A. Samour, A. Cobet, T. Sikora, and P. Praks. K-space at TRECVid 2007. In *TRECVID 2007*, Nov. 2007.
[166] M. Yeou and S. Maedaand K.S.Honda. Laryngeal activity in the production of consonants clusters and geminates in moroccan arabic. In *8th International Seminar on Speech Production (ISSP)*, pages 249–252, July 2008.

1.3.4 ACTN: Articles in Proceedings of French Conferences

[167] A. Aissa El Bey, K. Abed-Meraim, and Y. Grenier. Séparation aveugle sous-déterminée de sources audio par la méthode EMD (Empirical Mode Decomposition). In *20e Colloque GRETSI sur le traitement du signal et des images*, volume 2, pages 1233–1236, Louvain-La-Neuve, Belgique, Sept. 2005.
[168] A. Aissa El Bey, K. Abed-Meraim, and Y. Grenier. Séparation aveugle sous-déterminée de sources en utilisant la décomposition en paquet d'ondelettes. In *21e Colloque GRETSI sur le traitement du signal et des images*, Troyes, France, Sept. 2007.
[169] G. Bailly, C. Baras, P. Bas, S. Baudry, R. Brun, D. Beautemps, F. Davoine, F. Elisei, G. Gibert, D. Grison, J.-P. Léoni, J. Liénard, N. Moreau, and P. Nguyen. Artus : Calcul et tatouage audiovisuel des mouvements d'un personnage animé virtuel pour l'accessibilité d'émissions télévisuelles aux spectateurs sourds comprenant la langue française parlée complétée. In *Handicap*, pages 265–270, Paris, June 2006.
[170] C. Baras and N. Moreau. Modulation cdma informée dans un système de tatouage audio. In *CORESA*, Rennes, France, Nov. 2005.
[171] C. Baras, N. Moreau, and B. Zayen. Mécanisme de synchronisation en tatouage audio pour des perturbations désynchronisantes à forte dérive. In *GRETSI*, pages 1205–1208, Louvain-La-Neuve, Belgique, Sept. 2005.
[172] C. Berthomier, X. Drouot, M. Herman-Stoïca, J. Prado, J. Mattout, and M. P. D'Ortho. Analyse automatique du sommeil à partir d'une dérivation eeg : Comparaison entre hypnogrammes automatique et visuel chez le sujet sain. In *XXème Congrès de la Société Française de Recherche sur le Sommeil (SFRS)*, Lyon, Nov. 2005.
[173] C. Berthomier, X. Drouot, M. Herman-Stoïca, J. Prado, J. Mattout, and M. P. D'Ortho. Sleep automatic analysis using a single electroencephalogram channel in healthy subjects. In *Congrès de Physiologie, de Pharmacologie et Thérapeutique (P2T)*, Lyon, Apr. 2006.
[174] C. Berthomier, X. Drouot, M. Herman-Stoïca, J. Prado, J. Mattout, and M. P. D'Ortho. Analyse automatique du sommeil à partir dune unique dérivation eeg : Comparaison des analyses automatique et visuelle chez le patient. In *XXIème Congrès de la Société Française de Recherche et Médecine sur le Sommeil (SFRMS)*, Albi, France, Nov. 2006.
[175] D. Bitauld, I. Zaquine, A. Maruani, and R. Frey. Filtrage frequentiel optique par un dispositif acousto-optique associe a un reseau de diffraction. In *COLOQ 9*, page 43, Dijon, France, Sept. 2005.

[176] K. Ege, X. Boutillon, B. David, and J. Lozada. Analyse modale sans transformée de fourier. In *Congrès Français de Mécanique*, Grenoble, Aug. 2007.
[177] Q. He, I. Zaquine, A. Maruani, and R. Frey. Diffraction de bragg dans des cristaux photoniques 2d. In *Coloq*, Grenoble, July 2007.
[178] J.-L. Le Carrou, F. Gautier, and R. Badeau. Analyse des modes de cordes couplées d'une harpe par une méthode à haute résolution. In *8ème Congrès Français d'Acoustique CFA'06*, Tours, France, Apr. 2006.
[179] J. Lozada, X. Boutillon, and B. David. Modes propres de vibration : comment oublier fourier. In *Congrès Français de Mécanique*, Tours, France, Apr. 2006.
[180] Y. Menesguen, J. L. Smirr, G. Pillet, C. Bourdarias, R. Alleaume, A. Maruani, I. Zaquine, and R. Frey. Interface de changement de longueur donde conservant lintrication en polarisation. In *COLOQ*, Grenoble, July 2007.
[181] A. Moreau, I. Zaquine, A. Maruani, and R. Frey. Réseaux minces de diffraction en régime de bragg. In *COLOQ 9*, page 189, Dijon France, Sept. 2005.
[182] M. Ramona and G. Richard. Segmentation parole/musique par machines à vecteurs de support. In *Journées d'Etudes sur la Parole (JEP'08)*, Avignon, France, June 2008.

1.3.5 COM: Talks in Conferences Which Do Not Publish Proceedings

[183] R. Badeau and B. David. Adaptive subspace methods for high resolution analysis of music signals. In *Acoustics'08*, Paris, France, July 2008.
[184] N. Bertin and R. Badeau. Initialization, distances and local minima in audio applications of the non-negative matrix factorization. In *Acoustics'08*, Paris, France, July 2008.
[185] B. David and R. Badeau. Towards an adaptive subspace-based representation of musical spectral content. In *Acoustics'08*, Paris, France, July 2008.
[186] O. Derrien, G. Richard, and R. Badeau. Damped sinusoids and subspace based approach for lossy audio coding. In *Acoustics'08*, Paris, France, July 2008.
[187] J.-L. Durrieu and J. Weil. Automatic beat-synchronous generation of music lead sheets. In *Kspace PhD Jamboree*, Paris, France, July 2008.
[188] J.-L. Durrieu, G. Richard, and B. David. Single sensor singer/music separation using a source/filter model of the singer voice. In *Acoustics*, Paris, France, July 2008.
[189] F. Vallet, G. Richard, S. Essid, and J. Carrive. Detecting artist performances in a tv show. In *Kspace PhD Jamboree*, Paris, France, July 2008.

1.3.6 OS: Books and Book Chapters

[190] C. Baras, N. Moreau, and T. Dutoit. *How could music contain hidden information*, chapter 7, pages 223 – 264. 2009.
[191] R. Benmokhtar, B. Huet, G. Richard, T. Declerck, and S. Essid. *Feature Extraction for Multimedia Analysis*, chapter 4. Wiley, 2009.
[192] C. Clavel and G. Richard. *Reconnaissance acoustique des émotions,*, chapter 5. Hermès, 2009.
[193] T. Dutoit and N. Moreau. *How is sound processed in an MP3 player*, chapter 3, pages 65–101. 2009.
[194] T. Dutoit, N. Moreau, and P. Kroon. *How is speech processed in a cell phone conversation*, chapter 1, pages 1–31. 2009.
[1225] S. Essid, M. Campedel, G. Richard, T. Piatrik, R. Benmokhtar, and B. Huet. *Machine Learning Techniques for Multimedia Analysis*, chapter 5. Wiley, 2009.
[196] C. Févotte. *Bayesian audio source separation*, chapter 11, pages 305–335. Springer, 2007.
[197] N. Moreau. *Codage audio et normes*. Vuibert, 2006.
[198] G. Richard. *Audio Indexing*. Information Science Reference - IGI Global, 2008.
[199] M. Toda, S. Maeda, and K. Honda. *Formant-cavity affiliation in sibilant fricatives*. Fuchs, S., Zygis, M., Toda, M., and Shadle Ch. (Eds.). Mouton de Gruyter., 2009.

Chapter 2

Multimedia (MM)

Team leader B. Pesquet-Popescu (P).

Faculty M. Cagnazzo (MC, 02/08–), G. Chollet (DR CNRS), C. Concolato (MC, 10/07 –), C. Faure (CR CNRS), J. LeFeuvre (IE), L. Likforman-Sulem (MC), J.-C. Moissinac (MC), C. Pelachaud (DR CNRS, 01/09 –), M. Sigelle (MC), C. Tillier (06/05–09/07)

PhD students H. Bredin (09/04–10/07), S. S. Lin (09/02–06/07), L. Zouari (01/04–04/07), R. El-Hajj (11/05–07/07), T. Hueber (10/06–), B. Pellan (10/06–), B. Elloumi (12/06 –), M. Bendris (10/08–), R. Bayeh (12/03–), C. Angeli (), P. Perrot (01/05–), C. Concolato (10/02–07/07), G. Pau (01/03–06/06), M. Trocan (10/04–10/07), C. Tillier (10/02–06/05), G. Feideropoulou (10/01-04/05), A. Robert (11/04–01/08), C. Bergeron (01/04–01/07), G. Laroche (11/05–05/09), N. Tizon (11/05–), O. Crave (10/05–12/08), I. Daribo (10/06–), T. Maugey (10/07–), S. Chebbo (12/06–), C. Yaacoub (04/06–07/09), M. Kaaniche (10/06–), S. Hyniewska (10/08–), Q. Anh Le (07/09 –), J. Huang (10/09 –), C. Greco (09/08 –), R. de Oliveira (01/09 –), A-L Bianne (09/08–), M. Kimiaei-Asadi (02/02 – 06/05), B. Rodriguez (02/09–), A. R. Kaced (10/05–10/08), Z. K. Aoul (10/05–10/08)

Post-docs, engineers and sabbaticals R. Landais (05/06–12/07), G. Aversano (01/06–09/06), L. Zouari (04/07–11/08), J. Wei (10/07–09/08), Y-Z. Zhang (03/07–03/08), A. Fraysse (10/06–08/08), S. Brangoulo (01/06–09/06), B. Pellan (–09/06), T. André (10/07–05/08), J. Gauthier (06/08–09/09), W. Miled (10/07–09/09), A.M. de Bellaing (10/06–04/07), B. Zalesky (sabbatical 1 month), R. Niewiadomski (01/09 – 12/09), A.-M. Pez(10/08-01/10), K. Prepin (01/09-12/09), E. de Sevin (01/09 – 06/10), M. Ochs (09/09 – 08/10), H. Sarria (sabbatical, 01/08–01/09), E. Barney Smith (sabbatical, 2 weeks), E. Sanchez-Soto (05/09–), J. Razik (02/08–08/09), C. Riedinger (11/08–12/09), P. de Cuetos (–06/05), A. Amehraye (11/08–)

External collaborators A. Bennazza (SupCom Tunis), R. de Quieroz (Univ. Brasilia), C. Mokbel (UOB, Liban), C. Kermorvant (A2IA), A. Vinciarelli (IDIAP), I. Jermyn (INRIA Sophia), S. Perreau (ITR, Adelaide), E. Bratsolis (Univ. Athens), J. Farah (USEK, Liban), M. van der Schaar (UCLA, USA), G. Piella (Univ. Pompeu Fabra, Barcelona), C. Guillemot (INRIA Rennes)

Faculty [IT, CNRS]	[7, 2.3]
PhD students	11
Post-docs, engineers and sabbaticals	2
Defended PhD theses	16
Defended HDR	2
Journal papers	42
Papers in conference proceedings	135
Chapters and books	15
Patents and sofware	3
Standardization contributions	95
Grants [public, private, european] (k€)	[1778, 833, 1322]

2.1 Objectives

The research in the "Multimedia" (MM) group covers the life cycle of multimedia documents in the framework of a complete chain, going from authoring tools for on-line and off-line production of multimedia contents to multimodal interaction for the final user; this also includes automated processing like enhancement of degraded pictures, verification of the identity of the user, modification of auditive and visual appearance, image segmentation and pattern recognition. The group also works on techniques that allow the analysis, compression and robust transmission of these media in heterogeneous networks. It also works on the dynamic and distributed adaptation of the transmitted data flow (including meta-data and in particular those concerning the digital rights management) with respect to context, transport conditions and terminal type.

2.2 Main Results

The main research results obtained during the period 2005-2009 are presented below for the research areas of the Multimedia team.

2.2.1 Robust Compression and Transmission of Visual Data

Faculty B. Pesquet-Popescu, C. Tillier, M. Cagnazzo

Main events Best Paper Award IEEE Trans. Circuits and Systems for Video Technology 2006 received by B. Pesquet-Popescu. B. Pesquet-Popescu is a member of the IEEE SPS Multimedia Signal Processing (MMSP) Technical Committee, of the IEEE SPS Image, Video and Multidimensional Signal Processing (IVMSP) TC, Associate Editor for IEEE Trans.on Multimedia, Associate Editor for Elsevier Signal Processing, and was a Co-Chair of the MPEG AHG on Exploration in Wavelet Video Coding (04/05–07/06). She is also a member and Treasurer of the EURASIP AdCom and member of the GdR ISIS administrative committee. In 2006 and 2007 she was also a "rapporteur" for the RIAM program and is, since 2005, an expert for ANR.

Projects ANR DIVINE (2006-2009), ANR DITEMOI (2006-2009), pôle CapDigital Sebastian2 (2008-2010), pôle CapDigital PINGO (2008-2010), IST STREP DANAE (2004-2006), IST

NoE MUSCLE (2004-2008), ANR blanc ESSOR (2006-2009), CEDRE (2009-2010), bilateral SFR project (2005-2008), ACI Masses de Données CoDage (2004-2007)

Scalable and Adaptive Coding

One of our main topics of interest is *scalable video coding* [447], allowing a video system to provide a flexible and robust bitstream, able to be adapted to different transport and visualization conditions. We have studied video coding based on spatio-temporal wavelet decompositions, enabling a natural spatial and temporal scalability. These schemes also have the advantage of easily allowing the implementation of unequal error protection [236].

In this context, we have been among the first to introduce motion-compensated temporal lifting schemes ([230, 209]). New temporal decomposition tools have been proposed like, for example, 3-band temporal schemes [231], optimized update operators, iterative bidirectional prediction structures, low delay temporal schemes etc. In the spatial domain, we have worked on M-band filter banks permitting a fractional scalability [219], and that can also be adapted to the quantization step and to the content itself. This technique leads to important gains in quality and computational time, and allowed Telecom ParisTech to get a patent and to be in the process of obtaining a second one on the extension of this idea to H.264/AVC and SVC video adaptation. Different other adaptations and optimizations of the AVC/SVC codecs have been implemented in the collaborative project PINGO.

Another application of lifting structures is the construction of content-adaptive filter banks, where the choice between two or several structures is related to a criterion uniquely based on the analysed data. We have proposed [228, 237], in collaboration with G. Piella (Univ. Pompeu Fabra), and H. Heijmans (CWI, Amsterdam) an original framework based on semi-norms allowing to provide flexible decision criteria. Recently, we have incorporated rate-distortion criteria in these decompositions. Another approach for designing sparse representations adapted to the video content is based on block-oriented transforms, where we proposed solutions in a standardized framework during the PhD thesis of A. Robert (CIFRE FTRD).

An extension of the previous techniques to *multi-view coding and 3DTV compression* was performed, in several directions: first, the compression of stereo image pairs and stereo video sequences by joint multiresolution analyses without leakage [211], and second, the multi-view coding for free-point of view and 3DTV applications [226]. In this context, we have proposed optimal bitrate allocation in such schemes, as well as pre-, post-processing and compression of depth maps. The disparity estimation in a variational approach with convex constraints is a key point of this theme, which is developed by W. Miled [218]. It was also extended to dense motion estimation and joint disparity-motion estimation for multi-view coding. Lifting structures for multi-view coding and the application of joint wavelet packets in this framework was done in collaboration with Nuremberg University.

Finally, an important theoretical work, in collaboration with A. Fraysse (now at Univ. Paris-Sud) and J.-C. Pesquet (Univ. Paris-Est), was the study of asymptotic operational rate-distortion curve of Bernouilli-Generalized Gaussian sources, which provide an accurate model for the subbands of different spatio-temporal transforms [225].

Robust and Joint Source-Channel Coding

In a standardization context of MPEG-4/AVC, we have studied schemes based on “competition” [214], based on different optimization criteria (PhD thesis of G. Laroche, CIFRE FTRD). Some of the proposed tools have been integrated in the KTA, which is the reference software for a possible future standard (H.265 ?). We have also proposed original solutions for temporal scalability using frame shuffling [201] (PhD thesis of C. Bergeron, CIFRE with Thalès). In the same collaboration with Thalès, several *joint source-channel coding* optimizations for H.264/AVC streams have been performed. Video streaming over wireless networks, stream commutation, detection and prevention of congestion, ressource allocation, are the main topics of the work performed by N. Tizon in his CIFRE PhD thesis with SFR [232].

In the same time, video transmission over error-prone networks may be highly affected by congestion or bottlenecks. A tool allowing to cope with such errors is the *multiple description coding* (MDC), exploiting the existence of different paths from the sender to the receiver. We developed MDC schemes issued from wavelet frames with reduced redundancy in the spatial and/or temporal domain and proposed several solutions exploiting advanced convex optimization techniques. One of them, called "synthesis frame approach", allowed us to establish interesting connections with the *compressed sensing* framework. The MDC paradigm is also considered in collaborative projects like DIVINE (DIffusion de Vidéo et Image vers des termiNaux hEtérogènes, à travers des liens hétérogènes), where we performed unequal error protection for multicast links, or DITEMOI (DIffusion et TElechargement sur lien MObile Ip), where we work on joint source-channel coding for wireless multi-point to multi-point (Wi-Fi or WiMAX) channels [222]. In the Sebastian2 project, dedicated to real-time tools for post-production between Paris and San Francisco creation areas, we develop the idea of using MDC for P2P communications and propose new protocoles for wired and wireless P2P networks.

Distributed Video Coding

The current development of applications like mobile visiophony raises an increasing interest from the industry for compression techniques with low complexity, and low battery charge, in order to increase the autonomy of mobile terminals. In this context, the *distributed source coding* paradigm provides original solutions for moving the complexity of video compression from the encoder to the decoder or base station [204]. Moreover, there is a strong increase of sensor network solutions for videosurveillance, facing similar constraints. In our team, we develop distributed video coding (DVC) schemes, some of them in collaborative projects like ANR ESSOR (codagE de SourceS vidéO distRibué), and consider both theoretical and applicative aspects in mono- and multi-view distributed codig, and related multi-terminal concepts. For example, in collaboration with INRIA Rennes, we proposed iterative (turbo-like) decoding of MDC streams with adjacent information [224]. We have also performed a rate-distortion analysis and error propagation study of mono- and multi-view DVC schemes [224].

2.2.2 Rich Media, Adaptation and Open Source Software

Faculty C. Concolato, J. LeFeuvre, J.-C. Moissinac

Main events Organization of Distributed Framework for Multimedia Applications 2007, 2nd Best Open Source Software Award in ACM MM 07, Edition of several ISO and W3C standards

Projects ANR MP4MC (01/06–06/07), ANR Radio+(11/08–11/10), Cap Digital PINGO(04/08–04/10), IST FP6 STREP ISIS (09/02–03/05), IST FP6 STREP TIRAMISU (11/03–12/05), IST FP6 STREP DANAE (01/04–06/06), IST FP6 NoE INTERMEDIA (10/06–10/10), ANR Georacing (01/07–03/09), IT JEMTU (01/06–12/08).

Rich Media Representation

The term "Rich Media" [207] designates the methods, algorithms, tools or technlogies required for the processing of the new generation of multimedia content, i.e. content that encompasses natural or synthetic audio-visual material but adds animation and interactive capabilities. Rich Media technologies target a wide range of application domains: from digital TV or radio, to mobile multimedia and the Web 2.0.

The research topic that the team pursued in this area are numerous. Some work has been done towards finding the best representation for such content, as well as designing compression approaches for multimedia scene description languages, with features such as error protection and scalability. Other works focused on improving the visualization of such content [203], in particular on mobile phones. Finally, the problems related to the delivery of such content on diverse

networks such as broadcast networks have been also investigated. As part of this work, the team is an active participant to standardization bodies such as W3C and ISO. The team has contributed (more than 80 contributiions) and participated to the editing of the following international standards: MPEG-4 Systems, MPEG-4 BIFS, MPEG-4 LASeR, and W3C SVG.

Multimedia Adaptation

The adaptation of multimedia content to its context of use (terminal capabilities, network characteristics, user preference) is a very active research topic, with tight link with standardization activities such as MPEG-21 or W3C. The team explores specific problems in the adaptation of multimedia content: adaptation of protected content, adaptation of human-computer interface, and the authoring of adaptable services [220]. These problems are addressed along different axis either by defining software architectures for such adaptations (in relationship with the ASTRE Team) or by defining methods and languages facilitating the adapation of multimedia documents.

GPAC Open Source Software

The team maintains an Open Source platform called GPAC [314], GPAC Project on Advanced Content (http://gpac.sourceforge.net), distributed under an LGPL license. This platform offers various tools for the encoding, the delivery and the playback of multimedia content, ranging from simple audio/video to full-fledge Rich Media. These tools implement state-of-the-art algorithms, methods and protocols from many standards organizations (MPEG, W3C, IETF, ETSI) and are kept in close sync with new industrial deployments. GPAC is used by the academic world (42 citations in journals or international conferences), the industrial world (integrated in several R&D projects) and the internet community (e.g. used for iPod file management). GPAC constitues the back-bone for the implementation of the team's work (Rich Media representations and adaptation) and is often demonstrated in conferences or standardization meetings.

2.2.3 Document Imaging and Interaction

Faculty L. Likforman, M. Sigelle, C. Faure

Main events L. Likforman is the General Chair of the Document Recognition and Retrieval (DRR) 2009 and DRR 2010 conferences.

Projects DGA REI (2008-2010), GET projects : Campus Mobile (2002- 2005), GEOService (2007), i-Shpere (2008), RNRT INFRADIO (2003- 2006), TechnoVision RIMES (2006-2008)

We first showed that the use Dynamic Bayesian Networks for the recognition of either naturally of artificially degraded characters performs significantly better than other current state-of-the-art methods such as Support Vector Machines [215](L. Likforman, M. Sigelle). Also, we designed a recognition system for cursive arabic handwriting combining several Hidden Markov Model classifiers using different oriented windows [208], which proved to be one of the most performant at this moment (L. Likforman, in collaboration with C. Mokbel and R. Al-Hajj, Univ. of Balamand, Lebanon won the ICDAR 2005 competition for Arabic handwritten word recognition). A grant has been provided in 2008 by the A2IA company to the PhD student Anne-Laure Bianne for improving this system. L. Likforman took part in the specification of the TechnoVision RIMES (Written documents recognition and indexing) project goals, as well as in the RIMES evaluation in character and logo recognition (in collaboration with S. Ladjal). Télécom ParisTech was ranked on the first position for logo recognition and second, ex-aequo, for character recognition.

For image restoration with Total Variation based on graph-cuts methods, the PhD of J. Darbon and subsequent work [205, 206] have lead to a new methodology for joint restoration of Synthetic Aperture Radar amplitude and phase images for 3D reconstruction of buildings (joint work with F. Tupin et L. Denis ENSML). A new grant on this subject (funded by DGA/REI) has been accepted

and should start soon (in collaboration with J-F, Aujol (CMLA) and J-M. Nicolas). M. Sigelle has also been working in collaboration with W. Pieczinsky (Télécom SudParis), F. Tupin and D. Benboudjema on triplet Markov Random Fields AIMED TO texture analysis and indexing in the framework of the Info@Magic project.

M. Sigelle started a collaboration with I. Jermyn (INRIA ARIANA) and S. Perreau (UNISA Adelaide Australia) on the topics of (discrete) diffusion processes, which can be applied both to modelling of traffic routing in ad hoc networks and to image restoration [374, 540].

The studies of C. Faure on documents and images emphasized the role of communication and the visual modality. Digital and digitised documents are processed to facilitate information access. Layout and logical structures are automaticaly detected in document images or in semi-structured digital documents. Applications were developped for the RNTL project InfRadio for which web documents were adapted to be read and activated on the small screens of mobile devices [404]. More recently, document image analysis was performed for the digital library medic@ to assist the archivists in indexing and storing historical medical documents. New methods were proposed to structure the images of the pages and to extract relevant components such as the figure and caption pairs [274, 276, 275]. To cope with ancient fonts difficult to recognise by OCR, word spotting methods were proposed to search for word-images similar to query words [411, 308, 309]. These works for medic@ are made in collaboration with the LIPADE (Univ. Paris V). In GEOservice, a joint project between several research teams of the Institut Télécom (C. Faure was prime), the visual modality was involved in a web service. Images were combined with text to provide multimodal egocentric instructions for guiding a mobile user in a building. As a natural complement of the visual modality, the gestural modality was studied in the context of human-computer interaction where the users drew or wrote to communicate [273, 403, 440, 415, 265].

2.2.4 Audio-visual Identity/Imposture and Virtual Worlds

Faculty G. Chollet, C. Pelachaud, M. Sigelle, M. Charbit

Main events G. Chollet and C. Pelachaud, general co-chairs of IVA'07; C. Pelachaud and T. Boubekeur, co-editor special issue on Facial Modeling, IEEE Computer Graphics and Applications, to appear in 2010; C. Pelachaud co-organizer of a Workshop held in conjunction with AAMAS 2009; she is since 2007 secretary of the Humaine association on emotion; she is part of the selection committee of ANR CONTINT (since 2008), ANR Blanc CSD9 Sciences Humaines et sociales (in 2009).

Projects IST NoE BIOSECURE (2004-2007), IV2 TechnoVision (2006-2007), IST SECURE-PHONE (2005-2007), IST NoE KSpace (2005-2008), INFOM@GIC (Cap Digital) (2006-2009), ANR KIVAOU (2008-2010), ANR MYBlog3D (2006-2010), CompanionAble: IP de IST (2008-2012), ANR blanc OUISPER (2006-2009), IST IP-CALLAS (2006-2010), IST STREP-SEMAINE (2008-2011), IST NoE-SSPNet (2009-2013), COST Action 2102 (2006-2010), ANR CECIL (2009-2011), ANR GV-Lex (2009-2011), ANR IMMEMO (2009-2011)

Two main directions of investigation are present in this theme:

Biometry and Speech/Face Synthesis/Recognition/Verification

The speech group was created in 1983 when Gérard Chollet joigned Télécom-ParisTech (called ENST at the time). The focus was centered on coding, synthesis and recognition. In the 1990, speaker verification was added, followed by language identification five years ago. At that time, audio-visual speech and speaker recognition became a topic of interest. The Biosecure network of excellence was an opportunity to promote open-source software for major biometric modalities (face, voice, audio-visual speaker, signature, iris, hand shape...) This led to the publication of the book ([449]) and to the development of databases, reference systems and benchmarking protocols ([1027, 439]). The FP6-Securephone project was an opportunity to integrate audio-visual identity verification on a mobile phone. Audio-visual identification also finds applications in

video indexing (InfoM@gic project, PhD theses supported by OrangeLabs,...) Face tracking and super-resolution of faces are issues under study in the ANR-KIVAOU project and are evaluated in the context of the NIST-MBGC campaigns. Speech recognition is still a major problem for our team. It is being experimented in projects such as the ANR-MyBlog3D and the FP7-IP-Companionable in the context of Spoken Dialogue Systems. Initial results on Very Low Bit Rate Speech Coding led to a participation of G. Chollet in start-up companies such as Peer2Phone and Shankaa. Our coder still needs to be improved in terms of speaker and language independence. A similar approach is developped in the context of the ANR OUISPER project aiming at the development of a Silent Speech Interface (driven from tongue and lip movements).

Interaction and Embodied Conversational Agent

We have been developing an interactive platform of an Embodied Conversational Agent GRETA (virtual entity endowed with human-like communication capabilities) (work done within the projects ANR RNTL MyBlog-3D and IP-CALLAS) [242]. Greta is open source platform under GPL licence (http://www.tsi.enst.fr/p̃elachau/Greta/; more than 100 downloads in 1 year; it is used in several international projects as well as material for academic purposes). Two major axes are actually undertaken: the first one relates to nonverbal communicative and emotional behaviour model and the second one focuses on model of the interaction between user(s) and virtual agent(s). Models of communicative and emotional behaviours of ECAs are elaborated within the EU project IP-CALLAS and the national projects ANR CECIL, ANR GV-Lex and ANR IMMEMO. Different aspects of expressive behaviours are being modelled. Our aim is to go beyond the expression model of the six prototypical expressions of emotions that have been mainly considered so far. We are extending our model of expressive behaviours to other modalities than faces such as gesture and gaze [365, 315]. Expressions of emotions can correspond to blend of emotions (eg superposition of two emotions) (IP-CALLAS) [442]. The expression of emotion does not correspond solely to a static facial expression but it corresponds to sequential multimodal behaviours (IP-CALLAS) [332]; facial behaviours for complex emotions are going to be further defined (ANR CECIL; PhD thesis Jing Huang) from our previous work [441]; Expressive communicative behaviour for virtual agent and the humanoid robot NAO is being developed within the project ANR GV-Lex (PhD thesis Quoc Anh Le); and finally emotionally-coloured communicative behaviours is being worked out in the project ANR IMMEMO. While in most of our work we based our model on literature and on careful observation of data (IP-CALLAS; PhD thesis Sylwia Hyniewska) [331], in the project ANR IMMEMO we aim to use learning techniques to motion capture data so as to extract information on the relation between behaviour parameters. Our work on interaction is geared toward elaborating a listener model as well as the emergence of synchronous behaviours between interactants [436]. Within the STREP SEMAINE we are developing a backchannel model to simulate listener's behaviour in an interaction [323]. While the project SEMAINE deals with a dyad situation, a user dialoguing with a virtual agent, and is geared toward emotional dialogs, the project NoE SSPNet focuses on social signals. We are elaborating a model of synchrony between interactants of a conversation, synchrony being a sign of engagement. Within SSPNet we are extended our rule-based model to deal with dynamic model. Behaviours of agents are not only specified at a high-level (eg communicative intention and emotion) but they are also dynamically adapted to the user's behaviour [436].

2.3 References

2.3.1 ACL: Articles in ISI-Indexed Journals

[200] E. Argones Rua, H. Bredin, C. Garcia Mateo, G. Chollet, and D. Gonzalez Jimenez. Audio-visual speech asynchrony detection using co-inertia analysis and coupled hidden markov models. *Pattern Analysis and Applications Journal*, page 23, May 2008.

[201] C. Bergeron, C. Lamy-Bergot, G. Pau, and B. Pesquet-Popescu. Temporal scalability through adaptive m-band filterbanks for robust h264/mpeg-4 avc video coding. *special issue on "Video Analysis and Coding for Robust Transmission", EURASIP Journal on Applied Signal Processing (JASP)*, 2006(1):259 – 259, Jan. 2006.

[202] H. Bredin and G. Chollet. Audio-Visual Speech Synchrony Measure: Application to Biometrics. *EURASIP Journal on Advances in Signal Processing – Special Issue on Knowledge-Assisted Media Analysis for Interactive Multimedia Applications*, 2007(1):179–190, Jan. 2007.

[203] C. Concolato, J. Le Feuvre, and J. C. Moissinac. Design of an Efficient Scalable Vector Graphics Player for Constrained Devices. *IEEE Transactions on Consumer Electronics*, 54(2):895–903, May 2008.

[204] O. Crave, B. Pesquet-Popescu, C. Guillemot, and C. Tillier. Distributed temporal multiple description coding for robust video transmission. *EURASIP Journal on Wireless Communications and Networking*, Feb. 2008.

[205] J. Darbon and M. Sigelle. Image restoration with discrete constrained total variation part i: Fast and exact optimization. *Journal of Mathematical Imaging and Vision*, 26(3):261–276, Dec. 2006.

[206] J. Darbon and M. Sigelle. Image restoration with discrete constrained total variation part ii: Levelable functions, convex priors and non-convex cases. *Journal of Mathematical Imaging and Vision*, 26(3):277–291, Dec. 2006.

[207] J. C. Dufourd, O. Avaro, and C. Concolato. An MPEG standard for rich media services. *IEEE Multimedia*, 12(4): 60–68, Dec. 2005.

[208] R. El-Hajj, L. Likforman-Sulem, and C. Mokbel. Combining slanted-frame classifiers for improved hmm-based arabic handwriting recognition. *IEEE PAMI*, 31(7):1165–1177, July 2009.

[209] G. Feideropoulou, M. Trocan, G. Fowler, B. Pesquet-Popescu, and J.-C. Belfiore. Joint source-channel coding with partially coded index assignment for robust scalable video. *IEEE Signal Processing Letters*, 13(4):201– 204, Apr. 2006.

[854] L. Gueguen and M. Datcu. Image time-series data mining based on the information-bottleneck principle. *IEEE Transactions on Geoscience and Remote Sensing*, 45(4), Apr. 2007.

[211] M. Kaaniche, A. Benazza-Benyahia, B. Pesquet-Popescu, and J.-C. Pesquet. Vector lifting schemes for stereo image coding. *IEEE Transactions on Image Processing*, July 2009.

[212] W. Karam, H. Bredin, H. Greige, G. Chollet, and C. Mokbel. Talking-face identity verification, audiovisual forgery and robustness issues. *EURASIP Journal on Advances in Signal Processing*, page 15, Apr. 2009.

[213] R. Landais, L. Vinet, and J.-M. Jolion. Une Méthode Autonome de Ciblage de l'Optimisation d'un Système de Détection d'Objets par Analyse de la Responsabilité. *Traitement du Signal*, 24(5):353–369, 2007.

[214] G. Laroche, J. Jung, and B. Pesquet-Popescu. Rd optimized coding for motion vector predictor selection. *IEEE Trans.on CSVT*, 18(9):1247–1257, Sept. 2008.

[215] L. Likforman-Sulem and M. Sigelle. Recognition of degraded characters using dynamic bayesian networks. *Pattern Recognition*, 41(10):3092–3103, Oct. 2008.

[216] B. Marusic, S. Dobraveca, P. De Cuetos, and C. Concolato. Tiramisu: A novel approachto content representation and key management for seamless super-distribution of protected media. *Signal Processing: Image Communication*, 20(9-10):947–971, Apr. 2005.

[217] T. Maugey and B. Pesquet-Popescu. Side information estimation and new symmetric schemes for multi-view distributed video coding. *Journal of Visual Communication and Image Representation*, 19(8):589–599, Dec. 2008.

[218] W. Miled, J.-C. Pesquet, and M. Parent. A convex optimization approach for depth estimation under illumination variation. *IEEE Transactions on Image Processing*, 18(4):813–830, Apr. 2009.

[219] G. Pau, B. Pesquet-Popescu, and G. Piella. Modified M-band synthesis filter bank for fractional scalability of images. *IEEE Signal Processing Letters*, 13(6):345 – 348, June 2006.

[220] B. Pellan and C. Concolato. Authoring of Scalable Multimedia Documents. *Multimedia Tools and Applications*, 43 (3):225–252, July 2009.

[221] B. Pesquet-Popescu, H. H. Heijmans, and G. Piella. Building nonredundant adaptive wavelets by update lifting. *Applied Computational Harmonic Analysis (ACHA)*, (18):252–281, May 2005.

[222] B. Pesquet-Popescu, T. André, C. Lamy-Bergot, and A. Mokraoui-Zergainoh. Panorama des techniques de codage/décodage conjoint et techniques de diversité adaptées à la transmission de flux vidéo et html sur lien ip sans fil point/multipoint. *Traitement du Signal*, 25(5), Oct. 2008.

[223] B. Pesquet-Popescu, J. Farah, and C. Yaacoub. Feedback channel suppression in distributed video coding with adaptive rate allocation and quantization for multi-user applications. *EURASIP Journal on Wireless Communications and Networking*, July 2008.

[224] B. Pesquet-Popescu, O. Crave, and C. Guillemot. Multiple description coding with side information: Practical scheme and iterative decoding. *EURASIP Journal on Advances in Signal Processing (JASP)*, July 2009.

[225] B. Pesquet-Popescu, J.-C. Pesquet, and A. Fraysse. On the uniform quantization of a class of sparse sources. *IEEE Transactions on Information Theory*, July 2009.

[226] B. Pesquet-Popescu, C. Tillier, and I. Daribo. Motion vector sharing and bit-rate allocation for 3d video-plus-depth coding. *EURASIP Journal on Advances in Signal Processing (JASP)*, July 2009.

[227] G. Piella, B. Pesquet-Popescu, and H. Heijmans. Gradient-driven update lifting for adaptive wavelets. *Signal Processing : Image Communication*, 20(9-10):813–831, Oct. 2005.

[228] G. Piella, B. Pesquet-Popescu, H. Heijmans, and G. Pau. Combining seminorms in adaptive lifting schemes and applications to image analysis and compression. *Journal of Mathematical Imaging and Vision*, 25(2):203–226, Sept. 2006.

[229] B. Reiterer, C. Concolato, J. Lachner, J. Le Feuvre, J. C. Moissinac, S. Lenzi, S. Chessa, E. Fernández Ferrá, J. González Menaya, and H. Hellwagner. User-centric Universal Multimedia Access in Home Networks. *The Visual Computer*, 24(7-9):837–845, July 2008.

[230] C. Tillier, B. Pesquet-Popescu, and M. Van Der Schaar. Improved update operators for lifting-based motion-compensated temporal filtering. *IEEE Signal Processing Letters*, 12(2):146–149, Feb. 2005.
[231] C. Tillier, B. Pesquet-Popescu, and M. Van Der Schaar. 3-band motion-compensated temporal structures for scalable video coding. *IEEE Transactions on Image Processing*, 15(9):2545–2557, Sept. 2006.
[232] N. Tizon and B. Pesquet-Popescu. Scalable and media aware adaptive video streaming over wireless networks. *EURASIP Journal of Advances in Signal Processing (JASP)*, Feb. 2008.
[233] D. S. Turaga, M. Van Der Schaar, and B. Pesquet-Popescu. Complexity scalable motion compensated wavelet video encoding. *IEEE Transactions on Circuits and Systems for Video Technology*, 15(8):982–993, Aug. 2005.
[234] A. Zahour, B. Taconet, L. Likforman-Sulem, and W. Boussella. Overlapping and multi-touching text-line segmentation by block covering analysis. *Pattern Analysis & Applications*, 2008.
[235] L. Zouari and G. Chollet. Efficient codebook for fast and accurate low resource asr systems. *Speech Communication*, page 23, Mar. 2009.

2.3.2 ACLN: Articles in Other Refereed Journals

[236] J. Fowler and B. Pesquet-Popescu. Wavelets in source coding, communications, and networks: An overview. *special issue of the International Journal on Image and Video Processing (IJIVP) on "Wavelets in Source Coding, Communications, and Networks"*, Jan. 2007.
[237] H. H. Heijmans, G. Piella, and B. Pesquet-Popescu. Adaptive wavelets for image compression using update lifting: Quantisation and error analysis. *International Journal of Wavelets, Multiresolution and Information Processing*, 4 (1):41–63, Jan. 2006.
[238] M. Kimiaei-Asadi and J. C. Dufourd. Support de transmodage de contenus multimédia dans mpeg-21. etude et validation d'un outil de description. *Revue des sciences et technologies de l'information*, 24(7):815–835, July 2005.
[239] B. Pesquet-Popescu, J. Farah, and C. Yaacoub. New adaptive algorithms for gop size control with return channel suppression in wyner-ziv video coding. *International Journal of Digital Multimedia Broadcasting*, July 2009.
[240] C. Tillier, T. Petrisor, and B. Pesquet-Popescu. A motion-compensated overcomplete temporal decomposition for multiple description scalable video coding. *EURASIP IJIVP*, page 12, Jan. 2007.

2.3.3 ASCL: Articles in Journals Without Review Committee

[241] S. Simske, B. Pellan, and M. Shilman. Acm doceng 2008 recap. *ACM SIGWEB Newsletter*, Jan. 2009.

2.3.4 INV: Invited Talks

[242] C. Pelachaud. Modelling multimodal expression of emotion in a virtual agent. *Philosophical Transactions B*, 2009.

2.3.5 ACTI: Articles in Proceedings of International Conferences

[243] M. Antonini, M. Cagnazzo, and M. Oger. The "secure media sim" bitstream structure for video encryption and fingerprinting. In *The Smart Event*, Sophia Antipolis, France, Sept. 2009.
[244] E. Argonés, C. García, H. Bredin, and G. Chollet. Aliveness Detection using Coupled Hidden Markov Models. In *1st Spanish Workshop on Biometrics*, Girona, Espagne, June 2007.
[685] A. Ben Hadj Alaya-Feki, B. Sayrac, P. Houze, and E. Moulines. Opportunistic spectrum access with ieee 802.11 in ieee p1900.4 framework. In *Networking and Communications, 2008. WIMOB '08. IEEE International Conference on Wireless and Mobile Computing,*, pages 82–83, Oct. 2008.
[934] D. Benboudjema, F. Tupin, W. Pieczynski, M. Sigelle, and J. M. Nicolas. Unsupervised sar images segmentation using triplet markov fields and fisher noise distributions. In *IGARSS 2007*, Barcelone, Spain, July 2007.
[247] C. Bergeron, C. Lamy-Bergot, and B. Pesquet-Popescu. Adaptive m-band hierachical filterbanks for compliant temporal scalability in h.264 standard. In *Proc. IEEE ICASSP*, Philadelphia, USA, Mar. 2005.
[248] S. Brangoulo, N. Tizon, B. Pesquet-Popescu, and B. Lehembre. Video transmission over umts networks using udp/ip. In *EUSIPCO*, Florence, Italy, Sept. 2006.
[249] H. Bredin and G. Chollet. Audio-Visual Speech Synchrony Measure for Talking-Face Identity Verification. In *The 32nd International Conference on Acoustics, Speech, and Signal Processing - ICASSP2007*, Honolulu, Hawaii, USA, Apr. 2007.
[250] H. Bredin and G. Chollet. Making Talking-Face Authentication Robust to Deliberate Imposture. In *ICASSP 2008*, Las Vegas, USA, Apr. 2008.
[251] M. Cagnazzo, M. Agostini, M. Antonini, G. Laroche, and J. Jung. Motion vector quantization for efficient low bit-rate video coding. In *SPIE Visual Communications and Image Processing Conference*, San Diego, USA, Jan. 2009.
[252] M. Cagnazzo, T. Maugey, and B. Pesquet-Popescu. A differential motion estimation method for image interpolation in distributed video coding. In *International Conference on Audio, Speech and Signal Processing ICASSP*, pages 1861–1864, Taipei, Taiwan, Apr. 2009.

[253] M. Cagnazzo, W. Miled, T. Maugey, and B. Pesquet-Popescu. Image interpolation with edge-preserving differential motion refinement. In *IEEE International Conference on Image Processing*, Cairo, Egypt, Nov. 2009.
[254] C. Concolato. Generation, Streaming and Presentation of Declarative EPG. In *EuroiTV*, Leuven, Belgium, June 2009.
[255] C. Concolato and J. Le Feuvre. Playback of Mixed Multimedia Document. In *ACM Symposium on Document Engineering*, pages 219–220, São Paulo, Brazil, Sept. 2008.
[256] C. Concolato, J. Le Feuvre, and J. C. Moissinac. Timed-fragmentation of svg documents to control the playback memory usage. In *ACM Symposium on Document Engineering*, pages 121–124, Winnipeg, Canada, Aug. 2007.
[257] C. Concolato, J. Le Feuvre, and K. Park. An MPEG-based Widget System for CE and mobile devices. In *ICCE*, pages 1–2, Las Vegas, Etats-Unis, Jan. 2009.
[258] S. Corrado, M. Agostini, M. Cagnazzo, M. Antonini, G. Laroche, and J. Jung. Improving H.264 performances by quantization of motion vectors. In *Picture coding symposium*, Chicago, IL (USA), May 2009.
[259] O. Crave, G. Piella, and B. Pesquet-Popescu. Image interpolation using an adaptive invertible approach. In *EUSIPCO*, Florence, Italy, Sept. 2006.
[999] J. Darbon, M. Sigelle, and F. Tupin. The use of levelable regularization functions for MRF restoration of SAR images while preserving reflectivity. In *S&T/SPIE 19th Annual Symposium Electronic Imaging Conf. E112*, San Jose (USA), Jan. 2007.
[261] I. Daribo, C. Tillier, and B. Pesquet-Popescu. Distance dependent depth filtering in 3D warping for 3DTV. In *IEEE Multimedia Signal Processing (MMSP)*, Greece, Oct. 2007.
[262] I. Daribo, M. Kaaniche, W. Miled, M. Cagnazzo, and B. Pesquet-Popescu. Dense disparity estimation in multiview video coding. In *IEEE Workshop on Multimedia Signal Processing*, Rio de Janeiro, Bresil, Oct. 2009.
[263] S. De Bruyne, J. De Cock, R. Van de Walle, P. Hosten, M. Asbach, M. Wien, and C. Concolato. Personalized adaptation and presentation of annotated videos for mobile applications. In *3rd European Symposium on Mobile Media Delivery (EUMOB)*, Londres, United Kingdom, Sept. 2009.
[264] N. Dehak and G. Chollet. Support vector gmms for speaker verification. In *Speaker and Language Recognition Workshop, IEEE-Odyssey*, page 4, Puerto Rico, June 2006.
[265] I. Demeure, C. Faure, E. Lecolinet, J. C. Moissinac, and S. Pook. Mobile computing to facilitate interaction in lectures and meetings. In *First Int. Conf. on Distributed Frameworks for Multimedia Applications (DFMA)*, Besançon, France, Feb. 2005.
[266] I. Demeure, C. Faure, E. Lecolinet, J. C. Moissinac, and S. Pook. Mobile Computing to Facilitate Interaction in Lectures and Meetings. In *Int. IEEE Conf. on Distributed Frameworks for Multimedia Applications (DFMA)*, pages 359–366, Besançon, France, Feb. 2005.
[267] I. Demeure, C. Faure, E. Lecolinet, J. C. Moissinac, and S. Pook. Mobile computing to facilitate interaction in lectures and meetings. In *DFMA*, Besançon, France, Feb. 2005.
[1005] L. Denis, F. Tupin, M. Sigelle, and J. Darbon. Sar amplitude filtering using tv prior and its application to building delineation. In *EUSAR 08*, Friedrichhaffen, Allemagne, June 2008.
[269] J. C. Dufourd and M. Kimiaei-Asadi. Context-aware semantic adaptation of multimedia presentations. In *IEEE International Conference on Multimedia and Expo*, pages 362–365, Amsterdam, The Netherlands, July 2005.
[270] R. El-Hajj, C. Mokbel, and L. Likforman-Sulem. Combination of HMM-based classifiers for the recognition of arabic handwritten words,. In *International Conference on Document Analysis and Recognition, ICDAR'07*, Curitiba (Bresil), Sept. 2007.
[271] R. El-Hajj, C. Mokbel, and L. Likforman-Sulem. Recognition of arabic handwritten words using contextual character models. In *IS&T/SPIE Electronic Imaging Conf.*, San Jose (USA), Jan. 2008.
[272] B. Elloumi, J. C. Moissinac, O. Martinot, and E. Baynaud. Towards an authoring tool for personalizable multimedia content. In *SMAP 2008*, Prague, Dec. 2008.
[273] C. Faure. Preferences in the drawing of simple shapes. In *13th Conference of the International Graphonomics Society (IGS)*, pages 167–170, Melbourne - Australie, Nov. 2007.
[274] C. Faure and N. Vincent. Simultaneous detection of vertical and horizontal text lines based on perceptual organisation. In *IS&T/SPIE-DRR (Document Recognition and Retrieval)*, volume 7247, pages 0M1–OM8, San Jose (USA), Jan. 2009.
[275] C. Faure and N. Vincent. Document Image analysis for active reading. In *Semantically aware document processing and indexing (SADPI)*, pages 1–14, Montpellier - France, May 2007.
[276] C. Faure, K. Khurshid, and N. Vincent. Détection des composantes implicitement associées dans les images de document. In *EGC - Atelier Extraction de COnnaissance et Images*, Strasbourg, Jan. 2009.
[277] B. Fauve, H. Bredin, W. Karam, F. Verdet, A. Mayoue, G. Chollet, J. Hennebert, R. Lewis, J. Mason, C. Mokbel, and D. Petrovska. Some Results from the BioSecure Talking-Face Evaluation Campaign. In *ICASSP 2008*, Las Vegas, USA, Apr. 2008.
[278] G. Feideropoulou, J. Fowler, B. Pesquet-Popescu, and J.-C. Belfiore. Joint source-channel coding of scalable video with partially coded index assignment using reed-muller codes. In *ICIP2005*, Genova, Italie, Sept. 2005.
[279] G. Feideropoulou, B. Pesquet-Popescu, and J.-C. Belfiore. Bit-allocation algorithm for joint source-channel coding of t+2d video sequences. In *Proc. IEEE ICASSP*, Philadelphia, USA, Mar. 2005.
[1027] G. Fouquier, L. Likforman, J. Darbon, and B. Sankur. The Biosecure Geometry-based System for Hand Modality. In *IEEE ICASSP 32nd International Conference on Acoustics, Speech, and Signal Processing*, number I, pages 801–804, Honolulu, Hawaii, USA, Apr. 2007.
[281] J. Fowler, M. Tagliasacchi, and B. Pesquet-Popescu. Video coding with wavelet domain conditional replenishement and unequal error protection. In *IEEE ICIP2006*, Atlanta, GA, USA, Oct. 2006.
[282] J. E. Fowler, M. Tagliasacchi, and B. Pesquet-Popescu. Wavelet-based distributed source coding of video. In

EUSIPCO, Antalya, Turkey, Sept. 2005.

[283] A. Fraysse, B. Pesquet-Popescu, and J.-C. Pesquet. Rate-distortion results for generalized gaussian distributions. In *IEEE ICASSP*, Las Vegas, USA, Apr. 2008.

[284] A. Gentes, J.-P. Bernard, P. Horain, C. Pelachaud, D. Zhou, L. Zouari, and G. Chollet. Multimodal human machine interaction in virtual reality. In *Face2Face*, Grenoble, Oct. 2008.

[285] C. Gomes Gascon and B. Pesquet-Popescu. A simple and efficient eigenface method. In *ACIVS*, Delft, The Netherlands, Aug. 2007.

[1040] L. Gueguen and M. Datcu. The Model Based Similarity Metric. In *DCC*, page 382, Snowbird, Utah, USA, Mar. 2007.

[1043] L. Gueguen, M. Trocan, B. Pesquet-Popescu, A. Giros, and M. Datcu. Comparison of Multispectral Satellite Sequence Compression Appoaches. In *International Symposium on Signal, Circuits and Systems*, volume 1, pages 87–90, Iasi - Romania, July 2005.

[288] Y. Han, G. Liu, and G. Chollet. Goal event detection in broadcast soccer videos by combining heuristic rules with unsupervised fuzzy c-means algorithm. In *International Conference on Control, Automation, Robotics & Vision*, Hanoi, Vietnam, Dec. 2008.

[289] Y. Han, G. Liu, G. Chollet, and J. Razik. Person identity clustering in tv show videos. In *IET Visual Information Engineering Conference*, Xi'an, China, July 2008.

[290] T. Hueber, G. Aversano, G. Chollet, B. Denby, G. Dreyfus, Y. Oussar, P. Roussel, and M. Stone. Eigentongue feature extraction for an ultrasound-based silent speech interface. In *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pages 1245–1248, Honolulu, Hawaii - USA, Apr. 2007.

[291] T. Hueber, G. Chollet, B. Denby, G. Dreyfus, and M. Stone. Continuous-speech phone recognition from ultrasound and optical images of the tongue and lips. In *Interspeech*, pages 658–661, Antwerp, Belgium, Aug. 2007.

[292] T. Hueber, G. Chollet, B. Denby, M. Stone, and L. Zouari. Ouisper: Corpus based synthesis driven by articulatory data. In *International Congress of Phonetic Sciences (ICPHS)*, pages 2193–2196, Saarbrücken - Germany, Aug. 2007.

[293] T. Hueber, G. Chollet, B. Denby, G. Dreyfus, and M. Stone. Phone recognition from ultrasound and optical video sequences for a silent speech interface. In *Interspeech*, pages 2032–2035, Brisbane, Australia, Sept. 2008.

[294] T. Hueber, G. Chollet, B. Denby, G. Dreyfus, and M. Stone. Towards a segmental vocoder driven by ultrasound and optical images of the tongue and lips. In *Interspeech*, pages 2028–2031, Brisbane, Australia, Sept. 2008.

[295] T. Hueber, G. Chollet, B. Denby, and M. Stone. An ultrasound-based silent speech interface. In *Acoustics'08*, Paris, France, July 2008.

[296] T. Hueber, G. Chollet, B. Denby, and M. Stone. Acquisition of ultrasound, video and acoustic speech data for a silent-speech interface application. In *International Speech Production Seminar (ISPS)*, Strasbourg, Dec. 2008.

[297] T. Hueber, L. Benaroya, G. Chollet, B. Denby, G. Dreyfus, and M. Stone. Visuo-phonetic decoding using multi-stream and context-dependent models. In *InterSpeech*, Brighton, Sept. 2009.

[298] J. Jung, G. Laroche, and B. Pesquet-Popescu. Rd optimized competition scheme for efficient motion prediction. In *VCIP 2007, SPIE Electronic Imaging*, San Jose, CA, USA, Jan. 2007.

[299] M. Kaaniche, A. Benazza-Benyahia, J.-C. Pesquet, and B. Pesquet-Popescu. Lifting schemes for joint coding of stereoscopic pairs of satellite images. In *EUSIPCO*, Poznan, Poland, Sept. 2007.

[300] M. Kaaniche, W. Miled, B. Pesquet-Popescu, J.-C. Pesquet, and A. Benazza-Benyahia. Dense disparity map representations for stereo image coding. In *IEEE International Conference on Image Processing*, Le Caire, Égypte, Nov. 2009.

[301] A. R. Kaced and J.-C. Moissinac. Secure intermediary caching in mobile wireless networks using asymmetric cipher sequences based encryption. In *International Conference on Mobile Ad-hoc and Sensor Networks*, Beijing, China, Dec. 2007.

[302] A. R. Kaced and J.-C. Moissinac. Svg based secure universal multimedia access. In *International Conference on Signal Processing and Multimedia Applications*, Barcelone, Espagne, July 2007.

[303] A. R. Kaced and J. C. Moissinac. Protecting adaptive multimedia delivery and adaptation using proxy based approach. In *International Conference on Security and Cryptography SECRYPT*, Setubal, Portugal, Aug. 2006.

[304] W. Karam, C. Mokbel, H. Greige, and G. Chollet. Audio-visual identity verification and robustness to imposture. In *ICB*, Alghero, June 2009.

[305] Z. Kazi-Aoul, I. Demeure, and J. C. Moissinac. Towards a peer-to-peer architecture for the provision of adaptable multimedia composed documents. In *DFMA (Distributed Frame for Multimedia Applications), IEEE conference*, Penang, Malaysia, May 2006.

[306] Z. Kazi-Aoul, I. Demeure, and J. C. Moissinac. Paam: A web services oriented architecture for the adaptation of composed multimedia documents. In *Parallel and Distributed Compuing and Networks (PDCN)*, Innsbruck, Austria, Feb. 2008.

[307] Z. Kazi-Aoul, I. Demeure, and J. C. Moissinac. Paam: A web services oriented architecture for the adaptation of composed multimedia documents. In *Parallel and Distributed Computing and Networks (PDCN)*, Innsbruck, Austria, Feb. 2008.

[308] K. Khurshid, C. Faure, and N. Vincent. Feature-based word spotting in ancient printed documents. In *8th International Workshop on Pattern Recognition in Information Systems, PRIS 2008*, pages 193–198, Barcelone - Espagne, June 2008.

[309] K. Khurshid, C. Faure, and N. Vincent. Fusion of word spotting and spatial information for figure caption retrieval in historical document image. In *Inter. Conference on Document Analysis and Recognition (ICDAR)*, Barcelone Espagne, July 2009.

[310] K. Khurshid, I. Siddiqi, C. Faure, and N. Vincent. Comparison of niblack inspired binarization methods for ancient

documents. In *IS&T/SPIE-DRR (Document Recognition and Retrieval)*, volume 7247, pages 0U1–0U9, San Jose (USA), Jan. 2009.

[311] R. Landais, H. Bredin, L. Zouari, and G. Chollet. Vérification audiovisuelle de la parole. In *TAIMA*, pages 27–32, Hammamet, Tunisie, May 2007.

[312] G. Laroche, J. Jung, and B. Pesquet-Popescu. A spatio-temporal competing scheme for the rate-distortion optimized selection and coding of motion vectors. In *EUSIPCO*, Florence, Italy, Sept. 2006.

[313] G. Laroche, J. Jung, and B. Pesquet-Popescu. Competition based prediction for skip mode motion vector using macroblock classification for the h.264 jm kta software. In *ACIVS*, Delft, The Netherlands, Aug. 2007.

[314] J. Le Feuvre, C. Concolato, and J. C. Moissinac. Gpac, open source multimedia framework. In *ACM Multimedia*, pages 1009 – 1012, Augsburg, Allemagne, Sept. 2007. ACM New York, NY, USA.

[315] Z. Li, P. Horain, A.-M. Pez, and C. Pelachaud. Statistical gesture models for 3d motion capture. In *Gesture Workshop 2009*, Bielefeld, D, Feb. 2009.

[316] L. Likforman-Sulem and M. Sigelle. Combination of dynamic bayesian network classifiers for the recognition of degraded characters. In *IS&T/SPIE-DRR (Document Recognition and Retrieval)*, volume 7247, pages OH1–OH10, San Jose (USA), Jan. 2009.

[317] L. Likforman-Sulem and M. Sigelle. Recognition of broken characters from historical printed books using dynamic bayesian networks. In *ICDAR 2007*, Univ. Parana, Curitiba (Bresil), Sept. 2007.

[318] L. Likforman-Sulem and M. Sigelle. Recognition of degraded handwritten digits using dynamic bayesian networks. In *IS&T/SPIE 19th Annual Symposium Electronic Imaging Conf. E114*, San Jose (USA), Jan. 2007.

[319] L. Likforman-Sulem and A. Vinciarelli. Hmm-based recognition of handwritten words crossed-out with different kinds of strokes. In *ICFHR 08*, Montreal, Canada, Aug. 2008.

[320] T. Maugey, T. André, B. Pesquet-Popescu, and J. Farah. Analysis of error propagation due to frame losses in a distributed video coding system. In *European Conference of Signal Processing*, Lausanne, Switzerland, Aug. 2008.

[321] T. Maugey, W. Miled, M. Cagnazzo, and B. Pesquet-Popescu. Fusion schemes for multiview distributed video coding. In *EUSIPCO*, Glasgow, Royaume Uni, Aug. 2009.

[322] T. Maugey, W. Miled, and B. Pesquet-Popescu. Dense disparity estimation in a multi-view distributed video coding system. In *International Conference on Acoustics, Speech, and Signal Processing*, Taipei, Taiwan, Apr. 2009.

[323] M. McRorie, I. Sneddon, E. Bevacqua, E. de Sevin, and C. Pelachaud. A model of personality and emotional traits. In *International Working Conference on Intelligent Virtual Agents*, Amsterdam, NL, Sept. 2009.

[324] W. Miled and B. Pesquet-Popescu. A convex programming approach for color stereo matching. In *IEEE International Workshop on Multimedia Signal Processing*, Queensland, Australie, Oct. 2008.

[325] W. Miled, J.-C. Pesquet, and M. Parent. Wavelet-constrained stereo matching under photometric variations. In *SPIE International Symposium on Optical and Digital Image Processing*, Strasbourg, France, Apr. 2008.

[326] W. Miled, T. Maugey, M. Cagnazzo, and B. Pesquet-Popescu. Image interpolation with dense disparity estimation in multiview distributed video coding. In *International Conference on Distributed Smart Cameras*, Como, Italie, Sept. 2009.

[327] W. Miled, B. Pesquet-Popescu, and W. Chérif. A variational framework for simultaneous motion and disparity estimation in a sequence of stereo images. In *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Taipei, Taiwan, Apr. 2009.

[328] J.-C. Moissinac. Re-doing papyrus. In *SVG Open 2009*, Mountain View, USA, Oct. 2009.

[329] J. C. Moissinac and E. Guichard. One thousand billion of... maps (with svg and cocoon). In *SVG Open 2005*, Enschede - The Netherlands, Aug. 2005.

[330] J. C. Moissinac, Z. Kazi-Aoul, and I. Demeure. Sémantique pour la composition de web services d'adaptation multimédia. In *7th International Conference on New Technologies of Distributed Systems (NOTERE'07)*, Marrakech, July 2007.

[331] R. Niewiadomski, S. Hyniewska, and C. Pelachaud. Evaluation of multimodal sequential expressions of emotions in eca. In *International Conference on Affective Computing and Intelligent Interaction*, Amsterdam, NL, Sept. 2009.

[332] R. Niewiadomski, S. Hyniewska, and C. Pelachaud. Modeling emotional expressions as sequences of behaviors. In *International Working Conference on Intelligent Virtual Agents*, Amsterdam, NL, Sept. 2009.

[333] S. Parrilli, M. Cagnazzo, and B. Pesquet-Popescu. Distortion evaluation in transform domain for adaptive lifting schemes. In *Multimedia Signal Processing*, Cairns, Australie, Oct. 2008.

[334] S. Parrilli, M. Cagnazzo, and B. Pesquet-Popescu. Estimation of quantization noise for adaptive-prediction lifting schemes. In *IEEE Workshop on Multimedia Signal Processing*, Rio de Janeiro, Bresil, Oct. 2009.

[335] G. Pau and B. Pesquet-Popescu. Image coding with rational spatial scalability. In *EUSIPCO*, Florence, Italy, Sept. 2006.

[336] G. Pau and B. Pesquet-Popescu. Four-band linear-phase orthogonal spatial filter bank for subband video coding. In *IEEE ICASSP*, Philadelphia, USA, Mar. 2005.

[337] G. Pau and B. Pesquet-Popescu. Comparison of spatial m-band filter banks for t+2d video coding. In *VCIP 2005*, Pékin, Chine, July 2005.

[338] G. Pau, J. Vieron, and B. Pesquet-Popescu. Video coding with flexible mctf structures for low end-to-end delay. In *IEEE ICIP*, Gênes, Italie, Aug. 2005.

[339] B. Pellan and C. Concolato. Adaptation of Scalable Multimedia Documents. In *ACM Symposium on Document Engineering*, pages 32–41, São Paulo, Brazil, Sept. 2008.

[340] B. Pellan and C. Concolato. Scalable multimedia documents for digital radio. In *ACM Symposium on Document Engineering*, pages 221–222, São Paulo, Brazil, Sept. 2008.

[341] B. Pellan and C. Concolato. Spatial Scene Adaptation in Broadcast Environment. In *IEEE International Conference on Multimedia and Expo*, pages 389–392, Hannovre, Allemagne, June 2008.
[342] B. Pellan and C. Concolato. Media-driven dynamic scene adaptation. In *8th International Workshop on Image Analysis for Multimedia Interactive Services*, pages 67–70, Thira, Santorini, Greece, June 2007.
[343] B. Pellan and C. Concolato. Summarization of Scalable Multimedia Documents. In *Workshop on Image Analysis for Multimedia Interactive Services*, pages 304–307, Londres, Angleterre, May 2009.
[344] P. Perrot and G. Chollet. La voix: un atout utile à l'identification ? In *WISG (Worshop Interdisciplinaire sur la Sécurité Globale)*, Troyes, Jan. 2008.
[345] P. Perrot and G. Chollet. Les mondes virtuels : un nouvel espace ouvert à la criminalité. In *WISG (Worshop Interdisciplinaire sur la Sécurité Globale)*, Troyes, Jan. 2009.
[346] P. Perrot, H. Bredin, and G. Chollet. Biometrics and forensic sciences: the same quest for identification? In *2007 International Crime Science Conference*, London, UK, July 2007.
[347] P. Perrot, C. Preteux, S. Vasseur, and G. Chollet. Detection and recognition of voice disguise. In *2007 International Association for Forensic Phonetics and Acoustics Conference*, page 3, Plymouth, UK, July 2007.
[348] P. Perrot, M. Morel, J. Razik, and G. Chollet. Vocal forgery in forensic sciences. In *e-Forensics 2009*, Adelaide, Australie, Jan. 2009.
[349] P. Perrot, J. Razik, M. Morel, H. Khemiri, and G. Chollet. Techniques de conversion de voix appliquées à l'imposture. In *TAIMA*, Hammamet, May 2009.
[350] B. Pesquet-Popescu and N. Tizon. Adaptive video streaming with long term feedbacks. In *IEEE ICIP'09*, Cairo, Egypt, Nov. 2009.
[351] B. Pesquet-Popescu, G. Piella, and G. Pau. Représentations multirésolution 2d par lifting adaptatif. In *8-ème Colloque Franco-Roumain de Mathématiques Appliquées*, Chambéry, France, Aug. 2006.
[352] B. Pesquet-Popescu, O. Crave, and C. Guillemot. Multiple description video coding and iterative decoding of ldpca codes with side information. In *ICASSP'09*, Taipei, Taiwan, Apr. 2009.
[353] B. Pesquet-Popescu, J. Farah, and C. Yaacoub. A genetic frame fusion algorithm for side information enhancement in wyner-ziv video coding. In *EUSIPCO'09*, Glasgow, UK, Aug. 2009.
[354] B. Pesquet-Popescu, J. Farah, and C. Yaacoub. A genetic algorithm for side information enhancement in distributed video coding. In *IEEE ICIP'09*, Cairo, Egypt, Nov. 2009.
[355] B. Pesquet-Popescu, J. Farah, and C. Yaacoub. Content adaptive gop size control with feedback channel suppression in distributed video coding. In *IEEE ICIP'09*, Cairo, Egypt, Nov. 2009.
[356] B. Pesquet-Popescu, J. Farah, and C. Yaacoub. Improving hash-based wyner-ziv video coding using genetic algorithms. In *MobiMedia'09*, London, UK, Sept. 2009.
[357] B. Pesquet-Popescu, J. Garbas, and A. Kaup. Optimized anisotropic spatial transforms for wavelet-based scalable multi-view video coding. In *VCIP, SPIE conf no EI124-83*, San Diego, USA, Jan. 2009.
[358] B. Pesquet-Popescu, J. Jung, and G. Laroche. Intra prediction with 1d macroblock partitioning for image and video coding. In *VCIP, SPIE conf no EI124-83*, San Diego, USA, Jan. 2009.
[359] B. Pesquet-Popescu, C. Lamy-Bergot, B. Gadat, and B. Candillon. A simple multiple description coding scheme for improved peer-to-peer video distribution over mobile links. In *PCS'09*, Chicago, USA, May 2009.
[360] B. Pesquet-Popescu, M. Trocan, and J. E. Fowler. Block-based graph-cut rate allocation for subband image compression and transmission over wireless networks. In *MobiMedia'09*, London, UK, Sept. 2009.
[361] T. Petrisor, B. Pesquet-Popescu, and J.-C. Pesquet. Perfect Reconstruction in Reduced Redundancy Wavelet-based Multiple Description Coding of Images. In *EUSIPCO '05*, Antalya, Turquie, Sept. 2005.
[362] T. Petrisor, B. Pesquet-Popescu, and J.-C. Pesquet. Wavelet-based multiple description coding of images with iterative convex optimization techniques. In *International Conference on Image Processing (ICIP) '05*, Genes, Italie, Sept. 2005.
[363] T. Petrisor, C. Tillier, B. Pesquet-Popescu, and J.-C. Pesquet. Comparison of redundant wavelet schemes for multiple description coding of video sequences. In *Proc. of IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Philadelphia, U.S.A., Mar. 2005.
[364] T. Petrisor, B. Pesquet-Popescu, and J.-C. Pesquet. Redundant wavelet schemes for multiple description coding. In *WaVE2006*, Lausanne, Switzerland, July 2006.
[365] A.-M. Pez, C. Pelachaud, Z. Li, and P. Horain. Creating a library of gestures with variants. In *Gesture Workshop 2009*, Bielefeld, D, Feb. 2009.
[1114] G. Piella, M. Campedel, and B. Pesquet-Popescu. Adaptive wavelets for image representation and classification. In *EUSIPCO'05*, Sept. 2005.
[367] G. Piella, G. Pau, and B. Pesquet-Popescu. Adaptive lifting schemes combining seminorms for lossless image compression. In *IEEE ICIP*, Gênes, Italie, Aug. 2005.
[368] M. Ransburg, H. Hellwagner, B. Pellan, C. Concolato, R. Cazoulat, S. De Zutter, C. Poppe, R. Van De Walle, and A. Hutter. Dynamic and distributed adaptation of scalable multimedia content in a context-aware environment. In *European Symposium on Mobile Media Delivery*, Alghero, Sardinia, Italy, Sept. 2006.
[369] B. Reiterer, C. Concolato, J. Lachner, J. Le Feuvre, J. C. Moissinac, S. Lenzi, S. Chessa, E. Fernández Ferrá, J. González Menaya, and H. Hellwagner. User-centric Universal Multimedia Access in Home Networks. In *Computer Graphics International*, Istanbul, Turquie, June 2008.
[370] M. Repetto, S. Mangialardi, R. Rapuzzi, C. Concolato, J. Le Feuvre, and R. Bolla. A Transparent Session Migration Scheme for Real-Time Multimedia Streaming. In *International Conference on MOBILe Wireless MiddleWARE, Operating Systems, and Applications*, Berlin, Germany, Apr. 2009.
[371] R. Ricci, G. Chollet, J. Koreman, S. Jassim, M. Olivar-Dimas, S. Garcia-Salicetti, and P. Soria-Rodriguez. Securephone: a mobile phone with biometric authentication and e-signature support for dealing secure transactions

on the fly. In *SPIE Symposium on Mobile Multimedia / Image Processing for Military and Security Applications.*, Orlando, Florida, Apr. 2006.
[372] A. Robert, I. Amonou, and B. Pesquet-Popescu. Improving dct-based coders through block oriented transforms. In *8th International Conference on Advanced Concepts for Intelligent Vision Systems*, Sept. 2006.
[373] A. Robert, I. Amonou, and B. Pesquet-Popescu. Improving intra mode coding in h.264/avc through block oriented transforms. In *IEEE MMSP*, Oct. 2006.
[374] M. Sigelle, I. Jermyn, S. Perreau, and A. Jayasuriya. Lattice green functions and diffusion for modelling traffic routing in ad hoc networks. In *PHYSCOMNET 2009*, Seoul (Sud-Coree), June 2009.
[375] C. Tillier, O. Crave, B. Pesquet-Popescu, and C. Guillemot. A comparison of four video multiple description coding schemes. In *EUSIPCO*, Poznan, Poland, Sept. 2007.
[376] N. Tizon and B. Pesquet-Popescu. An adaptive synthesis filter bank for image decoding with fractional scalability. In *IEEE Multimedia ignal Processing (MMSP)*, Greece, Oct. 2007.
[377] B. U. Toreyin, M. Trocan, E. Cetin, and B. Pesquet-Popescu. Linear and nonlinear temporal prediction employing lifting structures for scalable video coding. In *EUSIPCO*, Florence, Italy, Sept. 2006.
[378] B. U. Toreyin, M. Trocan, B. Pesquet-Popescu, and E. Cetin. LMS-based adaptive prediction for scalable video coding. In *ICAASP*, May 2006.
[379] M. Trocan and B. Pesquet-Popescu. Video coding with fully separable wavelet and wavelet packet transforms. In *VCIP 2007, SPIE Electronic Imaging*, San Jose, CA, USA, Jan. 2007.
[380] M. Trocan and B. Pesquet-Popescu. Scene-cut processing in motion compensated temporal filtering. In *ACIVS*, Anvers, Belgium, Sept. 2005.
[381] M. Trocan and B. Pesquet-Popescu. Graph-cut rate-distortion optimization for subband image compression. In *EUSIPCO*, Poznan, Poland, Sept. 2007.
[382] M. Trocan, C. Tillier, and B. Pesquet-Popescu. Joint wavelet packets for groups of frames in mctf. In *SPIE Optics & Photonics 2005*, San Diego, USA, Aug. 2005.
[383] M. Trocan, C. Tillier, B. Pesquet-Popescu, and M. Van Der Schaar. A 5-band temporal lifting scheme for video surveillance. In *Proc. of IEEE International Workshop on MultiMedia Signal Processing (MMSP)*, Victoria B.C., Canada, Oct. 2006.
[384] M. Trocan, B. Pesquet-Popescu, and C. Tillier. A sliding window implementation of the 5-band motion compensated temporal lifting scheme. In *IEEE Non-Linear Signal and Image Processing Conference (NSIP)*, Bucharest, Romania, Sept. 2007.
[385] N. Vasylieva, M. Sazhok, T. Vintsiuk, and G. Chollet. Acoustic-phonetic model for syllable speech recognition output processing. In *XII th International Conference on Speech and Computer (SPECOM)*, Moscow, Russia, Oct. 2007.
[386] J. Wei, J. Dang, and P. Perrier. Observation and Modeling of Lingual Coarticulation in the Planning Stage. In *AFCP Workshop Coarticulation: cues,direction, and representation*, Montpellier, France, Dec. 2007.
[387] C. Yaacoub, J. Farah, F. Marx, and B. Pesquet-Popescu. Performance analysis of a distributed video coding system - application to broadcasting over an error-prone channel. In *EUSIPCO*, Poznan, Poland, Sept. 2007.
[388] C. Yaacoub, J. Farah, F. Marx, and B. Pesquet-Popescu. A cross-layer approach for dynamic rate allocation in h.264 multi-user video streaming. In *14th IEEE International Conference on Electronics, Circuits and Systems (ICECS)*, Marrakech, Morocco, Dec. 2007.
[389] C. Yaacoub, J. Farah, and B. Pesquet-Popescu. Joint source-channel wyner-ziv coding in wireless video sensor networks. In *IEEE ISSPIT*, Cairo, Dec. 2007.
[390] C. Yaacoub, J. Farah, and B. Pesquet-Popescu. Dynamic rate allocation with variable quantization in multi-sensor wyner-ziv video coding systems. In *3rd Int. Symposium on Communications, Control and Signal Processing (ISCCSP)*, Malta, Mar. 2008.
[391] G. Yazbek, C. Mokbel, and G. Chollet. Video segmentation and compression using hierarchies of gaussian mixture models. In *ICASSP*, Honolulu, Apr. 2007.
[392] L. Yu, F. Ma, A. Jayasuriya, M. Sigelle, and S. Perreau. A New Contour Detection Approach in Mammogram Using Rational Wavelet Filtering and MRF Smoothing. In *Digital Image Computing: Techniques and Applications (DICTA)*, Adelaide Australie, Dec. 2007.
[393] A. Zahour, L. Likforman-Sulem, W. Boussellaa, and B. Taconet. Text line segmentation of historical arabic documents. In *ICDAR'07*, Curitiba (Bresil), Sept. 2007.
[394] L. Zouari and G. Chollet. Sélection de paramètres pour la discrimination parole/non parole d'émissions radio diffusées. In *Traitement et Analyse de l'Information : Méthodes et Applications (TAIMA)*, Hammamet (Tunisie), May 2007.
[395] L. Zouari and G. Chollet. Speech transcription for eca animation. In *Acoustics'08*, Paris, July 2008.
[396] L. Zouari and G. Chollet. Multi-level gaussian selection for accurate low-resource asr systems. In *3rd Baltic Conference on Human Language Technologies*, Kaunas en Lituanie, Oct. 2007.
[397] L. Zouari and G. Chollet. Sélection multi-niveaux des gaussiennes pour des systèmes embarqués. In *Reconnaissance des Formes et Intelligence Artificielle (RFIA)*, Amiens, Jan. 2008.
[398] L. Zouari, H. Khemiri, J. Razik, A. Amehraye, and G. Chollet. Reconnaissance de la parole en temps réel pour le dialogue oral. In *TAIMA*, Hammamet, May 2009.

2.3.6 ACTN: Articles in Proceedings of French Conferences

[1170] D. Benboudjema, F. Tupin, W. Pieczynski, M. Sigelle, and J. M. Nicolas. Modélisation et segmentation non supervisée d'images RSO par champs de markov triplets et lois de fisher. In *GRETSI*, Troyes, Sept. 2007.

[400] C. Concolato, J. Le Feuvre, and J. C. Moissinac. Comparaison des méthodes de transport de séquences de graphiques animés. In *COmpression et REprésentation des Signaux Audiovisuels*, Montpellier, France, Nov. 2007.

[401] I. Daribo, C. Tillier, and B. Pesquet-Popescu. Filtrage de la profondeur pour le plaquage de la texture dans la télévision 3D. In *CORESA*, Montpellier, France, Nov. 2007.

[402] J. Farah, C. Yaacoub, F. Marx, and B. Pesquet-Popescu. Analyse des performances d'un système de compression distribuée de séquences vidéo transmises sur un lien non fiable. In *Colloque GRETSI*, Troyes, Sept. 2007.

[403] C. Faure. Préférences et variabilité dans les tracés de formes simples. In *CIFED'06 (Colloque Internatinal Francophone sur l'Ecrit et le Document)*, pages 163–168, Fribourg, Suisse, Sept. 2006.

[404] C. Faure, P. Benci, A. Danzart, and E. Lecolinet. Conception de services mobiles pour étudiants. In *UbiMob'06*, Paris, Sept. 2006.

[405] A. Kaced and J. C. Moissinac. Sécurisation des flux multimédia adaptables-proposition d'un schéma de signature sur des proxies. In *Ubimob*, Grenoble, June 2005.

[406] A. R. Kaced and J. C. Moissinac. Multimedia content authentication for proxy-side adaptation. In *IEEE International Conference on Digital Telecommunications ICDT*, Cap Esterel, Côte d'Azur, France, Sept. 2006.

[407] A. R. Kaced and J. C. Moissinac. Semafor: a framework for authentication of adaptive multimedia content and delivery for heterogeneous networks. In *IEEE International Conference on Internet Surveillance and Protection ICISP*, Cap Esterel, Côte d'Azur, France, Aug. 2006.

[408] A. R. Kaced and J. C. Moissinac. La sécurité, problème majeur pour les plates-formes de diffusion de flux multimédia adaptable. In *SSTIC 2006*, Rennes, May 2006.

[409] A. R. Kaced and J. C. Moissinac. Sécurité dans les plates-formes de diffusion de flux multimédia adaptables. In *3rd French-speaking conference on Mobility and uibquity computing UbiMob*, Paris, France, Sept. 2006.

[410] Z. Kazi-Aoul, I. Demeure, and J. C. Moissinac. Vers un système d'adaptation de documents multimédia dans un environnement p2p. In *Conference sur les Nouvelles Technologies de la Répartition (NOTERE'06)*, Toulouse, France, June 2006.

[411] K. Khurshid, C. Faure, and N. Vincent. Recherche de mots dans des images de documents par appariement de caractères. In *CIFED'08 (Colloque Internatinal Francophone sur l'Ecrit et le Document)*, page 91:96, Rouen - France, Oct. 2008.

[412] G. Laroche, J. Jung, and B. Pesquet-Popescu. Codage de vecteurs mouvement par compétition de prédicteurs spatio-temporels dans le standard h.264. In *CORESA*, Caen, France, Nov. 2006.

[413] G. Laroche, J. Jung, and B. Pesquet-Popescu. Adaptation orientée contenu pour le codage par compétition des prédicteurs de mouvement. In *CORESA*, Montpellier, France, Nov. 2007.

[414] E. Lecolinet, C. Faure, I. Demeure, J. C. Moissinac, and S. Pook. Augmentation de cours et de réunion dans un campus. In *Ubimob*, Grenoble, France, May 2005.

[415] E. Lecolinet, C. Faure, I. Demeure, J. C. Moissinac, and S. Pook. Augmentation de cours et de réunion dans un campus. In *Conf. Mobilité et Ubiquité*, pages 161–168, May 2005.

[416] T. Maugey, M. Wided, M. Cagnazzo, and B. Pesquet-Popescu. Méthodes denses d'interpolation de mouvement pour le codage vidéo distribué monovue et multivue. In *Colloque GRETSI - Traitement du Signal et des Images*, Dijon, France, Sept. 2009.

[417] W. Miled, I. Daribo, and B. Pesquet-Popescu. Estimation conjointe disparité mouvement pour le codage de séquences vidéo multi-vues. In *22ème Colloque Traitement du Signal et des Images GRETSI*, Dijon, France, Sept. 2009.

[418] J.-C. Moissinac, A. Demeure, and Z.-I. Kazi-Aoul. Services d'adaptation de contenus multimédia, composition de services et pair-à-pair. In *CRIMES 09*, Saint-Denis de La Réunion, France, Nov. 2009.

[419] B. Pesquet-Popescu, J. Farah, and C. Yaacoub. Nouvelle technique d'adaptation dynamique de la taille du gop dans le codage wyner-ziv des séquences vidéo. In *GRETSI'09*, Dijon, France, Sept. 2009.

[420] B. Pesquet-Popescu, J. Farah, and C. Yaacoub. Nouvelle technique de génération de l'information adjacente en codage vidéo distribué basée sur les algorithmes génétiques. In *GRETSI'09*, Dijon, France, Sept. 2009.

[421] B. Pesquet-Popescu, C. Guillemot, T. Maugey, and J.-P. Gauthier. Amélioration du modèle statistique de bruit pour le codage vidéo distribué. In *GRETSI'09*, Dijon, France, Sept. 2009.

[422] B. Pesquet-Popescu, J.-C. Pesquet, and A. Fraysse. Une méthode d'allocation de débit basse-résolution pour des données parcimonieuses. In *GRETSI'09*, Dijon, France, Sept. 2009.

[423] T. Petrisor, A. Fraysse, B. Pesquet-Popescu, and J.-C. Pesquet. Une nouvelle approche du codage par descriptions multiples, utilisant des représentations linéaires creuses. In *Gretsi*, Troyes, France, Sept. 2007.

[424] T. Petrisor, A. Fraysse, B. Pesquet-Popescu, and J.-C. Pesquet. Une autre approche au codage par descriptions multiples, utilisant des représentations creuses. In *GRETSI*, Troyes, Sept. 2007.

[425] A. Robert, I. Amonou, and B. Pesquet-Popescu. Amélioration de codeurs dct par orientation des blocs de la transformée. In *CORESA*, Caen,France, Nov. 2006.

[426] A. Robert, I. Amonou, and B. Pesquet-Popescu. Amélioration du codage h.264 par orientation des blocs de la transformée. In *CORESA*, Montpellier, France, Nov. 2007.

[427] C. Tillier, T. Petrisor, B. Pesquet-Popescu, and J.-C. Pesquet. Codage par descriptions multiples pour la transmission video. In *GRETSI '05*, Louvain-la-Neuve, Belgique, Sept. 2005.

[428] N. Tizon, B. Pesquet-Popescu, and B. Lehembre. Streaming vidéo avec prise en compte du contenu de l'image pour l'allocation de ressources dans un réseau de type 3gpp. In *CORESA*, Nov. 2007.

2.3.7 COM: Talks in Conferences Which Do Not Publish Proceedings

[429] J. Bernard, G. Chollet, A. Gentès, P. Horain, C. Pelachaud, D. Zhou, and L. Zouari. Multimodal human machine interaction in virtual reality. In *face2face*, Grenoble, Oct. 2008.
[430] H. Bredin and G. Chollet. Synchronisation Voix/Lèvres pour la Vérification d'Identité. In *Journée Jeunes Chercheurs - GDR-ISIS - Visage/Geste/Mouvement*, Paris, France, Oct. 2006.
[431] G. Chollet, A. Esposito, A. Gentes, P. Horain, W. Karam, Z. Li, C. Pelachaud, P. Perrot, D. Petrovska, D. Zhou, and L. Zouari. Multimodal human machine interactions in virtual and augmented reality. In *COST-2102 School*, page 23, Vietri, June 2008.
[432] G. Chollet, A. Amehraye, H. Khemiri, C. Mokbel, J. Razik, and L. Zouari. Spoken dialogue in virtual worlds. In *COST-2102 School*, Dublin, Mar. 2009.
[433] Y. Han, J. Razik, G. Chollet, and G. Liu. Speaker retrieval for tv show videos by associating audio speaker recognition result to visual faces. In *K-Space PhD Jamboree Workshop*, Paris France, July 2008.
[434] J. Razik, P. Perrot, and G. Chollet. voice conversion: a toy, a threat or a forensic tool. In *YESS Identity Management*, Washington - USA, July 2009.

2.3.8 OS: Books and Book Chapters

[435] B. Abboud, H. Bredin, G. Aversano, and G. Chollet. *Audio-Visual Identity Verification: an Introductory Overview*, pages 118–134. Y. Stylianou (ed.) Springer Verlag, LNCS-4391, 2007.
[436] E. Bevacqua, K. Prépin, R. Niewiadomski, E. de Sevin, and C. Pelachaud. *Towards an Interactive Conversational Virtual Companion*. J. Benjamins publ. Y. Wilks (Ed), 2009.
[437] G. Chollet, R. Landais, H. Bredin, T. Hueber, C. Mokbel, P. Perrot, and L. Zouari. Some experiments in audio-visual speech processing. In M. Chetouani, editor, *Advances in Non-Linear Speech Processing*, chapter Some experiments in Audio-visual Speech Processing, page 32. Springer Verlag, Paris, 2007.
[438] G. Chollet, A. Esposito, A. Gentès, P. Horain, W. Karam, Z. Li, C. Pelachaud, P. Perrot, D. Petrovska-Delacretaz, D. Zhou, and L. Zouari. Multimodal human machine interactions in virtual and augmented reality. In A. Esposito, editor, *Multimodal Signals: Cognitive and Algorithmic Issues Interaction*, chapter Multimodal Human Machine Interactions in Virtual and Augmented Reality., page 24. Springer, 2009.
[439] H. Dutagaci, G. Fouquier, E. Yoruk, B. Sankur, L. Likforman-Sulem, and J. Darbon. *A Reference Biometric System based on Hand Modality,*. Springer, 2008.
[440] C. Faure. *Le geste graphique*, pages 217–247. Hermès-Lavoisier, Paris, 2006.
[441] R. Niewiadomski, S. Hyniewska, M. Mancini, and C. Pelachaud. Emotional behaviours in embodied conversational agents. In E. R. K. Scherer, T. Banziger, editor, *A blueprint for Affective Computing: a sourcebook and manual*. Oxford, 2009.
[442] R. Niewiadomski, S. Hyniewska, and C. Pelachaud. Modélisation des expressions faciales des émotions. In C. Pelachaud, editor, *Systèmes d'Interaction Emotionnelle*. Hermes, 2009.
[443] C. Pelachaud. Les émotions dans l'interaction homme-machine. In *Informatique et Sciences Cognitives : influences ou confluences ?* C. Garbay and D. Kaiser (Eds); collection "Cogniprisme" (co-édition Ophrys/MSH), 2009.
[444] C. Pelachaud. *Systèmes d'Interaction Emotionnelle*. Hermes, 2009.
[445] P. Perrot, G. Aversano, and G. Chollet. Voice disguise and automatic detection, review and program. In Y. Stylianou, editor, *Progress in Non-Linear Speech Processing*. Springer-Verlag, LNCS-4391, 2007.
[446] B. Pesquet-Popescu, S. Li, and M. Van Der Schaar. *Scalable Video Coding for Adaptive Streaming Applications*. Elsevier, 2007.
[447] B. Pesquet-Popescu, M. van der Schaar, and S. Z. Li. Scalable video coding for adaptive streaming applications. In *Multimedia over IP and Wireless Networks*. Elsevier, 2007.
[448] D. Petrovska, A. El Hannani, and G. Chollet. Automatic speaker verification, state of the art and current issues. In Y.Stylianou, editor, *Progress in Non-Linear Speech Processing*. Springer-Verlag, LNCS-4391, 2007.
[449] D. Petrovska-Delacrétaz, G. Chollet, and B. Dorizzi, editors. *Guide to Biometric Reference Systems and Performance Evaluation.* Computer Imaging, Vision, PR and Graphics. Springer, 2009.

2.3.9 DO: Journal or Proceedings Edition

[450] C. Pelachaud, J.-C. Martin, E. Andre, G. Chollet, K. Karpouzis, and D. Pelé, editors. *Intelligent Virtual Agents*, Paris, Sept. 2007. Springer Verlag.

2.3.10 AP: Patents, Registered Softwares

[451] S. Brangoulo, R. Leonardo, B. Pesquet-Popescu, M. Mrak, and J. Xu. Draft status report on wavelet video coding exploration. Technical Report N7571, Nice, France, Oct. 2005.
[452] S. Brangoulo, G. Pau, and B. Pesquet-Popescu. Integration of bidirectional joint motion estimation for vidwav software. Technical Report m13011, Bangkok, Thailand, Jan. 2006.
[453] C. Concolato. Text of 14496-20:dcor (editor's input). Technical Report M13729, Klagenfurt, Austria, July 2006.

[454] C. Concolato. Usage of laser content in mpeg-4 systems environments. Technical Report M12069, Busan, Korea, Apr. 2005.
[455] C. Concolato. Clarification on usages of iso/iec 14496-20 by other standardization bodies. Technical Report N10449, Lausanne, Suisse, Feb. 2009.
[456] C. Concolato. Requirements v3 for a new bifs profile to support interactive digital radio. Technical Report N10567, Maui, USA, Apr. 2009.
[457] C. Concolato. Call for proposal on additional bifs technologies for interactive services for digital radio. Technical Report N10568, Maui, USA, Apr. 2009.
[458] C. Concolato. Mpeg-4 part 1 fourth edition. Technical Report N10574, Maui, USA, Apr. 2009.
[459] C. Concolato. Mpeg-4 laser white paper. Technical Report N7507, Poznan, Poland, July 2005.
[460] C. Concolato and P. De Cuetos. An implementation of the mpeg-21 file format. Technical Report M12067, Busan, Korea, Apr. 2005.
[461] C. Concolato and J. Le Feuvre. On saf global streams. Technical Report m13789, Hangzhou, June 2006.
[462] C. Concolato and J. Le Feuvre. On laser waiting tree. Technical Report m13790, Hangzhou, Sept. 2006.
[463] C. Concolato and J. Le Feuvre. Comments and proposal for laser amendment 2 on scene adaptation. Technical Report M15791, Turin, Italie, Sept. 2008.
[464] C. Concolato and J. Le Feuvre. Comments on laser amendment 3 on presentation of structured information. Technical Report M15792, Turin, Italie, Sept. 2008.
[465] C. Concolato and J. Le Feuvre. Editorial and technical inputs for laser sofcd. Technical Report M12340, Poznan, Poland, July 2005.
[466] C. Concolato and J. Le Feuvre. Statistical analysis of laser conformance test and encoding comparisons. Technical Report M12408, Poznan, Poland, July 2005.
[467] C. Concolato and J. Le Feuvre. Technical analysis of the w3c svg wg liaison on laser. Technical Report M13232, Montreux, Switzerland, Apr. 2006.
[468] C. Concolato and J. Le Feuvre. Proposal for saf and laser conformance. Technical Report M13235, Montreux, Switzerland, Apr. 2006.
[469] C. Concolato and J. Le Feuvre. Request for clarifications on font data streams. Technical Report M13242, Montreux, Switzerland, Apr. 2006.
[470] C. Concolato and J. Le Feuvre. Items for part 20 corrigendum. Technical Report M13243, Montreux, Switzerland, Apr. 2006.
[471] C. Concolato and J. Le Feuvre. Proposed items for laser v2. Technical Report M13244, Montreux, Switzerland, June 2006.
[472] C. Concolato and J. Le Feuvre. Wd 1.0 of mpeg-u. Technical Report N10626, Maui, USA, Apr. 2009.
[473] C. Concolato and J. Le Feuvre. Mpeg-4 terminal architecture white paper. Technical Report M12651, Nice, France, Oct. 2005.
[474] C. Concolato and J. Le Feuvre. Laser fdis editorial issues. Technical Report M13018, Bangkok, Thailand, Jan. 2006.
[475] C. Concolato and J. Le Feuvre. Conformance streams for mpeg-4 atg. Technical Report M13241, Montreux, Switzerland, Apr. 2009.
[476] C. Concolato and J. Le Feuvre. Iso file format conformance sequences. Technical Report M13678, Klagenfurt, Austria, July 2006.
[477] C. Concolato, P. De Cuetos, B. Pellan, and M. Kimiaei-Asadi. Conversionlink. Technical Report M11670, Hong-Kong, China, Jan. 2005.
[478] C. Concolato, J. C. Dufourd, O. Avaro, and C. Timmerer. Workplan for core experiment on open issues regarding the laser specification. Technical Report N6967, Hong-Kong, China, Jan. 2005.
[479] C. Concolato, J. Le Feuvre, and K. Park. Architecture for the mpeg ui framework. Technical Report M15521, Paris, June 2008.
[480] C. Concolato, J. Le Feuvre, and K. Park. Analysis of mpeg-21 ued for scene personalization. Technical Report m15602, Hannovre, Allemagne, July 2008.
[481] C. Concolato, J. Le Feuvre, and K. Park. Additional thoughts about the mpeg user interface framework. Technical Report m15604, Hannovre, Allemagne, July 2008.
[482] C. Concolato, J. Le Feuvre, and K. Park. Comments on the architecture of the mpeg rich media ui framework. Technical Report M15793, Turin, Italie, Sept. 2008.
[483] C. Concolato, J. Le Feuvre, K. Park, Y. Ryu, S. Cho, and H. Park. Use cases and requirement for an mpeg user interface framework. Technical Report M15345, Archamps, France, Apr. 2008.
[484] C. Concolato, K. Park, and G. Cordara. Context and Objectives of Rich Media UI Framework v1.0. Technical Report N10085, Hannovre, Allemagne, July 2008.
[485] C. Concolato, K. Park, and G. Cordara. Rich Media UI Framework Requirements. Technical Report N10231, Busan, Korea, Oct. 2008.
[486] C. Concolato, K. Park, and G. Cordara. Call for Proposal on Rich Media UI Framework. Technical Report N10232, Busan, Korea, Oct. 2008.
[487] C. Concolato, K. Park, and G. Cordara. Context and Objectives of Rich Media UI Framework v2.0. Technical Report N10296, Busan, Korea, Oct. 2008.
[488] C. Concolato, B. Pellan, and M. Brelot. Requirements on technologies to support Interactive Digital Radio. Technical Report N10086, Hannovre, Allemagne, July 2008.
[489] C. Concolato, B. Pellan, and M. Brelot. Requirements for a new BIFS profile to support Interactive Digital Radio. Technical Report N10228, Busan, Korea, Oct. 2008.

[490] C. Concolato, J. Le Feuvre, and B. Pellan. Comments on requirements for a new bifs profile. Technical Report M16179, Lausanne, Suisse, Feb. 2009.
[491] C. Concolato, J. Le Feuvre, and B. Pellan. Wd 1.0 of amd7 of bifs for interactive digital radio services. Technical Report N10439, Lausanne, Suisse, Feb. 2009.
[492] C. Concolato, J. Le Feuvre, and B. Pellan. Requirements v2 for a new bifs profile to support interactive digital radio. Technical Report N10503, Lausanne, Suisse, Feb. 2009.
[493] P. De Cuetos, C. Concolato, and J. C. Dufourd. Using bifs updates for melisa sport broadcasting system. Technical Report M11671, Hong-Kong, Jan. 2005.
[494] J. C. Dufourd, N. Pierre, E. Le Coq, C. Concolato, and J. Le Feuvre. Final word on the encoding of times in laser. Technical Report m13969, Hangzhou, Sept. 2006.
[495] P. Gioia, R. Cavagna, A. Le Bris, and J. Le Feuvre. Report on ce2: Space partitioning. Technical Report m14185, Marrakech, Jan. 2007.
[496] S. Hwang, J. Song, C. Concolato, J. Le Feuvre, and Y. Lim. Study text for cd of 14496-20 amd2. Technical Report M15889, Busan, Korea, Oct. 2008.
[497] S. Hwang, J. Song, C. Concolato, J. Le Feuvre, and Y. Lim. Study text for adaptivesceneindicator of cd on 14496-20 amd2. Technical Report M15890, Busan, Korea, Oct. 2008.
[498] S. Hwang, J. Song, C. Concolato, J. Le Feuvre, and Y. Lim. Architecture for the mpeg ui framework. Technical Report M15892, Busan, Korea, Oct. 2008.
[499] B. Jovanova, C. Concolato, J. Le Feuvre, and M. Preda. Storage of xml documents and associated media resources in the iso file format. Technical Report m14905, Shenzhen, Oct. 2007.
[500] H. Y. Kim, H. Lee, H. Kim, D. Kwon, B. Pellan, and A. David. Conformance files contribution for iso/iec 23000-9 (dmb-af). Technical Report M15896, Busan, Korea, Oct. 2008.
[501] J. Le Feuvre. On laser conditional execution. Technical Report m13785, Hangzhou, Sept. 2006.
[502] J. Le Feuvre. On saf configuration. Technical Report m13786, Hangzhou, Sept. 2006.
[503] J. Le Feuvre. Comments on laser and saf dcor. Technical Report m13787, Hangzhou, Sept. 2006.
[504] J. Le Feuvre. On laser animatescroll. Technical Report m13788, Hangzhou, Sept. 2006.
[505] J. Le Feuvre. On aac sbr storage in iso media file. Technical Report m13877, Hangzhou, Sept. 2006.
[506] J. Le Feuvre. On saf streams redefinition. Technical Report m13895, Hangzhou, Sept. 2006.
[507] J. Le Feuvre. On laser events. Technical Report m13920, Hangzhou, Sept. 2006.
[508] J. Le Feuvre. Update of enst iso file format conformance. Technical Report m14026, Hangzhou, Sept. 2006.
[509] J. Le Feuvre. On audio storage in iso media file. Technical Report m14264, Marrakech, Jan. 2007.
[510] J. Le Feuvre. Comments on space partitioning ce. Technical Report m14953, Shenzhen, Oct. 2007.
[511] J. Le Feuvre. Comment on iso ff technology removal. Technical Report m15351, Archamps, May 2008.
[512] J. Le Feuvre. Gpac project on advanced content. (IDDN.FR.001.310013.000.S.C.2006.000.40000), July 2006.
[513] J. Le Feuvre and C. Concolato. Bifs and laser harmonisation. Technical Report M14662, Lausanne, Suisse, June 2007.
[514] J. Le Feuvre and C. Concolato. Comments on laser pdam2. Technical Report M16085, Lausanne, Suisse, Feb. 2009.
[515] J. Le Feuvre and C. Concolato. On laser fraction events. Technical Report m13879, Hangzhou, Sept. 2006.
[516] J. Le Feuvre and J. C. Dufourd. Discussion on saf global streams. Technical Report m13878, Hangzhou, Sept. 2006.
[517] J. Le Feuvre and J. C. Dufourd. Proposed text for updatesource. Technical Report m14266, Marrakech, Jan. 2007.
[518] J. Le Feuvre and J. C. Dufourd. On laser bitstream exchange. Technical Report m14660, Lausanne, July 2007.
[519] J. Le Feuvre, C. Concolato, and K. Park. First comments on the use of dcci for mpeg ui personalization. Technical Report m15603, Hannovre, Allemagne, July 2008.
[520] R. Leonardo, S. Tubaro, J. Xu, and B. Pesquet-Popescu. Ahg on exploration in wavelet video coding. Technical Report N7344, Poznan, Poland, July 2005.
[521] R. Leonardo, S. Tubaro, J. Xu, and B. Pesquet-Popescu. Ahg on exploration in wavelet video coding. Technical Report m12729, Nice, France, Oct. 2006.
[522] R. Leonardo, J. Xu, S. Tubaro, and B. Pesquet-Popescu. Ahg on exploration in wavelet video coding. Technical Report m13037, Montreux, Switzerland, Apr. 2006.
[523] V. Levantovsky and C. Concolato. Clarifications on font subsets in font data streams. Technical Report M13495, Klagenfurt, Austria, July 2006.
[524] K. Park, C. Concolato, and J. Le Feuvre. Additional use cases for the mpeg ui framework. Technical Report m15601, Hannovre, Allemagne, July 2008.
[525] K. Park, Y. Ryu, S. Cho, H. Park, C. Concolato, and J. Le Feuvre. Use cases and requirements for personalized user interfaces in laser and bifs. Technical Report M15372, Archamps, France, Apr. 2008.
[526] K. Park, Y. Ryu, S. Cho, H. Park, C. Concolato, and J. Le Feuvre. Requirements and use cases for bifs/laser in the home environment. Technical Report M15373, Archamps, France, Apr. 2008.
[527] K. Park, C. Concolato, J. Le Feuvre, and G. Cordara. Items under considerations in rich ui framework. Technical Report M16038, Lausanne, Suisse, Feb. 2009.
[528] G. Pau and B. Pesquet-Popescu. Proposal of vidwav obmc bug fixing. Technical Report m12616, Nice, France, Oct. 2005.
[529] G. Pau and B. Pesquet-Popescu. Comparison of spatial m-band filter banks for t+2d video coding. Technical Report m12058, Busan, Korea, Apr. 2005.
[530] G. Pau and B. Pesquet-Popescu. Four-band linear-phase orthogonal spatial filter bank in wavelet video coding.

Technical Report m11739, Hong Kong, Jan. 2005.
[531] G. Pau and B. Pesquet-Popescu. Optimized prediction of uncovered areas in wavelet video coding. Technical Report m11738, Hong Kong, Jan. 2005.
[532] G. Pau, J. Viéron, and B. Pesquet-Popescu. Wavelet video coding with flexible 5/3 mctf structures for low end-to-end delay. Technical Report m11741, Hong Kong, Jan. 2005.
[533] G. Pau, J. Viéron, G. Boisson, E. François, and B. Pesquet-Popescu. Proposal for svc ce1 : Time and level adaptive mctf architectures for low delay video coding. Technical Report m11673, Hong Kong, Jan. 2009.
[534] B. Pellan, C. Concolato, T. Cong Thang, E. Delfosse, P. De Cuetos, and M. Kimiaei-Asadi. Report of ce on the use of adaptation qos for conversions. Technical Report M11884, Busan, Korea, Apr. 2005.
[535] B. Pellan, C. Concolato, T. Demartini, C. Timmerer, T. Cong Thang, P. De Cuetos, M. Kimiaei-Asadi, and E. Delfosse. Report of ce on harmonisation of conversion tools. Technical Report M12191, Poznan, Poland, July 2005.
[536] B. Pellan, Y.-K. Lim, and C. Concolato. Bifs profiles and extensions for interactive digital radio and tv services. Technical Report M15436, Archamps, France, Apr. 2008.
[537] B. Pellan, Y.-K. Lim, and C. Concolato. New bifs profile for interactive digital radio. Technical Report m15550, Hannovre, Allemagne, July 2008.
[538] B. Pesquet-Popescu and J. Xu. Ahg on exploration in wavelet video coding. Technical Report m12121, Poznan, Poland, July 2005.
[539] B. Pesquet-Popescu, M. Trocan, and G. Pau. Bidirectional joint motion estimation for vidwav software. Technical Report m12303, Poznan, Poland, July 2005.
[540] M. Sigelle, I. Jermyn, and S. Perreau. Markov chains, diffusion and green functions - applications to traffic routing in ad hoc networks and to image restoration. Technical report, TELECOM PARISTECH CNRS UMR 5141, Jan. 2009.
[541] C. Tillier and B. Pesquet-Popescu. CBR 3-band MCTF, Jan. 2005.
[542] C. Tillier and B. Pesquet-Popescu. Constant bit rate 3-band mctf. Technical Report m11732, Jan. 2005.
[543] C. Tillier, G. Pau, and B. Pesquet-Popescu. Coding performance comparison of entropy coders in wavelet video coding, Apr. 2005.
[544] C. Tillier, G. Pau, and B. Pesquet-Popescu. Coding performance comparison of entropy coders in wavelet video coding. Technical Report m12056, Busan, Korea, Apr. 2009.
[545] C. Timmerer, B. Pellan, and T. Cong Thang. Mpeg-21 dia amd/1 reference software status. Technical Report M12583, Nice, France, Oct. 2005.
[546] C. Timmerer, B. Pellan, and T. Cong Thang. Conformance bitstreams for dia conversions and permissions. Technical Report M12909, Bangkok, Thailand, Jan. 2006.
[547] J. Xu, R. Leonardo, S. Tubaro, and B. Pesquet-Popescu. Ahg on exploration in wavelet video coding. Technical Report N 7831, Bangkok, Thailand, Jan. 2006.
[548] L. Zvi and C. Concolato. Proposal for a free-distribution maf. Technical Report M12335, Poznan, Poland, July 2005.

Chapter 3

Statistics and Applications (STA)

Team leader F. Roueff (P).

Faculty K. Abed Meraim (MC, on sabbatical leave at University of Sharjah, 06/07–06/09), G. Blanchet (DE), P. Bianchi (MC, 01/09–), O. Cappé (DR CNRS), J-F. Cardoso (DR CNRS), M. Charbit (P, on sabbatical leave at University of Adelaide, 06/07–12/07), S. Clémençon (MC, 10/07–), G. Fort (CR CNRS), A. Garivier (CR CNRS, 10/07–), J. Jakubowicz (MC, 11/08–), E. Moulines (P), C. Lévy-Leduc (CR CNRS), J. Najim (CR CNRS), F. Roueff (P).

PhD students A. Ben Hadj Alaya (10/05–10/08), S. Barembruch (10/07–), T. Ben Jabeur (10/05–), H. Benoudnine (09/06–07/08, phd started at USTO, Algeria), L. Berriche (09/02–04/06), M. Boulé (09/03–09/07), H. Bousbia-Salah (01/05–05/06, phd started at Ecole Polytechnique d'Alger, Algeria), N. Castaneda, (09/04–07/08), J. Cornebise (09/05–06/09, also at Univ. Paris 6), M. Depecker (10/07–), J.F. Germain (09/05–10/08), F. Guilloux (10/05–12/08, also at Univ. Paris 7), Z. Harchaoui (11/05–11/08), M. Karray (09/03–09/07), I. Kacha (01/05–04/07, phd started at Ecole Polytechnique d'Alger, Algeria), M. Kharouf (01/07–), O. Kouamo (09/07–, also at Univ. Yaoundé 1, Cameroon), D. Lahat (09/07–, also at Univ. Tel Aviv, Israel), A. Lung-Yut-Fong (10/08–), N. Mahler (02/08–, also at ENS Cachan), B. Mouhouche (09/02–12/05), N. Sokolovska (11/06–), S. Philippi (10/07–), G. Picard (10/03–12/06), T. Rebafka (10/06–), L. Rigouste (10/03–11/06), W. Souidene (06/03–10/07), T. Trigano (10/02-12/05).

Post-docs, sabbaticals B. Benmammar (postdoc 12 months), P. Etoré (postdoc 8 months, also at CERMICS, Ponts), J. Olsson (Postdoc 10 months), M.S. Taqqu (Prof. at Boston Univ., 3 months), L. White (Prof. at Univ. of Adelaide, Australie, 6 months), M. Zetlaoui (postdoc, 1 year), V. Reisen (MC, Vitória Univ., Brazil, 8 months), Samir Attallah (Prof. at NUS, Singapore, 2 months).

Faculty [IT, CNRS]	[5.5, 5.3]
PhD students	7.2
Post-docs, sabbaticals	1.4
Defended theses	19
Defended HDR	3
Journal papers [published, to appear]	[92, 13]
Papers in conference proceedings	140
Registered [patents, software]	[1,1]
Grants [public, private, European] (k€)	[822, 497, 7]

3.1 Objectives

The STA team's main research interest is in the development and analysis of statistical methods for information processing, with applications in signal processing, applied statistics, complex systems and digital communications. The team's main expertise lies in statistical signal processing and mathematical statistics but also in probability, operation research and, more generally in applied mathematics. The team is also involved in research projects targeting more specific applications, usually in the context of broader collaborations, often supported by funds from the Agence Nationale de la Recherche (ANR). In this context, topics that are relevant to the team expertise include digital communications, astronomical data analysis, security and defense applications (localization, intrusion or anomaly detection), and data mining. In the recent period, the team started to extend its expertise towards statistical machine learning, in particular for ranking and sequential learning applications.

The members of the STA team are actively participating to teaching, typically at the master level and in the fields of probability, statistics, signal processing, machine learning and applied mathematics, at Télécom ParisTech but also in several other Grandes Ecoles of the ParisTech institute (Ecole des Ponts, Ecole Polytechnique, ENSAE) and universities (M2 *Modélisation aléatoire* at Paris 7 Denis Diderot, M2 *Modélisation Vision Apprentissage* at ENS Cachan, M2 *Ingénierie Mathématique* at Paris 11 Orsay, University Paris-Dauphine).

The STA team has developed long term research collaborations with several academic Parisian partners such as Univ. Paris 7 Denis Diderot (LPMA and ADAMIS), Univ. Paris 10 Nanterre (MODAL'X), Univ. Paris-Est (IGM), Institut d'Astrophysique de Paris, Univ. Paris-Dauphine (Cérémade), research groups in other ParisTech schools (CMBIO, Mines and CERMICS and CERTIS, Ponts) and with the Ecoles Normales Supérieures Ulm (INRIA projects TREC and WILLOW) and Cachan (CMLA). Such collaborations are essential to the team for achieving long term research programs, and, more generally, for exchanging ideas and views within a stimulating academic environment.

These academic relationships parallel industrial partnerships. The latter have been developed in the framework of national research projects (ANR), bilateral contracts, or the funding of PhdDtheses (through CIFRE conventons). Beside favoring our financial autonomy, such partnerships bring practical applications which are helpful for our opening and to remaining active on new research prospects. In the last years, regular industrial partners include the Commissariat à l'Energie Atomique (CEA), Renault, France Télécom R&D and Direction Générale de l'Armement (DGA).

The team enjoys a high national and international recognition with editorial board members in high quality journals such as Bernoulli, ESAIM P&S (E. Moulines) and the Journal of the Royal Statistical Society, Series B (O. Cappé) as well as regular participation as program comity mem-

bers in the major international conferences (IEEE ICASSP, IEEE statistical Signal Processing workshop, International Conference on Machine Learning, Neural Information Processing Systems). The team regularly organizes or co-organizes scientific events such as the international workshop *New directions in Monte Carlo Methods* in Fleurance (2007) as well as recurrent scientific seminars in the Parisian region (*séminaire parisien de statistiques*, ParisTech Machine Learning reading group).

Finally, members of the team are regularly invited to give talks in national seminars such as the *séminaire parisien de statistiques*, universities abroad (Hong Kong University of Science and Technology and National University of Singapore, S. Clémençon; probability seminars in University of Bochum and Stanford Univ., J. Najim; seminar of statistics in Cornell Univ. and Université Catholique de Louvain, F. Roueff; seminar of applied probability in Warwick, G. Fort) as well as in workshops or conferences (Isaac Newton Institute, O. Cappé, E. Moulines; 2006 New Developments in MCMC workshop, 2008 Adap'Ski workshop, 2008 SSC-SFDS conference, 2009 workshop on Scaling methods in Warwick, G. Fort; 2009 Physcomnet, J. Najim; 2006 ValueTools workshop, 2006 New Developments in MCMC workshop, 2007 Eurandom Algorithms in Complex Systems workshop, 2008 European Geosciences Union General Assembly, 2008 Sequential Monte Carlo Methods SAMSI workshop, E. Moulines).

3.2 Main Results

3.2.1 Statistical Learning

Contributors O. Cappé, A. Garivier, S. Clémençon, C. Lévy-Leduc, E. Moulines, F. Roueff.

Main events ANR projects KERNSIG (Learning and kernels for representation and decision in signal processing, 2007–), MGA (Graphical Models and Applications, 2008–), TAMIS (Adaptation, multiple tests, ranking and applications, 2006–2009), BEMOL (Prediction of internet users' behavior, simulation and collaborative filtering, 2008–); Contracts with France Telecom R&D (two theses) and Renault (two theses).

In the context of the STA team, statistical learning is a new research theme that has been largely developed during the last four years. Our efforts on this aspect have benefited from two recruitments (A. Garivier, S. Clémençon) and from the support of several academic (ANR projects KERNSIG, TAMIS and MGA) and industrial grants. Although recent, the team's contribution in statistical learning is now recognized, with several team members regularly participating as program comity members to the main conferences of the field (ICML, EMCL, COLT and NIPS). The team also developed strong collaborations on this theme with other teams within the ParisTech alliance (CMBIO, Mines and CERTIS, Ponts) and the INRIA/ENS project WILLOW (F. Bach), with whom we are organizing the popular monthly Paris Tech-Machine Learning reading group, as well as with the CMLA, ENS Cachan group (N. Vayatis).

Since 2006, the team has been active first on **kernel methods** and more specifically their use for purposes other than supervised classification and, in particular, for signal processing applications (which is the main focus of the KERNSIG project). Our main contributions include a mathematical analysis of kernel-based changepoint detection tests [741] as well as several extensions to the multiple changepoints and changepoint localization problems.

Graphical models is another topic on which the team is active with works on parameter inference for latent variable models used in natural language processing [652] (in collaboration with F. Yvon, Univ. Paris-Sud 11) as well as online learning algorithms for mixture and hidden Markov models [571]. The team also worked on several applications of **sparse regression and classification** using LASSO type procedures [740, 648].

Ranking has become a very important research theme in the team with a series of works initiated by S. Clemençon in [579]. The distinctive feature of this approach is to view methods based on the AUC (Area Under Curve) criterion as solving a functional optimization task which

requires adaptive approximation of the optimal ROC (Receiver Operating Characteristic) curve. The computation of confidence bands through resampling for the ROC curve and associated performance criteria has been investigated in [699, 719]. Reference [580] presents the main ranking algorithm, termed tree-rank, and provides a thorough theoretical analysis of its performance. In the context of the ANR project BEMOL, the team also started some preliminary works on related tasks such as collaborative filtering.

More recently, with the arrival of A. Garivier, the team started working on themes related to resource allocation and **reinforcement learning**, in particular in the context of the PhD thesis of S. Filippi (funded by France Telecom R&D).

3.2.2 Statistical Methods for Astronomy

Contributors O. Cappé, J-F. Cardoso, G. Fort.

Projects ANR projects COSMOSTAT (Statistical methods for reconstruction and analysis of the cosmic microwave background) and ECOSTAT (Exploration of the cosmic model by statistical methods).

There is a growing interest in statistically and numerically efficient methods for the processing of the complex massive data sets delivered by modern astronomical observatories and surveys. Our team contribute to this domain along several axis, with a strong focus on the Planck space mission of the European Spatial Agency. This mission, which will deliver measurements of the Cosmic Microwave Background (CMB) of unprecedented resolution and sensitivity, requires data processing of outstanding quality. The team has been contributing several challenges in this area.

In the context of the Planck mission, which will deliver multi-frequency sky maps, the first task is to develop **component separation** methods for extracting the best possible CMB map from these measurements. We contribute a powerful blind separation method which performed very well in the Planck separation challenge [612] and a fast and robust non-blind method [584] based on spherical needlets.

CMB maps are *spherical maps*. Usual space-frequency methods such as wavelet analysis cannot be applied in this context. The ANR project COSMOSTAT has been dedicated to develop **multi-scale methods on the sphere**. We proposed and studied a promising new tool for this purpose, the *needlets*, a spherical frame for optimal filtering [584] and spectral estimation on the sphere [606, 596].

Ultimately, CMB data are exploited in a Bayesian framework for the inference of the cosmological parameters (age of the Universe, Hubble constant, etc). The complexity of the models requires a specific approach based on **Monte Carlo methods** (ANR project ECOSTAT) on which the team enjoys a high level of expertise. In [636], we have developed an adaptive importance sampling scheme targeted to the specificities of cosmological data.

CMB data enter in cosmological inference via the likelihood of their angular spectrum, which raises several issues in terms of the dependence structure. Again this specificity calls for new methods in **statistical analysis on the sphere**. We developed exact and approximate likelihoods function for the observation of the CMB sky with missing data [559] via interpolations methods on the sphere.

The formation of the large scale structures of the Universe by gravitational collapse can be analyzed via the *skeleton* of the matter density field. Analytical skeleton models require knowing the joint distribution of the field and of all its derivative tensors. This problem is related to the theoretical description of **spherical invariants of isotropic fields**. We obtained closed form expressions of it via a theory of spherical invariants for isotropic fields [626].

3.2.3 Statistical Methods for Signal Processing

Contributors K. Abed-Meraim, P. Bianchi, M. Charbit, J. Jakubowicz, E. Moulines, J. Najim.

Projects Euopean REX network NewCom; ANR project MalCom (Random matrices for communications); ANR project SESAME (inference for random matrices and communicaton) ; Contracts DEMORO (with CS), Blind demodulation (with I2E), Aintercom (with DGA), WAVECOM (one thesis) and France Telecom R&D (one thesis).

Our interest lies in applications of mathematical and statistical tools to performance evaluation and optimization of the physical layer of wireless communications systems. Such approaches have been particularly fruitful in many areas of interest in the last decade.

The first topic of interest is the performance analysis of **Multiple Input Multiple Output (MIMO) communications**. MIMO systems are widely acknowledged as a mean for increasing the spectral efficiency of wireless communication systems. In order to design efficient MIMO communications, a crucial issue is to evaluate the performance of MIMO transmissions in terms of capacity or outage probability. **Random matrix theory** is a powerful tool which allows to evaluate such performance indicators [607, 608]. Whereas the pioneer works in this field usually assume simplistic communication models, our activity consists in developing new tools for random matrices in order to encompass a wider class of communication models, including realistic propagation channel models and involved transmit/receive architectures.

On the other hand, **geo-localization and tracking** of base stations and mobile stations of GSM network have been considered (in the context of the DEMORO project, and N. Castaneda's thesis). This study used both GSM signals with a multiple sensor array and traffic informations and took into account multipath propagation and presence of outliers. Different approaches have been considered: Expectation-Maximization (EM) algorithm and recursive EM for DOA estimation applications but also Monte Carlo methods (or particle filtering) in the context of Bearing Only Tracking [712, 711].

A final field of interest for non-cooperative communications is **blind signal processing**. In this context, it is assumed that the signal coming from an unknown transmitter has been intercepted. The received signal is corrupted by an unknown propagation channel. The aim is to demodulate the received signal in order to recover the transmitted data and to estimate the value of the technical parameters used by the transmitter. In order to achieve attractive performance in terms of Bit Error Rate, our aim is to develop blind demodulation approaches using approximate Maximum Likelihood methods. One of the main stake is to propose methods which are suitable to modulations with high spectral efficiency, that is, in the case where the size of the alphabet used by the transmitter is large (Aintercom project, I2E contract).

3.2.4 Monte Carlo Methods

Contributors O. Cappé, S. Clémençon, G. Fort, E. Moulines.

Projects/Main events ANR project ADAP'MC (Adaptive Monte Carlo Methods); ANR project BigMC (Issues in large scale Monte Carlo)); Organization of the international workshop *New directions in Monte Carlo Methods* in Fleurance, 2007.

The team has acquired a high reputation in the domain of Monte Carlo methods by working on sequential Monte Carlo methods or particles filtering, Markov chain Monte Carlo methods as well as so-called Population Monte Carlo. Its activity has a strong emphasis on methodological and theoretical developments in Monte Carlo methods.

When applying **Sequential Monte Carlo** methods (SMC), a well-known problem is the degeneracy of the approximations introduced by the resampling steps. We obtained results on optimal sampling allocation [645]. We also developed methods for statistical inference in Hidden Markov Models, which exploits the forgetting properties of the conditional hidden chains [625, 590, 594] [coll. with Univ. of Lund, Sweden; and Univ. of Jerusalem, Israël].

The efficiency of the **Markov chain Monte Carlo** (MCMC) methods relies on the tuning of design parameters. New algorithms are based on self-tuning of the parameters on the fly without relying on a priori expert parameter tuning, thus yielding to adaptive MCMC algorithms. We developed techniques to identify the optimal values of these design parameters [601]. We obtained

results on the asymptotic behavior of these adaptive procedures [550] [coll. with Univ. of Illinois, US; and Univ. of Bristol, UK].

Population Monte Carlo methods are designed as generic self-adaptive importance sampling algorithms. The goal is thus to calibrate the best fitting proposal. We developed an adaptive method for an automatic computation of the optimal proposal among a class of parameterized importance functions [573].

Developing proper theoretical tools is an important issue for Monte Carlo methods: studying the simulation problems by using theoretical tools used in the **theory of Markov chains** and particle approximations allows to identify the key convergence bottlenecks and to propose the appropriate methodological approaches to solve them. We obtained results in the Markov chain theory [593, 589, 810, 591], in limit theorems for weighted samples [587] and in output analysis for Markov models [577] using bootstrap methods.

3.2.5 Time Series

Contributors M. Charbit, S. Clémençon, C. Lévy-Leduc, E. Moulines, F. Roueff.

Projects ANR projects OSCAR (Overlay network security : characterization, analysis and recovery) and SARAH (Standardization of high-definition audio remastering); Contracts with CEA (one thesis) and CSA; Participation to the European IP project SECOQC.

Statistical inference for time series and, more generally, for stochastic processes is a wide area. The research activities of the team in this domain covers long standing problems in statistical signal processing and new directions in spatial statistics. These topics are often motivated by applications that are also of interest to the team.

A first topic is concerned with **time frequency analysis** of time series based on a study of the asymptotic statistics in a semi-parametric or non-parametric framework. Our expertise in **long range dependence** has been increased, in particular by a thorough analysis of semi-parametric Wavelet methods ([622, 623, 629, 630], coll. Boston Univ.). Specific domains of application have been considered, such as financial time-series [592, 597] and teletraffic data ([595, 650]). Other subjects in time frequency analysis have been considered such as frequency estimation for irregularly sampled series [615] in a non-parametric framework and missing-value estimation for an AR process applied to DNA microarray data ([576], coll. Univ. of Sydney).

A second topic of interest for the team is **change detection** by statistical methods and their applications. We have been working on anomaly detection in Internet teletraffic data (ANR-RNRT project OSCAR, [614]) based on non-parametric statistical methods. An online algorithm [812] has been proposed and implemented in a platform dedicated to anomaly detection in the Internet. On the methodological side, we proposed new change detection methods based on LASSO for automatically selecting the number of changes and kernel methods for change detection using unspecified features ([740, 741]).

Our activities include theoretical studies of specific stochastic processes arising in applied probability and/or having a strong impact on specific applications. We have been interested in **spatial point processes** for modelling natural images using geometrical models (coll. with TII team [853, 831]) and quantum key distribution networks ([637], SECOQC project, coll. with MIC2 team). With a particular emphasis on the time evolution of spatial point processes, we also considered stochastic epidemic models [643, 561]. The **pileup models** appear naturally in several measurements context such as spectrometry and fluorescence. We proposed statistical methods which take into account the pileup phenomenon rather than avoiding it leading to new algorithms for processing such measurements ([634, 813]). A coll. with Univ. of Lille and Michigan State Univ. yielded new results on the path properties of α–stable fields [554, 639]. We also studied the **extremes** (tail properties) of Markov chains [560, 562], which are of interest in risk management.

3.3 References

3.3.1 ACL: Articles in ISI-Indexed Journals

[549] T. Adali, H. Li, M. Novey, and J.-F. Cardoso. Complex ICA using nonlinear functions. *IEEE Trans. Signal Processing*, 56(9):4536–4544, Sept. 2008.

[550] C. Andrieu and E. Moulines. On the ergodicity properties of some adaptive mcmc algorithms. *Annals of Applied Probability*, 16(3):1462–1505, Dec. 2006.

[551] C. Andrieu, E. Moulines, and P. Priouret. Stability of stochastic approximation under verifiable conditions. *SIAM Journal on Control and Optimization*, 44(1):283–312, 2005.

[552] S. Attallah and K. Abed-Meraim. A fast adaptive algorithm for the generalized symmetric eigenvalue problem. *Signal Processing Letters, IEEE*, 15:797–800, 2008.

[553] S. Attallah, J. Manton, and K. Abed-Meraim. Convergence analysis of the noja algorithm using the ode approach. *Signal Processing*, Nov. 2006.

[554] A. Ayache, F. Roueff, and Y. Xiao. Linear fractional stable sheets : wavelet expansion and sample path properties. *Stochastic processes and their applications*, 119(4):1168–1197, 2009.

[555] S. Barembruch, A. Garivier, and E. Moulines. On approximate maximum likelihood methods for blind identification: How to cope with the curse of dimensionality. *IEEE Transactions on Signal Processing*, July 2009.

[556] S. Bartelmaos and K. Abed-Meraim. Fast minor component extraction using givens rotations. *Electronics Letters*, 43(18), Aug. 2007.

[557] S. Bartelmaos and K. Abed-Meraim. Fast principal component extraction using givens rotations. *IEEE Signal Processing Letters*, 2008.

[558] S. Bartelmaos, K. Abed-Meraim, and E. Grosicki. Selection criteria for mobile location in nlos situations. *Wireless Communications, IEEE Transactions*, 7(1):4393–4403, Nov. 2008.

[559] K. Benabed, J.-F. Cardoso, S. Prunet, and E. Hivon. Teasing: a fast and accurate approximation for the low multipole likelihood of the cosmic microwave background temperature. *Monthly Notices of the Royal Astronomical Society*, Jan. 2009.

[560] P. Bertail and S. Clémençon. Sharp bounds for the tails of functionals of harris markov chains. *Theory of Probability and Its Applications*, July 2007.

[561] P. Bertail, S. Clémençon, and J. Tressou. A storage model with random release rate for modeling exposure to food contaminants. *Mathematical Biosciences and Engineering*, 5(1):35–60, Jan. 2008.

[562] P. Bertail, S. Clémençon, and J. Tressou. Extreme values statistics for harris markov chains via the (pseudo-) regenerative method. *Extremes*, Feb. 2009.

[563] M. Betoule, E. Pierpaoli, J. Delabrouile, M. Lejeune, and J.-F. Cardoso. Measuring the tensor to scalar ratio from CMB B-modes in presence of foregrounds. *Astronomy and Astrophysics*, Jan. 2009.

[831] C. Bordenave, Y. Gousseau, and F. Roueff. The dead leaves model : an example of a general tessellation. *Advances in Applied Probability*, 38(1):31–46, Mar. 2006.

[565] S. Boucheron, A. Garivier, and E. Gassiat. Coding on countably infinite alphabets. *IEEE Transactions on Information Theory*, 55(1):358–374, Jan. 2009.

[566] A.-O. Boudraa, J.-C. Cexus, and K. Abed-Meraim. Cross psib-energy operator-based signal detection. *Journal of the Acoustical Society of America*, 2008.

[567] R. Boyer and K. Abed-Meraim. Asymptotic performance for delayed exponential process. *IEEE Transactions on Signal Processing*, June 2007.

[568] R. Boyer and K. Abed-Meraim. Asymptotic performance for delayed exponential process. *IEEE Transactions on Signal Processing*, June 2007.

[569] R. Boyer and K. Abed-Meraim. Damped and delayed sinusoidal model for transient signals. *IEEE Transactions on Signal Processing*, 53(5):1720– 1730, May 2005.

[570] R. Boyer, S. De Lathauwer, and K. Abed-Meraim. Higher-order tensor-based method for delayed exponential fitting. *IEEE Transactions on Signal Processing*, June 2007.

[571] O. Cappé and E. Moulines. Online expectation-maximization algorithm for latent data models. *J. Royal Statist. Soc. B*, 71(3):593–613, 2009.

[572] O. Cappé, S. Godsill, and E. Moulines. An overview of existing methods and recent advances in sequential monte carlo. *Proceedings of the IEEE*, 95(5):899–924, May 2007.

[573] O. Cappé, R. Douc, A. Guillin, J.-M. Marin, and C. P. Robert. Adaptive importance sampling in general mixture classes. *Statistics and Computing*, 18(4):447–459, 2008.

[574] J.-F. Cardoso, M. Martin, J. Delabrouille, M. Betoule, and G. Patanchon. Component separation with flexible models. application to the separation of astrophysical emissions. *IEEE Journal of Selected Topics in Signal Processing*, Oct. 2008.

[575] A. Chambaz, A. Garivier, and E. Gassiat. A mdl approach a mdl approach to hmm with poisson and gaussian emissions. *Journal of Statistical Planning and Inference*, 139(3):962–977, Mar. 2009.

[576] M. K. Choong, M. Charbit, and H. Yan. Autoregressive model-based missing value, estimation for dna microarray time series data. *IEEE Transactions on Information Technology in BioMedicine*, 13-1:131–137, Jan. 2009.

[577] S. Clémençon and P. Bertail. Approximate regenerative-block bootstrap for markov chains. *Computational Statistics & Data Analysis*, 52(5):2739–2756, Jan. 2008.

[578] S. Clémençon and N. Vayatis. The rankover algorithm: overlaid classification rules for optimal scoring. *Constructive approximation*, Oct. 2008.

[579] S. Clémençon and N. Vayatis. Ranking the best instances. *Journal of Machine Learning Research*, 8:2671–2699, Dec. 2007.
[580] S. Clémençon and N. Vayatis. Tree-based ranking methods. *IEEE IT*, July 2008.
[581] S. Clémençon, G. Lugosi, and N. Vayatis. Ranking and empirical minimization of u-statistics. *Annals of Statistics*, 36(2):844–874, Mar. 2008.
[582] J. Cornebise, E. Moulines, and J. Olsson. Adaptive methods for sequential importance sampling with application to state space models. *Statistics and Computing*, 18(4):461–480, Aug. 2008.
[583] L. De Lathauwer, J. Castaing, and J.-F. Cardoso. Fourth-order cumulant based blind identification of underdetermined mixtures. *IEEE Transactions on Signal Processing*, 55(6):2965–2973, Dec. 2007.
[584] J. Delabrouille, J.-F. Cardoso, M. Le Jeune, M. Betoule, G. Fay, and F. Guilloux. A full sky, low foreground, high resolution CMB map from WMAP. *Astronomy and Astrophysics*, 2008.
[585] O. Derrien, P. Duhamel, M. Charbit, and G. Richard. A new quantization optimization algorithm for the mpeg advanced audio coder using a statistical sub-band model of the quantization noise. *IEEE Transactions on Audio, Speech and Language Processing*, 14(4):1328–1339, July 2006.
[586] A. Djebbar, K. Abed-Meraim, and A. Djebbari. Blind and semi-blind equalization of downlink mc-cdma system exploiting guard interval redundancy and excess codes. *Communications, IEEE Transactions*, 57(1):156–163, Jan. 2009.
[587] R. Douc and E. Moulines. Limit theorems for weighted samples with applications to sequential monte carlo methods. *Annals of Statistics*, 36(5):2344–2376, May 2008.
[588] R. Douc, A. Guillin, and J. Najim. Moderate deviations for particle filtering. *Annals of Applied Probability*, 15(1B): 587–614, Feb. 2005.
[589] R. Douc, G. Fort, and A. Guillin. Subgeometric rates of convergence of f-ergodic strong markov processes. *Stochastic processes and their applications*, May 2006.
[590] R. Douc, G. Fort, E. Moulines, and P. Priouret. Forgetting of the initial distribution for hidden markov models. *Stochastic processes and their applications*, Apr. 2007.
[591] R. Douc, E. Moulines, and P. Soulier. Computable convergence rates for sub-geometric ergodic markov chains. *Bernoulli*, 13(3):831–848, Oct. 2007.
[592] R. Douc, F. Roueff, and P. Soulier. On the existence of some arch(∞) processes. *Stochastic processes and their applications*, 118(5):755–761, 2007.
[593] R. Douc, A. Guillin, and E. Moulines. Bounds on regeneration times and limit theorems for subgeometric markov chains. *Annales de l'Institut Henri Poincaré*, 44(2):239–257, Oct. 2008.
[594] R. Douc, E. Moulines, and Y. Ritov. Forgetting of the initial condition for the filter in general state-space hidden markov chain: a coupling approach. *Electronic Journal of Probability*, 14:27–49, Feb. 2009.
[595] G. Fay, F. Roueff, and P. Soulier. Estimation of the memory parameter of the infinite source poisson process. *Bernoulli*, 13(2):473–491, 2007.
[596] G. Fay, F. Guilloux, M. Betoule, J.-F. Cardoso, J. Delabrouille, and M. Le Jeune. CMB power spectrum estimation using wavelets. *Physical Review D*, 78(8):083013, 2008.
[597] G. Fay, E. Moulines, F. Roueff, and M. S. Taqqu. Estimators of long-memory : Fourier versus wavelets. *Journal of Econometrics*, 2009.
[598] F. Forbes and G. Fort. A convergence theorem for variational em-like algorithms : application to image segmentation. *IEEE Transactions on Image Processing*, 16(3):824–837, June 2007.
[599] G. Fort and S. Lambert-Lacroix. Classification using partial least squares with penalized logistic regression. *Bioinformatics*, 21(7):1104–1111, July 2005.
[600] G. Fort and G. Roberts. Subgeometric ergodicity of strong markov processes. *Ann. Appl. Probab.*, 15(2):1565–1589, July 2005.
[601] G. Fort, S. Meyn, E. Moulines, and P. Priouret. The ode method for stability of skip-free markov chains with applications to mcmc. *Ann. Appl. Probab*, 18(2):664–707, 2008.
[602] E. Gassiat and C. Lévy-Leduc. Efficient semiparametric estimation of the periods in a superposition of periodic functions with unknown shape. *Journal of Time Series Analysis*, 27(6):877–910, Nov. 2006.
[603] H. Gazzah and K. Abed-Meraim. Optimum ambiguity-free directional and omni-directional planar antenna arrays for doa estimation. *IEEE Transactions on Signal Processing*, 2009.
[853] Y. Gousseau and F. Roueff. Modeling occlusion and scaling in natural images. *SIAM Multiscale Modeling and Simulation*, 6(1):105–134, 2007.
[605] E. Grosicki, K. Abed-Meraim, and Y. Hua. A weighted linear prediction method for near-field source localization. *IEEE Transactions on Signal Processing*, 53(10 part 1):3651 – 3660, Oct. 2005.
[606] F. Guilloux, G. Fay, and J.-F. Cardoso. Practical wavelet design on the sphere. *Applied and computational harmonic analysis*, Dec. 2008.
[607] W. Hachem, P. Loubaton, and J. Najim. The empirical distribution of the eigenvalues of a gram matrix with a given variance profile. *Annales de l'Institut Henri Poincare (B) Probability and Statistics*, 42, Nov. 2006.
[608] W. Hachem, P. Loubaton, and J. Najim. Deterministic equivalents for certain functionals of large random matrices. *Annals of Applied Probability*, 17(3):875–930, July 2007.
[609] C. Hurvich, E. Moulines, and P. Soulier. Estimating long memory in volatility. *Econometrica*, 73(4):1283–1328, July 2005.
[610] I. Kacha, K. Abed-Meraim, and A. Belouchrani. Fast adaptive blind mmse equalizer for multichannel fir systems. *EURASIP Journal on Applied Signal Processing*, 2006, 2006.
[611] M. Lavielle and C. Lévy-Leduc. Semiparametric estimation of the frequency of unknown periodic functions and its application to laser vibrometry signals. *IEEE Transactions on Signal Processing*, 53(7):2306–2315, July 2005.

[612] S. M. Leach, J.-F. Cardoso, and et al. Component separation methods for the Planck mission. *Astronomy and Astrophysics*, 491:597–615, Nov. 2008.
[613] C. Lévy-Leduc. Efficient frequency estimation from a particular almost periodic function. *Journal of Time Series Analysis*, 27(5):637–670, Sept. 2006.
[614] C. Lévy-Leduc and F. Roueff. Detection and localization of change-points in high-dimensional network traffic data. *Annals Of Applied Statistics*, 3(2):637–662, June 2009.
[615] C. Lévy-Leduc, E. Moulines, and F. Roueff. Frequency estimation based on the cumulated Lomb-Scargle periodogram. *Journal Of Time Series Analysis*, 29(6):1104–1131, 2008.
[616] Y. Lu, S. Attallah, G. Mathew, and K. Abed-Meraim. Analysis of orthogonality error propagation for frans and hfrans algorithms. *IEEE Transactions on Signal Processing*, 56(9):4515–4521, Sept. 2008.
[617] J. F. Macias-Perez, G. Lagache, B. Maffei, P. Ade, A. Amblard, R. Ansari, E. Aubourg, J. Aumont, S. Bargot, J. Bartlett, A. Benoit, J. Ph Bernard, R. Bhatia, A. Blanchard, J. J. Bock, A. Boscaleri, F. R. Bouchet, A. Bourrachot, P. Camus, J.-F. Cardoso, F. Couchot, P. De Bernardis, J. Delabrouille, F.-X. Desert, O. Dore, M. Douspis, L. Dumoulin, X. Dupac, P. Filliatre, P. Fosalba, K. Ganga, F. Gannaway, B. Gautier, M. Giard, Y. Giraud-Heraud, R. Gispert, L. Guglielmi, J. Ch Hamilton, S. Hanany, S. Henrot-Versille, V. Hristov, J. Kaplan, J.-M. Lamarre, A. E. Lange, K. Madet, C. Magneville, D. P. Marrone, S. Masi, F. Mayet, J. A. Murphy, F. Naraghi, F. Nati, G. Patanchon, O. Perdereau, G. Perrin, S. Plaszczynski, M. Piat, N. Ponthieu, S. Prunet, J.-L. Puget, C. Renault, C. Rosset, D. Santos, A. Starobinsky, I. Strukov, R. V. Sudiwala, R. Teyssier, M. Tristram, C. Tucker, J. Ch Vanel, D. Vibert, E. Wakui, and D. Yvon. Archeops in-flight performance, data processing and map making. *Astronomy & Astrophysics*, 467(3):1313–1344, June 2007.
[618] M. Maida, J. Najim, and S. Peche. Large deviations for weighted empirical mean with outliers. *Stochastic Processes and their Applications*, 117:1373 – 1403, May 2007.
[619] Y. Moudden, J.-F. Cardoso, J.-L. Starck, and J. Delabrouille. Blind component separation in wavelet space. application to CMB analysis. *EURASIP Journal on Applied Signal Processing*, 2005(15):2437–2454, 2005.
[620] E. Moulines, P. Priouret, and F. Roueff. On recursive estimation for locally stationary time varying autoregressive processes. *The Annals of statistics*, 33(6):2610–2654, Dec. 2005.
[621] E. Moulines, F. Roueff, A. Souloumiac, and T. Trigano. Nonparametric inference of photon energy distribution from indirect measurements. *Bernoulli*, 13(2):365–388, 2007.
[622] E. Moulines, F. Roueff, and M. Taqqu. On the spectral density of the wavelet coefficients of long memory time series with application to the log-regression estimation of the memory parameter. *Journal of Time Series Analysis*, 28(2):155–187, Mar. 2007.
[623] E. Moulines, F. Roueff, and M. Taqqu. A wavelet whittle estimator of the memory parameter of a non-stationary gaussian time series. *Annals of Statistics*, 36(4):1925–1956, 2008.
[624] L. T. Nguyen, A. Belouchrani, K. Abed-Meraim, and B. Boashash. Separating More Sources Than Sensors Using Time-Frequency Distribution. *EURASIP Journal on Applied Signal Processing*, 2005(17):2828–2847, Sept. 2005.
[625] J. Olsson, O. Cappé, R. Douc, and E. Moulines. Sequential monte carlo smoothing with application to parameter estimation in non-linear state space models. *Bernouilli*, 14(1):155–179, 2008.
[626] D. Pogosyan, C. Pichon, C. Gay, S. Prunet, J.-F. Cardoso, T. Sousbie, and S. Colombi. The local theory of the cosmic skeleton. *Monthly Notices of the Royal Astronomical Society*, 2009.
[627] J. F. Ponthieu, J. F. Macias-Perez, M. Tristram, P. Ade, A. Amblard, R. Ansari, J. Aumont, E. Aubourg, A. Benoit, J.-P. Bernard, A. Blanchard, J. J. Bock, F. R. Bouchet, A. Bourrachot, P. Camus, J.-F. Cardoso, F. Couchot, P. De Bernardis, J. Delabrouille, F.-X. Desert, M. Douspis, L. Dumoulin, P. Filliatre, P. Fosalba, M. Giard, Y. Giraud-Heraud, R. Gispert, J. Grain, L. Guglielmi, J.-C. Hamilton, S. Hanany, S. Henrot-Versille, J. Kaplan, G. Lagache, A. E. Lange, K. Madet, B. Maffei, S. Masi, F. Mayet, F. Nati, G. Patanchon, O. Perdereau, S. Plaszczynski, M. Piat, S. Prunet, J.-L. Puget, C. Renault, C. Rosset, D. Santos, D. Vibert, and D. Yvon. Temperature and polarization angular power spectra of Galactic dust radiation at 353 GHz as measured by Archeops. *Astronomy & Astrophysics*, 444(1):327–336, Dec. 2005.
[628] F. Roueff and T. Rydén. Non-parametric estimation of mixing densities for discrete distributions. *The Annals of Statistics*, 33(5):2066–2108, Oct. 2005.
[629] F. Roueff and M. S. Taqqu. Central limit theorems for arrays of decimated linear processes. *Stochastic processes and their applications*, 2009.
[630] F. Roueff and M. S. Taqqu. Asymptotic normality of wavelet estimators of the memory parameter for linear processes. *J. Time Ser. Anal.*, 2009.
[631] M. Sahmoudi, K. Abed-Meraim, and M. Benidir. Blind separation of impulsive alpha-stable sources using minimum dispersion criterion. *IEEE Signal Processing Letters*, 12(4):281–284, Apr. 2005.
[632] W. Souidene, K. Abed-Meraim, and A. Beghdadi. A new look to multichannel blind image deconvolution. *IEEE Transactions on Image Processing*, 2009.
[633] L. Thiagarajan, S. Attallah, K. Abed-Meraim, L. Ying-Chang, and F. Hongyi. Non-data-aided joint carrier frequency offset and channel estimator for uplink mc-cdma systems. *IEEE Transactions on Signal Processing*, 56(9):4398–4408, Sept. 2008.
[634] T. Trigano, E. Moulines, F. Roueff, T. Montagu, and A. Souloumiac. Statistical pileup correction method for hpge detectors. *IEEE Transactions on Signal Processing*, 55(10):4871 – 4881, Oct. 2007.
[635] M. Tristram, G. Patanchon, J. F. Macias-Perez, P. Ade, A. Amblard, R. Ansari, E. Aubourg, A. Benoit, J.-P. Bernard, A. Blanchard, J. J. Bock, F. R. Bouchet, A. Bourrachot, P. Camus, J.-F. Cardoso, F. Couchot, P. De Bernardis, J. Delabrouille, F.-X. Desert, M. Douspis, L. Dumoulin, P. Filliatre, P. Fosalba, M. Giard, Y. Giraud-Heraud, R. Gispert, L. Guglielmi, J.-C. Hamilton, S. Hanany, S. Henrot-Versille, J. Kaplan, G. Lagache, J.-M. Lamarre, A. E. Lange, K. Madet, B. Maffei, C. Magneville, S. Masi, F. Mayet, F. Nati, O. Perdereau, S. Plaszczynski, M. Piat, N. Ponthieu,

S. Prunet, C. Renault, C. Rosset, D. Santos, D. Vibert, and D. Yvon. The CMB temperature power spectrum from an improved analysis of the Archeops data. *Astronomy & Astrophysics*, 436(3):785–797, Sept. 2005.
[636] D. Wraith, M. Kilbinger, K. Benabed, O. Cappé, J.-F. Cardoso, G. Fort, S. Prunet, and C. P. Robert. Estimation of cosmological parameters using adaptive importance sampling. *Physical Review D*, 2009.

3.3.2 ACLN: Articles in Other Refereed Journals

[637] R. Alléaume, F. Roueff, E. Diamanti, and N. Lutkenhaus. Topological optimization of quantum key distribution networks. *New Journal of Physics*, 11, July 2009.
[638] A. Ayache, F. Roueff, and Y. Xiao. Local and asymptotic properties of linear fractional stable sheets. *C. R. Acad. Sci. Paris, Ser. I.*, 344(6):389–394, Mar. 2007.
[639] A. Ayache, F. Roueff, and Y. Xiao. Joint continuity of the local times of linear fractional stable sheets. *C. R. Acad. Sci. Paris, Ser. I.*, 344(10):635–640, May 2007.
[891] M. Campedel and E. Moulines. Classification et sélection de caractéristiques de textures. *Revue d'Intelligence Artificielle / RSTI (Hermès)*, 19:633–659, Sept. 2005.
[641] I. Catillo, C. Lévy-Leduc, and C. Matias. Exact adaptive estimation of a periodic function with unknown period. *Mathematical Methods Of Statistics*, 15(2):146–175, 2006.
[642] S. Clémençon and J. Tressou. Exposition aux risques alimentaires et processus stochastiques. *Journal de la Société Française de Statistique*, 150(1):3–29, Aug. 2009.
[643] S. Clémençon, H. De Arazoza, and V. Tran. A stochastic epidemic model with contact-tracing: Large population approximation and statistical estimation. *Journal of Biological Dynamics*, 2(4):392–414, Oct. 2008.
[644] A. Djebbar-Bouzidi, K. Abed-Meraim, and A. Djebbari. Blind channel equalization and carrier frequency offset estimation for mc-cdma systems using guard interval redundancy and excess codes. *International Journal of Electronics and Communications*, 2008.
[645] R. Douc, E. Moulines, and J. Olsson. Optimality of the auxiliary particle filter. *Probability and Mathematical Statistics*, 29(I), Feb. 2009.
[646] G. Fort, S. Lambert-Lacroix, and J. Peyre. Réduction de dimension dans les modèles généralisés : Application à la classification de données issues des biopuces. *Journal de la Société Française de Statistique*, 146(1-2): 117–152, July 2005.
[647] M. Fromont and C. Lévy-Leduc. Adaptive tests for periodic signals detection with applications to laser vibrometry. *ESAIM Probability and Statistics*, 10:46–75, Sept. 2005.
[648] J.-F. Germain. Pampering the client: Calibrating vehicle parts to satisfy customers. *Case Studies in Business, Industry and Government Statistics*, 1(2):164–172, 2007.
[649] R. Iferroudjene, K. Abed-Meraim, and A. Belouchrani. A new jacobi-like method for joint diagonalization of arbitrary non defective matrices. *Journal of Applied Mathematics and Computation*, 211(2):363–373, May 2009.
[650] E. Moulines, F. Roueff, and M. Taqqu. Central Limit Theorem for the log-regression wavelet estimation of the memory parameter in the Gaussian semi-parametric context. *Fractals*, 15(4):301 – 313, Dec. 2007.
[651] J. Najim. Large deviations for independent random variables, application to Erdös-renyi's functionnal law of large numbers. *ESAIM : Probability and Statistics*, 9:116–142, Apr. 2005.
[652] L. Rigouste, O. Cappé, and F. Yvon. Inference and evaluation of the multinomial mixture model for text clustering. *Information Processing and Management*, 43(5):1260–1280, Jan. 2007.
[653] L. Rigouste, O. Cappé, F. Yvon, and F. Clérot. Modèles multi-thématiques markoviens pour la segmentation de textes. *RNTI E10 : revue des nouvelles technologies de l'information*, 2007.

3.3.3 INV: Invited Talks

[654] K. Abed-Meraim. Plenary talk on space time processing for OTH Radar at CGE, Algiers, 2006.
[655] K. Abed-Meraim. Tutorial talk on mobile localization at ICSPC, Dubai, Nov. 2007.
[656] K. Abed-Meraim. Tutorial talk on blind and semi blind system identification at ISSPA, Sharjah, Feb. 2007.
[657] O. Cappé. Adaptive population Monte Carlo. In *Recent Advances in Monte Carlo Based Inference Workshop*, Isaac Newton Institute, Cambridge, UK, Nov. 2006.
[658] O. Cappé. Monte carlo methods for cosmological models. XXIIIrd IAP Colloquium, July 2007.
[659] O. Cappé. An introduction to sequential monte carlo for filtering and smoothing. In *Workshop on statistical modeling of extremes in data assimilation and filtering approaches*, Strasbourg, France, June 2008.
[660] G. Fort. Criteria for subgeometric ergodicity of strong markov processes. In *New Developments in MCMC (Diffusions, Images and Other Challenges)*, Warwick, GB, July 2006.
[661] G. Fort. Adaptive mcmc : theory and methods. In *Optimization in MCMC*, Warwick, GB, July 2009.
[662] S. Haykin and E. Moulines. From kalman to particle filtering (tutorial). In *IEEE Int. Conf. on Acoustics, Speech, and Signal Processing*, Philadelphia, USA, Mar. 2005.
[663] E. Moulines. Mcmc, smc,... what next ? In *Algorithms in Complex Systems Workshop*, EURANDOM, Eindhoven, Netherlands, Sept. 2007.
[664] E. Moulines. Adaptive methods for sequential importance sampling with application to state space models. In *Inference and Estimation in Probabilistic Time-Series Models Workshop*, Isaac Newton Institute, Cambridge, UK, June 2008.

3.3.4 ACTI: Articles in Proceedings of International Conferences

[665] K. Abed-Meraim and S. Attallah. A new adaptive algorithm for the generalized symmetric eigenvalue problem. In *Proc. ISSPA*, Feb. 2007.

[666] A. Aissa El Bey and K. Abed-Meraim. Blind simo channel identification using a sparsity criterion. In *Proc. SPAWC*, Brazil, July 2008.

[667] A. Aissa El Bey and K. Abed-Meraim. Blind identification of sparse simo channels using maximum a posteriori approach. In *EUSIPCO*, Aug. 2008.

[668] A. Alaya-Feki, B. Sayrac, E. Moulines, and A. Le Cornec. Opportunistic spectrum access: Online search of optimality. In *Global Telecommunications Conference, 2008. IEEE GLOBECOM 2008.*, pages 1–5, Nov. 2008.

[669] F. Alayyan, K. Abed-Meraim, and A. Zoubir. Blind equalization in ofdm systems exploiting guard interval redundancy. In *Proc. of the 39th Asilomar Conference on Signals, Systems and Computers*, Nov. 2005.

[670] F. Alayyan, K. Abed-Meraim, and A. E. H. Zoubir. Blind mmse channel identification and equalization algorithms for ofdm-based systems. In *Proc. ISSPA*, Feb. 2007.

[671] F. O. Alayyan, K. Abed-Meraim, and A. M. Zoubir. Blind equalization and frequency offset estimation in ofdm systems exploiting guard interval redundancy. In *Proc. of Int. Symposium on Signal Processing and its Applications (ISSPA), Sydney, Australia*, Aug. 2005.

[672] C. Andrieu, E. Moulines, and P. Priouret. Stability of stochastic approximation under verifiable conditions. In *IEEE Conference on Decision and Control*, pages 6656–6661, Grenade, Dec. 2005.

[673] F. Bach and Z. Harchaoui. Diffrac: a discriminative and flexible framework for clustering. In *NIPS*, Vancouver, Dec. 2007.

[674] S. Barembruch, A. Garivier, and E. Moulines. On approximate maximum likelihood methods for blind identification: How to cope with the curse of dimensionality. In *IEEE SPAWC 2008*, Recife, Brésil, July 2008.

[675] S. Barembruch, A. Garivier, and E. Moulines. On optimal sampling for particle filtering in digital communication. In *IEEE SPAWC 2008*, Recife, Brésil, July 2008.

[676] S. Bartelmaos and K. Abed-Meraim. An efficient & stable algorithm for minor subspace tracking and stability analysis. In *ICASSP*, 2007.

[677] S. Bartelmaos and K. Abed-Meraim. General selection criteria to mitigate the impact of nlos errors in rtt measurements for mobile positioning. In *ICC*, 2007.

[678] S. Bartelmaos and K. Abed-Meraim. Principal and minor subspace tracking: Algorithms & stability. In *ICASSP*, May 2006.

[679] S. Bartelmaos, K. Abed-Meraim, and S. Attallah. Fast algorithms for minor component analysis. In *SSP 2005*, Bordeaux Paris, July 2005.

[680] S. Bartelmaos, K. Abed-Meraim, and S. Attallah. Efficient and fast tracking algorithm for minor component. In *PIMRC*, Oct. 2006.

[681] S. Bartelmaos, K. Abed-Meraim, and F. Soltani. An efficient rake-cfar method for downlink mobile positioning in umts fdd mode. In *SPAWC*, 2007.

[682] A. Belouchrani, A. Bourennane, and K. Abed-Meraim. A closed form solution for the blind separation of two sources from two sensors. In *14th European Signal Processing Conference (EUSIPCO06)*, Florence, Italie, Sept. 2006.

[683] A. Ben Hadj Alaya-Feki, E. Moulines, and E. Villebrun. Exploiting radio measurements in wireless mobile networks with advanced signal processing. In *Third International Conference on Wireless and Mobile Communications, 2007. ICWMC '07.*, page 28, Mar. 2007.

[684] A. Ben Hadj Alaya-Feki, B. Sayrac, S. Ben Jemaa, and E. Moulines. Interference cartography for hierarchical dynamic spectrum access. In *3rd IEEE Symposium on New Frontiers in Dynamic Spectrum Access Networks, 2008. DySPAN 2008.*, pages 1 – 5, Oct. 2008.

[685] A. Ben Hadj Alaya-Feki, B. Sayrac, P. Houze, and E. Moulines. Opportunistic spectrum access with ieee 802.11 in ieee p1900.4 framework. In *Networking and Communications, 2008. WIMOB '08. IEEE International Conference on Wireless and Mobile Computing,*, pages 82–83, Oct. 2008.

[686] A. Ben Hadj Alaya-Feki, B. Sayrac, A. Le Cornec, and E. Moulines. Semi dynamic parameter tuning for optimized opportunistic spectrum access. In *IEEE 68th Vehicular Technology Conference, 2008. VTC 2008-Fall.*, pages 1–5, Oct. 2008.

[687] T. Ben Jaber and K. Abed-Meraim. Blind channel shortening in ofdm system using nulltones and cyclic prefix. In *Proc. ICASSP*, Apr. 2008.

[688] T. Ben Jaber, K. Abed-Meraim, and M. Bonnet. Channel shortening in ofdm system with controlled tir quality. In *Proc. ISSPA*, Feb. 2007.

[689] T. Ben Jaber, K. Abed-Meraim, and H. Boujemaa. A new blind channel shortening for differential encoded ofdm system. In *Proc. SPAWC*, Brazil, July 2008.

[690] T. Ben Jaber, K. Abed-Meraim, and H. Boujemaa. Blind channel shortening in mimo-ofdm systems using single block differential modulation. In *IWCMC*, June 2009.

[691] T. Ben Jaber, K. Abed-Meraim, and H. Boujemaa. Blind channel shortening in zp-ofdm systems with controlled tir quality. In *EUSIPCO*, Aug. 2009.

[692] A. M. Bentahar, A. Belouchrani, E. Bourennane, and K. Abed-Meraim. An analytical solution for a second order blind identification algorithm. In *Proc. CNTSA: Colloque National sur le Traitement du Signal et ses Applications, Guelma, Algeria*, Sept. 2005.

[693] L. Berriche and K. Abed-Meraim. Semi-blind stochastic maximum likelihood for frequency selective MIMO channels. In *The 16th Annual IEEE International Symposium on Personal Indoor and Mobile Radio Communications*, Berlin, Germany, Sept. 2005.

[694] L. Berriche, K. Abed-Meraim, and J.-C. Belfiore. Investigation of the channel estimation error on MIMO system performance. In *EUSIPCO*, Antalya, Turquie, Sept. 2005.
[695] L. Berriche, K. Abed-Meraim, and J.-C. Belfiore. Effect of imperfect channel knowledge on the mimo channel outage capacity. In *SPAWC workshop*, Cannes, France, July 2006.
[696] L. Berriche, K. Abed-Meraim, and J.-C. Belfiore. MIMO systems: Performance comparison of semi-blind techniques. In *9th International Symposium on Signal Processing and Its Applications, 2007. ISSPA 2007*, Feb. 2007.
[697] P. Bertail, S. Clémençon, and J. Tressou. Regenerative block-bootstrap confidence intervals for the extremal index. In *International Workshop in Applied Probability*, Compiègne France, July 2008.
[698] P. Bertail, S. Clémençon, and J. Tressou. A regeneration-based runs estimator for the extremal index in the markov setup. In *International Workshop in Applied Probability*, Compiègne France, July 2008.
[699] P. Bertail, S. Clémençon, and N. Vayatis. On bootstrapping the ROC curve. In *ADVANCES IN NEURAL INFORMATION 21, Proceedings of the NIPS 2008 Conference*, volume 21, pages 137–144, Vancouver CANADA, Dec. 2008.
[700] A. Boudraa, J. C. Cexus, Z. Zaidi, and K. Abed-Meraim. Interaction measure of am-fm signals by cross-ψ_b-energy operator. In *Proc. of Int. Symposium on Signal Processing and its Applications (ISSPA), Sydney, Australia*, Aug. 2005.
[701] R. Boyer and K. Abed-Meraim. Estimation of the complex amplitudes associated to the common poles in a multichannel signal. In *Proc. ICASSP*, 2007.
[702] R. Boyer, G. Bouleux, and K. Abed-Meraim. Common pole estimation with an orthogonal vector method. In *14th European Signal Processing Conference (EUSIPCO06)*, Florence, Italie, Sept. 2006.
[965] M. Campedel, E. Moulines, and M. Datcu. Feature selection for satellite image indexing. In *IGARSS'05*, Séoul, Corée, July 2005.
[704] O. Cappé. Online sequential monte carlo em algorithm. In *IEEE Workshop on Statistical Signal Processing*, Cardiff, Wales, UK, Sept. 2009.
[705] O. Cappé and E. Moulines. On the use of particle filtering for maximum likelihood parameter estimation. In *European Signal Processing Conference (EUSIPCO)*, Antalya, Turkey, Sept. 2005.
[706] O. Cappé and E. Moulines. Recursive computation of the score and observed information matrix in hidden markov models. In *IEEE Workshop on Statistical Signal Processing (SSP'05)*, Bordeaux, France, July 2005.
[707] O. Cappé, M. Charbit, and E. Moulines. Recursive EM algorithm with applications to DOA estimation. In *Proc. IEEE Int. Conf. Acoust., Speech, Signal Processing (ICASSP)*, volume III, pages 664–667, Toulouse, France, May 2006.
[708] J.-F. Cardoso and M. Martin. A flexible component model for precision ICA. In *7th International Conference on Independent component analysis and component separation*, pages 1–8, London, UK, Dec. 2007.
[709] N. Castaneda, M. Charbit, and E. Moulines. Source localization from quantized time of arrival measurements. In *International Conference on Acoustics, Speech and Signal Processing*, volume 4, pages IV933–IV936, Toulouse, France, May 2006.
[710] N. Castaneda, M. Charbit, and E. Moulines. Source localization from quantized time of arrival measurements. In *ICASSP*, volume IV, pages 933–936, Toulouse, France, May 2006.
[711] N. Castaneda, M. Charbit, and E. Moulines. A New Approach for Mobile Localization in Multipath Scenarios. In *IEEE International Conference on Communications*, pages 4680–4685, Glasgow, Scotland, June 2007.
[712] N. Castaneda, M. Charbit, and E. Moulines. A New Bearings-Only Tracking Algorithm for Ground Moving Targets Constrained to Roads. In *IEEE Workshop on Signal Processing Advances in Wireless Communications*, Helsinki, Finland, June 2007.
[713] M. Charbit and L. White. System design for temporally correlated mimo channels. In *Communications Theory Workshop, 2008. AusCTW 2008. Australian*, pages 156–160, University of Canterbury, Christchurch, New Zealand, Jan. 2008.
[714] S. Clémençon and N. Vayatis. Approximation of the optimal ROC curve and a tree-based ranking algorithm. In *Algorithmic Learning Theory*, Budapest Hongrie, Oct. 2008.
[715] S. Clémençon and N. Vayatis. Empirical performance maximization based on linear rank statistics. In *ADVANCES IN NEURAL INFORMATION 21, Proceedings of the NIPS 2008 Conference*, volume 21, pages 305–312, Vancouver CANADA, Dec. 2008.
[716] S. Clémençon and N. Vayatis. Overlaying classifiers: a practical approach to optimal ranking. In *ADVANCES IN NEURAL INFORMATION 21, Proceedings of the NIPS 2008 Conference*, volume 21, pages 313–320, Vancouver CANADA, Dec. 2008.
[717] S. Clémençon and N. Vayatis. On partitioning rules for bipartite ranking. In *AISTATS 2009, JMLR: W&CP*, number 5, pages 97–104, TAMPA, USA, Apr. 2009.
[718] S. Clémençon and N. Vayatis. Adaptive estimation of the optimal roc curve and a bipartite ranking algorithm. In *ALT 2009*, Porto, Portugal, June 2009.
[719] S. Clémençon and N. Vayatis. Nonparametric estimation of the precision-recall curve. In *ICML 2009*, Montréal, Canada, June 2009.
[720] S. Clémençon, A. Garivier, and J. Tressou. Pseudo regenerative block-bootstrap for hidden markov models. In *SSP 2009*, Cardiff, UK, July 2009.
[721] J. Cornebise, E. Moulines, and J. Olsson. Adaptive methods for sequential importance sampling with application to state space models. In *16th European Signal Processing Conference (EUSIPCO)*, Lausanne, Suisse, Aug. 2008.
[722] J. Cornebise, E. Moulines, and J. Olsson. Adaptive methods for sequential importance sampling with application to state space models. In *International Workshop on Applied Probability (IWAP)*, Compiègne, France, July 2008.

[723] A. Djebbar, K. Abed-Meraim, and A. Djebbari. Blind channel equalization in downlink mc-cdma systems exploiting guard interval redundancy excess codes. In *SPAWC workshop*, Cannes, France, July 2006.
[724] A. Djebbar-Bouzidi, K. Abed-Meraim, and A. Djebbari. Blind cannel equalization and carrier frequency offset estimation for mc-cdma systems using guard interval redundancy and excess codes. In *Proc. ICSPC*, pages 456–459, Dubai, EAU, Nov. 2007.
[725] A. Djebbar-Bouzidi, K. Abed-Meraim, and A. Djebbari. Semi-blind equalization of downlink mc-cdma system. In *Proc. ICSPC*, pages 460–463, Dubai, EAU, Nov. 2007.
[726] F. Djebbari, D. Guerchi, K. Abed-Meraim, and H. Hamam. Text hiding in high frequency components of speech spectrum. In *IH*, Allemagne, June 2009.
[727] R. Douc and E. Moulines. Limit theorems for weighted samples with applications to sequential monte carlo methods. In *Sequential Monte Carlo Methods: filtering and other applications*, volume 19, pages 101–107, Oxford, Angleterre, Aug. 2007. EDP Sci., Les Ulis.
[728] R. Douc, O. Cappé, and E. Moulines. Comparison of resampling schemes for particle filtering. In *4th International Symposium on Image and Signal Processing and Analysis (ISPA)*, Zagreb, Croatia, Sept. 2005.
[729] R. Douc, E. Moulines, and J. Olsson. Improving the performance of the two-stage sampling algorithm: a statistical perspective. In *IEEE Statistical Signal Processing Workshop 2007*, Madison, USA, Aug. 2007.
[730] J. Dumon, W. Hachem, S. Lasaulce, P. Loubaton, and J. Najim. On the asymptotic analysis of mutual information of mimo rician correlated channels. In *ISCCSP*, Marrakech, May 2006.
[731] G. Fay, F. Roueff, and P. Soulier. Estimation of the memory parameter of transmission rate measurements using an infinite source poisson model. In *ASMDA2005*, Brest, France, June 2005.
[732] C. Févotte and J.-F. Cardoso. Maximum likelihood approach for blind audio source separation using time-frequency Gaussian source models. In *IEEE Workshop on Applications of Signal Processing to Audio and Acoustics*, Mohonk, NY, USA, Oct. 2005.
[733] S. Filippi, O. Cappé, F. Clérot, and E. Moulines. A near optimal policy for channel allocation in cognitive radio. In *Recent Advances in Reinforcement Learning, Lectures Notes in Computer Science*, volume 5323, pages 69–81, Lille, France, June 2008.
[734] G. Fort, S. Meyn, E. Moulines, and P. Priouret. Ode methods for markov chain stability with applications to mcmc. In *ValueTools'2006*, Pise (Italie), Oct. 2006.
[735] H. Gazzah and K. Abed-Meraim. Optimum ambiguity-free isotropic antenna arrays. In *ICASSP*, Apr. 2009.
[1038] Y. Gousseau and F. Roueff. A geometrical a priori for capturing the regularity of images. In *EUSIPCO 2005*, Aug. 2005.
[737] E. Grosicki and K. Abed-Meraim. A new trilateration method to mitigate the impact of some non–line–of–sight errors in toa measurements for mobile localization. In *Proc. IEEE Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP)*, May 2005.
[738] Z. Harchaoui and F. Bach. Image classification with segmentation graph kernels. In *CVPR*, Minneapolis, June 2007.
[739] Z. Harchaoui and O. Cappé. Retrospective change-point estimation with kernels. In *IEEE Workshop on Statistical Signal Processing (SSP'07)*, Madison, USA, Aug. 2007.
[740] Z. Harchaoui and C. Lévy-Leduc. Catching change-points with lasso. In *NIPS*, Vancouver Canada, Dec. 2007.
[741] Z. Harchaoui, F. Bach, and E. Moulines. Testing for homogeneity with kernel fisher discriminant analysis. In *NIPS*, Vancouver, Dec. 2007.
[742] Z. Harchaoui, F. Bach, and E. Moulines. Kernel change-point analysis. In *Neural Information Processing Systems (NIPS)*, Dec. 2008.
[743] Z. Harchaoui, F. Vallet, A. Lung-Yut-Fong, and O. Cappé. A regularized kernel-based approach to unsupervised audio segmentation. In *ICASSP 2009*, pages 1665–1668, Taiwan, Apr. 2009.
[744] S. Haykin, A. Hero, and E. Moulines. Modeling, identification, and control of large-scale dynamical systems. In *ICASSP*, volume V, pages 945–948, Philadelphie (USA), Apr. 2005.
[745] A. Ikhlef, K. Abed-Meraim, and D. le Guennec. A fast blind adaptive separation algorithm using multiuser kurtosis maximization criterion. In *Proc. SPAWC*, 2007.
[746] I. Kacha, K. Abed-Meraim, and A. Belouchrani. A new blind blind adaptive MMSE equalizer for MIMO systems. In *The 16th Annual IEEE International Symposium on Personal Indoor and Mobile Radio Communications*, Berlin, Germany, Sept. 2005.
[747] I. Kacha, K. Abed-Meraim, and A. Belouchrani. Fast adaptive simo equalizer based on truncated covariance matrix method. In *Proc. WoSPA*, Mar. 2008.
[748] I. Kacha, K. Abed-Meraim, and A. Belouchrani. A low-cost adaptive algorithm for blind equalization without channel order estimation. In *Proc. ISCCSP*, Malta, Mar. 2008.
[749] A. Kammoun, K. Abed-Meraim, and S. Affes. Performance of linear receivers based on superimposed training. In *Proc. SPAWC*, 2007.
[750] A. Kammoun, K. Abed-Meraim, and S. Affes. An efficient regularized semi-blind estimator. In *Conference ICC*, Allemagne, June 2009.
[751] A. Kammoun, K. Abed-Meraim, and S. Affes. Superimposed or time-multiplexed training: A performance comparison. In *EUSIPCO*, Aug. 2009.
[752] C. Lévy-Leduc. Frequency estimation from a particular almost periodic function. In *ICASSP*, Toulouse, France, May 2006.
[753] N. Linh-Trung, A. Aissa El Bey, K. Abed-Meraim, and A. Belouchrani. Underdetermined blind source separation of non-disjoint nonstationary sources in time-frequency domain. In *ISSPA'05*, volume 1, pages 46–49, Sydney (Australie), Aug. 2005.

[754] Y. Lu, S. Attallah, and K. Abed-Meraim. Propagation of orthogonality error for frans algorithm. In *Proc. ISSPA*, Feb. 2007.
[755] A. Lung-Yut-Fong, C. Lévy-Leduc, and O. Cappé. Distributed detection/localization of network anomalies using rank tests. In *SSP 09*, Cardiff, UK, Sept. 2009.
[756] E. Misra, O. Cappé, and F. Yvon. Using lda to detect semantically incoherent documents. In *Conf. Computational Natural Language Learning (CoNLL)*, Manchester, UK, Aug. 2008.
[757] E. Moreau, F. Yvon, and O. Cappé. Robust similarity measures for named entities matching. In *International Conference on Computational Linguistics (COLING)*, Manchester, UK, 2008.
[758] E. Moreau, F. Yvon, and O. Cappé. Semi-automatic labeling of (coreferent) named entities: an experimental study. In *LREC Workshop on "Resources and Evaluation for Identity Matching, Entity Resolution and Entity Management"*, Marakech, Marocco, 2008.
[759] Y. Moudden, P. Abrial, P. Vielva, J.-B. Melin, J.-L. Starck, J.-F. Cardoso, J. Delabrouille, and M. K. Nguyen. Independent component separation from incomplete spherical data using wavelets. application to CMB data analysis. In *Physics in Signal and Image Processing*, Toulouse, France, Jan. 2005.
[760] B. Mouhouche, P. Loubaton, and K. Abed-Meraim. On the performance of space time transmit diversity in the downlink of w-cdma with and without equalization. In *Proc. IEEE Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP)*, May 2005.
[761] J. Olsson, O. Cappé, R. Douc, and E. Moulines. On the use of sequential monte carlo methods for approximating smoothing functionals, with application to fixed parameter estimation. In *Proceedings of the SMC'2006 workshop, European Series in Applied and Industrial Mathematics*, Oxford, UK, July 2006.
[762] L. Rigouste, O. Cappé, and F. Yvon. Evaluation of a probabilistic method for unsupervised text clustering. In *International Symposium on Applied Stochastic Models and Data Analysis*, Brest, France, May 2005.
[763] L. Rigouste, O. Cappé, and F. Yvon. Inference for Probabilistic Unsupervised Text Clustering. In *IEEE Workshop on Statistical Signal Processing (SSP'05)*, Bordeaux, France, July 2005.
[764] L. Rigouste, O. Cappé, and F. Yvon. Quelques observations sur le modèle LDA. In *Journées Internationales d'Analyse statistique des données textuelles*, pages 819–830, Besançon, France, Apr. 2006.
[765] M. Sahmoudi and K. Abed-Meraim. Investigations on contrast functions for blind source separation based on non-gaussianity and sparsity measures. In *Proc. of Int. Symposium on Signal Processing and its Applications (ISSPA), Sydney, Australia*, Aug. 2005.
[766] M. Sahmoudi and K. Abed-Meraim. Robust quadratic time-frequency distributions for the analysis of multicomponent fm signals in heavy-tailed noise. In *in Proc. of the IEEE Stat. Sig. Proc. (SSP) Workshop, Bordeaux, France*, July 2005.
[767] M. Sahmoudi, K. Abed-Meraim, M. Laviel, E. Kuhn, and P. Ciblat. Blind source separation of noisy mixtures using a semi-parametric approach with application to heavy-tailed signals. In *in Proc. of the European Sig. Proc. Conf. (EUSIPCO), Antalya, Turkey*, Sept. 2005.
[768] N. Sokolovska, O. Cappé, and F. Yvon. The asymptotics of semi-supervised learning in discriminative probabilistic models. In *International Conference on Machine Learning (ICML)*, Helsinki, Finland, July 2008.
[769] W. Souidene, K. Abed-Meraim, and A. Beghdadi. Deterministic techniques for multichannel blind image deconvolution. In *Proc. of Int. Symposium on Signal Processing and its Applications (ISSPA), Sydney, Australia*, Aug. 2005.
[770] W. Souidene, A. Aissa El Bey, K. Abed-Meraim, and A. Beghdadi. Blind image separation using sparse representation. In *14th International Conference on Image Processing ICIP*, San Antonio, Texas, USA, Sept. 2007.
[771] L. Thiagarajan, S. Attallah, L. Ying-Chang, and K. Abed-Meraim. Channel identifiability for blind subspace-based channel estimator in uplink mc-cdma systems. In *Proc. ICC*, May 2008.
[772] T. Trigano, E. Barat, T. Dautremer, and A. Souloumiac. Pile-Up Correction Algorithms for Nuclear Spectrometry. In *ICASSP 2005*, Philadelphie (USA), Mar. 2005.
[773] T. Trigano, A. Souloumiac, F. Roueff, and E. Moulines. Nonparametric Inference for Pileup Correction in Nuclear Spectroscopy. In *IEEE Workshop on Statistical Signal Processing*, Bordeaux, France, July 2005.
[774] T. Trigano, F. Roueff, E. Moulines, A. Souloumiac, and T. Montagu. Energy spectrum reconstruction for HPGe detectors using analytical pile-up correction. In *ICASSP*, volume III, pages 592–595, Toulouse, France, May 2006.
[775] J. Ybanez, F. Davoine, and M. Charbit. Linear tracking of pose and facial features. In *10th IAPR International Conference on Machine Vision Applications*, Tokyo, Japon, May 2007.
[776] J. Ybanez, F. Davoine, and M. Charbit. Face tracking using canonical correlation analysis. In *International Conference on Computer Vision Theory and Applications*, volume 1, pages 396–402, Barcelone, Espagne, Mar. 2007.

3.3.5 ACTN: Articles in Proceedings of French Conferences

[777] S. Bartelmaos and K. Abed-Meraim. Critères de cohérence permettant d'atténuer l'impact des erreurs de nlos sur le positionnement du mobile. In *Proc. GRETSI*, 2007.
[778] S. Bartelmaos, K. Abed-Meraim, J. M. Chaufray, and V. Guillet. Estimation des paramètres de propagation d'un canal mimo par l'algorithme esprit-unitaire multidimentionnel. In *GRETSI 2005*, Belgique, Sept. 2005.
[779] B. Benmammar, C. Lévy-Leduc, and F. Roueff. Algorithme de détection d'attaques de type syn flooding. In *Gretsi*, Troyes France, Sept. 2007.
[1177] M. Campedel and E. Moulines. Méthodologie de sélection de caractéristiques pour la classification d'images satellitaires. In *CAP05*, pages 107–108, Nice - France, June 2005.

[781] O. Cappé and E. Moulines. A propos de l'utilisation des méthodes de monte carlo séquentielles pour l'estimation de paramètres dans les modèles de markov cachés. In *Actes du colloque du GRETSI*, Louvain, Belgique, Sept. 2005.
[782] O. Cappé and C. P. Robert. Une approche monte carlo adaptative pour l'approximation de lois a posteriori avec application à l'inférence de paramètres cosmologiques. In *Colloque du GRETSI*, Troyes, France, Sept. 2007.
[783] J.-F. Cardoso, P. Abrial, Y. Moudden, J.-L. Starck, and J. Delabrouille. Statistiques direction-multipôle pour la séparation de composantes dans le fonds de rayonnement cosmologique. In *GRETSI*, Louvain-la-Neuve, Sept. 2005.
[784] N. Castaneda, M. Charbit, and E. Moulines. A Batch-Recursive Algorithm for Passive Ground Target Tracking. In *GRETSI*, Troyes, France, Sept. 2007.
[785] J. Dumon, W. Hachem, S. Lasaulce, P. Loubaton, and J. Najim. Quelques propriétés d'un approximant de l'information mutuelle des canaux mimo de rice bicorrélés. In *GRETSI*, Troyes, Sept. 2007.
[786] J.-F. Germain. Une procédure de sélection de modèle basée sur la régression logistique régularisée l1. application au passage de vitesse. In *39èmes Journées de Statistiques - SFdS*, Angers - France, June 2007.
[787] W. Hachem, P. Loubaton, and J. Najim. "sur les fluctuations de l'information mutuelle des canaux mimo de grande dimension". In *GRETSI*, Troyes, Sept. 2007.
[788] Z. Harchaoui and F. Bach. Classification d'images à l'aide de noyaux sur graphes de segmentation. In *GRETSI*, Troyes, Sept. 2007.
[789] Z. Harchaoui and C. Lévy-Leduc. Segmentation temporelle de signaux à l'aide du lasso. In *Gretsi*, Troyes France, Sept. 2007.
[790] A. Ikhlef, K. Abed-Meraim, and D. le Guennec. S'eparation aveugle sous-déterminée de sources audio en utilisant la décomposition en paquet d'ondelettes. In *Proc. GRETSI*, 2007.
[791] A. Lung-Yut-Fong, O. Cappé, C. Lévy-Leduc, and F. Roueff. Détection et localisation décentralisées d'anomalies dans le trafic internet. In *GRETSI*, Dijon, France, Sept. 2009.
[792] E. Moreau, F. Yvon, and O. Cappé. Appariement d'entités nommées coréférentes : combinaisons de mesures de similarité par apprentissage supervisé. In *Conférence sur le Traitement Automatique des Langues (TALN)*, Avignon, France, 2008.
[793] T. Rebafka. An mcmc approach for estimating a fluorescence lifetime with pile-up distorsion. In *Gretsi*, Troyes, Sept. 2007.
[794] L. Rigouste, O. Cappé, and F. Yvon. Modèle de mélange multi-thématique pour la Fouille de Textes. In *Traitement Automatique des Langues Naturelles - Atelier DÉfi Fouille de Textes*, Dourdan, France, June 2005.

3.3.6 COM: Talks in Conferences Which Do Not Publish Proceedings

[795] S. Bartelmaos, K. Abed-Meraim, and S. Attallah. Mobile localization using subspace tracking. In *APCC 2005*, Australie, Oct. 2005.
[796] J. Cornebise, E. Moulines, and J. Olsson. Adaptive refueling in particle filter algorithms. In *New directions in Monte Carlo Methods*, Fleurance, France, June 2007.
[797] J. Cornebise, E. Moulines, and J. Olsson. Adaptive methods for sequential importance sampling. In *Opening workshop of SAMSI 2008-09 Program onSequential Monte Carlo methods*, Durham, Etats-Unis, Sept. 2008.
[798] J. Cornebise, E. Moulines, and J. Olsson. Adaptive methods for sequential importance sampling. In *Journées MAS de la SMAI*, Rennes, France, Aug. 2008.
[799] G. Fay, F. Roueff, and P. Soulier. Estimation of the long memory parameter using an infinite source poisson model applied to transmission rate measurements. In *4th Conference on Extreme Value Analysis*, Gothenburg, Sweden, Aug. 2005.
[800] G. Fort. Fluid limit-based tuning of some hybrid mcmc samplers. In *Adap'SKI*, Bormio, Italie, July 2008.
[801] G. Fort. On adaptive stratification. In *2009 INFORMS Applied Probability Society*, July 2009.
[802] G. Fort. Limites fluides de quelques échantillonneurs mcmc. In *Journées MAS*, Lille, France, July 2006.
[803] G. Fort. Stability of markov chains based on fluid limit techniques. applications to mcmc. In *Congrès SSC-SFDS*, Ottawa, Canada, July 2008.
[804] G. Fort. Limit theorems for adaptive mcmcalgorithms. In *41eme journées de Statistiques de la SFDS*, Bordeaux, France, July 2009.
[805] G. Fort. Fluid limit for hybrid mcmc samplers. In *INFORMS Applied Probability Society*, July 2007.
[806] J. Ybanez, F. Davoine, and M. Charbit. A linear estimation method for 3D pose and facial animation tracking. In *Workshop on Component Analysis Methods for Classification, Clustering, Modeling, and Estimation Problems in Computer Vision on the IEEE Conference on Computer Vision and Pattern Recognition*, Minneapolis, June 2007.

3.3.7 OS: Books and Book Chapters

[807] O. Cappé, E. Moulines, and T. Rydén. *Inference in Hidden Markov Models*. Springer, 2005.
[808] J.-F. Cardoso. *Vraisemblance*, pages 115–168. Hermes, Paris, France, 2007.
[809] J. Delabrouille and J.-F. Cardoso. *Diffuse source separation in CMB observations*. Springer, Lecture Notes in Physics, 2008.
[810] R. Douc, E. Moulines, and P. Soulier. Subgeometric ergodicity of Markov chains. In *Dependence in probability and statistics*, pages 55–64. Springer, 2006.

[811] G. Fort, E. Moulines, and P. Soulier. *Elements of Markov chain theory*, pages 511–562. Springer, 2005.

3.3.8 AP: Patents, Registered Softwares

[812] B. Benmammar, C. Lévy-Leduc, and F. Roueff. Logiciel TopRank, 2008.
[813] T. Rebafka, F. Roueff, and A. Souloumiac. Procede d'estimation des parametres de la distribution des temps de reponse de particules d'un systeme, applique notamment aux mesures de fluorescence. (09 00524), Feb. 2009.

Chapter 4

Image Processing and Interpretation (TII)

The Image Processing and Interpretation Group (TII) of the TSI department includes research projects dealing with images and 3D objects, and the Center of Competences in information extraction and image understanding for earth observation (CoC).

Team leader F. Schmitt (P) until October 2008[1], then I. Bloch (P).

Faculty A. Almansa (CR1 CNRS, since 10/07), E. Angelini (Assoc. P), I. Bloch (P), H. Brettel (CR1 CNRS), T. Boubekeur (Asso. P, since 11/08), M. Campedel (Assoc. P), M. Datcu (P), J. Delon (CR2 CNRS, since 10/05), Y. Gousseau (Assoc. P), S. Ladjal (Assoc. P), H. Maître (P, part time), J.-M. Nicolas (P), S. Rital (IR), M. Roux (Assoc. P), H. Sahbi (CR1 CNRS, since 10/07), F. Schmitt (P, until 10/08), T. Tanzi (P), F. Tupin (P).

Supporting permanent staff (shared with other groups): D. Asselineau, S.C. Barrière, B. Nabati.

PhD students Defended: D. Cherifi (03/05), S. Ladjal (03/05), T. Tung (06/05), F. Duguet (06/05), S. Homayouni (12/05), P. Soler (03/06), D. Girardeau-Montaut (05/06), F. Bretar (06/06), F. Rossant (10/06), C. Valade (12/06), F. Cellier (01/07), G. Peters (06/07), A. Moreno (09/07), J.-F. Goudou (10/07), L. Gueguen (10/07), J. Gerhardt (10/07), C. B. Akgul (11/07), B. Zhang (11/07), L. Bin (12/07), A. Bhattacharya (12/07), C. Millet (01/08), H. Khotanlou (02/08), T. Hurtut (03/08), I. Kyrgyzov (05/08), J. Delliere (06/08), N. Bonnier (09/08), M. Costache (09/08), A. Kermi (10/08), P. Lopez Quiroz (11/08), A. Baillard (12/08), R. El-Berbari (01/00), X. Perrotton (01/09), A. Ghaleb (02/09), M. Liénou (03/09), O. Nempont (03/09), J.-B. Bordes (04/09), H. Chaabouni (06/09).

Current: E. Aldea (10/06), C. Angeli (01/07), J. Anquez (02/06), S. Audière (10/08), J. Baussé (12/06), P. Birjandi (01/08), H. Bizot (10/08), P. Blanchart (10/08), E. Bughin (10/07), J. Caron (10/08), J. Chen (doctoral stay, 1 year), N. Chenouard (10/06), D. Craciun (10/06)), C. Deledalle (10/08), V. Duval (09/08), G. Fouquier (10/06), G. Ferraioli (doctoral stay, 1 year), B. Galerne (10/07), I. Ghorbel (11/08), D. Hadidi (11/08), G. Hochard (11/07), C. Lemen (10/05), G. Lehureau (10/06), D. Lesage (10/05), C. Mallet (09/07), M. Marim (12/07), D. Martinez (10/06), F. Mosca (10/07), T. Napoléon (10/06), G. Palma (02/07), B. Petitpas (10/08), J. Rabin (10/06), S. Redko (05/06), A. Shabou (10/07), A. Simac (10/06),

[1] Francis Schmitt received his engineering diploma from the Ecole Centrale in Lyon, France, in 1973 and in 1979 was awarded a PhD from the University of Paris VI (Pierre et Marie Curie). From 1973 up to his sudden death in October 2008 he was a member of the faculty at Télécom ParisTech (Ecole Nationale Supérieure des Télécommunications, last holding the rank of full professor in the Image and Signal Processing Department in which he headed the Image Processing Group. His main interests were in computer vision, 3D modeling, image and 3D object indexing, computational geometry, multispectral imagery and colorimetry. He authored or co-authored nearly 150 publications in these fields.

H. Soubaras (01/09), H. Sportouche (10/07), C. Vanegas (01/08), Y. Wang (doctoral stay, 1 year), N. Widynski (10/07), J. Wojak (11/07), G. Xia (09/07).

Post-docs, engineers and sabbaticals J. Atif (8 months), B. Batrancourt (6 months), D. Benboudjema (1 year), R. Berger (1 year), L. Bibin (1 year), R. Cesar (Univ. Sao Paulo, 3 months), S. Chambon (15 months), O. Colliot (4 months), E. Erdem (3 months), M. Ferecatu (1 year), G. Dardier (1 year), L. Denis (1 year), M. Gasteau (18 months), C. Hudelot (8 months), V. Israël-Jost (1 year), H. Kiyochi, R. Lepage (Univ. Montréal, 1 year), R. Pino (Univ. Merida, 4 months), N. Richard (1 year), H. Tang (6 months), A. Zureiki (1 year).

Faculty [EC, CNRS]	[12 ; 2,5]
PhD students	27,4
Post-docs, engineers and sabbaticals	3,5
Defended PhD theses	37
Defended HDR	1
Journal papers [published, in press]	[75, 11]
Papers in conference proceedings	302
Chapters and books	26
Patents and sofware	1
Grants [public, private, european] (k€)	[2705, 662, 97]

4.1 Objectives

The objective of the group is to develop methodologies and theoretical tools for image, scene and 3D object processing and interpretation. The main approach consists in solving globally complex problems, based on rigorous theoretical bases, and integrating multiple and complementary techniques, for deriving interpretations from data. Applications focus on medical imaging, aerial and satellite imaging, natural image analysis. Contributions of the group can therefore be found at theoretical level (knowledge and information representation and modeling, at various levels and in 2D as well as 3D, processing, interpretation and reasoning on spatial data), at algorithmical level (in particular to implement the developed models for large and complex data sets), and at applicative level. The group is now well recognized, in both academic, institutional and industrial domains. It has numerous collaborations with other universities, and is supported by grants and contracts. The different research activities are closely linked together, which is one of the strong features of the group.

Over the last four years, the team has benefited from the appointment of three CNRS researchers and one associate professor, strengthening research axes in indexing and mathematics for image processing and computer vision, and in computer graphics. The good reputation of the group and its visibility, in France as well as at international level, are confirmed by the number of publications, but also by the number of collaborations, mentioned below for each research axis, and by its attractiveness for CNRS candidates, post-docs and PhDs.

The scientific animation of the team includes a general seminar and several specific ones (medical imaging, compressed sensing, radar imaging, CoC seminar...). PhD candidates are invited to present their work at the end of the first year of their PhD, so as to gather comments from the whole team and initiate discussions among them, thus favoring cross-fertilization of ideas. We also pay attention to the accompanying process of the PhD theses, beside the direct scientific supervision, including a help to prepare their future.

The team is also strongly involved in teaching, both at undergraduate level and master level, at Télécom ParisTech and in partner universities. It is responsible for several master programs in image processing and its applications to medical imaging and satellite imaging, thus ensuring a strong link between teaching and research.

4.2 Main Results

The main research results obtained during the period 2006-2009 are presented below for the research areas of the TII team, both from a theoretical and methodological point of view and from an application perspective.

4.2.1 Knowledge Representation and Spatial Reasoning

Faculty I. Bloch, M. Campedel, H. Maître.

Main events RFIA 2008 (program chair) and edition of a special issue of the I3 journal, with selected papers.

Projects Collaborations: J. Atif (Univ. Antilles-Guyane), R. Cesar (Univ Sao Paulo, Brazil), C. Hudelot (ECP), J. Inglada (CNES), J. Lang (IRIT and LAMSADE), N. Milisavljecvic (RMA, Brussels), R. Pino-Perez and C. Uzcategui (Univ Los Andes, Merida, Venezuela), F. Rossant (ISEP), L. Laborelli (INA), S. Dubuisson (LIP6).

Spatial reasoning in images requires to develop tools for representing spatial information, both for objects and their spatial relations, and for reasoning on this type of information. Uncertainty and imprecision management, as well as fusion of heterogeneous information are central in our work. As the continuation of previous work, we proposed models for representing spatial relations based on fuzzy sets theory [824, 829, 823]. Recently, we proposed new definitions of fuzzy connectivity, based on the notion of hyper-connectivity, and dealing properly with the fuzzy sets semantics and with continuity issues [872]. The associated algorithms are based on tree representations, that make filtering and other processing tractable. We also addressed the modeling of complex relations such as “parallel” and “across”, again using fuzzy mathematical morphology. A new orientation of our work deals with the modeling of bipolar spatial information, in order to represent both positive and negative information. We proposed a novel approach, based on mathematical morphology on the complete lattice of bipolar fuzzy sets to represent and manipulate such information [1213].

Besides knowledge representation aspects, we addressed the reasoning component of spatial reasoning from different points of view. We developed an ontology of spatial relations, which was used to enrich a part of the FMA[2] (medical ontology) concerning brain structures. Fuzzy models of spatial relations define the semantics of ontology concepts and their representations in the spatial domain contribute to reduce the semantic gap. This provides a promising way for using the enriched ontology to guide the recognition of image structures [857]. For each particular application, the semantics of the spatial relations (in particular the shape and parameters of the membership functions) are learned on a database of examples. Other work on ontologies, in the domain of satellite imaging, are carried out in DAFOE project (see Section 4.2.5).

These models have also been integrated in graphs representing image structures (objects and spatial relations between them). Reasoning schemes in these graphs have been designed, in order to find optimal paths providing an ordered sequence of objects to be recognized, each object being processed based on the previously processed objects in the sequence and on spatial relations with respect to them. The optimality is defined in terms of spatial relations and saliency computed from the actual data [1028]. As a novel contribution, we also integrated these models in constraint networks, and expressed the recognition process as a constraint satisfaction problem,

[2] http://sig.biostr.washington.edu/projects/fm/

for which we derived specific propagators for each spatial relation in order to reduce the domains of the solutions [1102]. Finally, fuzzy spatial relations are integrated in particle filters for tracking objects in video sequences (collaboration with the LIP6). This new contribution shows a better behavior than classical particle filters in case of abrupt changes in the trajectory.

Our work on fuzzy mathematical morphology has led to the development of new transformations, for defining fuzzy influence zones and skeleton by influence zones, with applications to interpolation between fuzzy sets [822]. These transformations have also been developed in a logical framework (in collaboration with R. Pino-Perez, C. Uzcategui and J. Lang), with applications to mediation and negotiations [951].

Finally, our work on information fusion deals with fusion of spatial relations, fusion of defect detectors for digital film restoration (with INA) [880] and fusion of fuzzy musical rules, which led to higher recognition rates in various musical scores than commercial softwares (with ISEP) [879]. We also have a long collaboration with the RMA in Brussels for fusion in the domain of anti-personnel mine detection for which we proposed original methods based on belief functions and possibility theory [866].

4.2.2 Machine Learning and Image Retrieval

Faculty The whole group is involved in this research axis.

Projects Infom@gic in pôle CapDigital, ANR 2006 AVEIR and DAFOE projects, European project K-Space. Collaborationss with J.-Y. Audibert and R. Keriven (Ponts ParisTech).

In 2006-2007, a new research direction, spreading across various themes in the TSI department, has emerged. In the TII group, it concerns indexing of multimedia documents. By indexing, we mean the analysis of images or documents contents, in order to facilitate their massive exploration. Indexing is strongly linked to the mining operation an end-user may need. Research in this domain benefits from methodological advanced developments (modeling, adaptive learning depending on the type of images), in strong connection with STA team, and from a better knowledge management and exploitation (fuzzy reasoning, visual or domain ontologies). Indexing of 3D models was also studied, based on either 2D views or purely 3D information, using kernel approaches for estimating joint density distributions [815, 816], and using Reeb graphs [883]. For 3D object recognition in biological vision, we found that view-specific *and* 3D-model based representations are used by human observers [1226, 875]. Finally, mining strategies for large image databases are developed, based on relevance feedback.

Spatial relations have been exploited in this context for recognizing regions of an image and providing a linguistic description of its content (with CEA-LIST). Classification and image mining are also addressed using marginalized graph kernels, and have contributed to the Infom@gic project.

A software platform, PLATO, is being developed with the aim of organizing, centralizing and handling multimedia data (images, sounds, videos, but also processing tools and processing results), in collaboration with AAO team.

The goal of the UrbanView project (partners LIP6, EADS, THALES, etc.) is to design machine learning techniques for multi-camera object (car, person,...) tracking, retrieval and traffic surveillance. Two different scenarios were considered, synchronous and asynchronous, depending on the fact that objects and tracks are matched using overlapping or non overlapping cameras. In this work, we introduced a framework for multi-view object matching and tracking based on kernel canonical correlation analysis. Our method is purely statistical and encodes intrinsic object appearances while being view-point invariant.

Further collaborations, mainly with Ponts ParisTech, include kernel design for object-based image retrieval. The goal is to incorporate many properties (invariance, context, etc.) in order to achieve object matching and retrieval. Theoretical properties, about the positive definiteness of these kernels and their convergence to a fixed point, were proved together with experiment validation on widely used databases including Corel and Flickr [1127].

3D retrieval has recently emerged as an important boost for 2D search techniques, by its several complementary aspects, for instance, enriching views in 2D image datasets, overcoming occlusion and serving in many real world applications such as photography, art, archeology and geo-localization. In this work, we introduced a complete "2D photography to 3D object" retrieval framework which, given a (collection of) picture(s) or sketch(es) of the same scene or object, allows us to retrieve the underlying similar objects in a database of 3D models. The contributions of the method include (i) a generative approach for alignment which is able to find canonical views consistently through scenes/objects and (ii) the application of an efficient but effective matching method used for ranking. The results are reported through the SHREC benchmarking consortium and evaluated/compared by a third-party, showing clearly the good performance of the proposed framework with respect to the other participants [1097].

The AVEIR ANR project is about combined text and image retrieval joining LIP6, LSIS and LIG; its goal is to design machine learning techniques in order to learn the relationships between text and images and perform inference (i.e., image annotation). The members of the consortium are actively collaborating and participating in different evaluations and challenges including ImageClef 2008 and 2009; they submitted a common run ranked 2nd among 25 international experienced teams working on the same topic.

Another research topic is to use manifold learning techniques (graph Laplacian and diffusion maps) for relevance feedback based image retrieval. A new graph Laplacian technique was introduced which makes it possible to robustly learn the embedding of a manifold enclosing an image database, via diffusion map [1128, 1124]. The approach is three folds, it allows us (i) to integrate all the unlabeled images in the decision process (ii) to robustly capture the topology of the image set and (iii) to perform the search process inside the manifold. This technique shows a clear and a consistent gain with respect to state of the art relevance feedback approaches on standard databases. The graph Laplacian technique was also used for dimensionality reduction and applied to large scale image database "visualization".

Finally, we recently addressed the problem of image queries in large databases from user sketches (binary strokes). We proposed a new descriptor [1018] for fast large scale search and integrated the so-defined search engine within a variational image compositing tool [1019].

In this part of our activities, a core feature concerns kernel-based statistical methods which allow taking into account invariance and contextual properties for object matching and recognition in images and video sequences. The main goal is to integrate additional information about geometry, textual relations and invariance properties in the kernel definition. Theoretical properties of kernels have then to be proved in order to use them for machine learning and dimensionality reduction. Taking into account the transductive aspect is important, via the introduction of prior information in a weakly supervised manner and will lead to increased performances in recognition and interpretation tasks. Multiple applications can be anticipated, such as scene recognition, interactive search and navigation in multimedia generic and specific databases, within ongoing projects such as ANR AVEIR.

4.2.3 2D and 3D Mathematical Modeling

Faculty A. Almansa, T. Boubekeur, J. Delon, Y. Gousseau, S. Ladjal, H. Maître, F. Roueff, F. Schmitt.

Projects European project MUSCLE, ANR Otarie, ANR Freedom, ANR CeCil, ANR NatSim. Collaborations with L. Alvarez (U. Gran Canaria, Spain), J.-F. Aujol (ENS-Cachan), J.-M. Morel (ENS-Cachan), L. Vese (UCLA), V. Caselles (UPF, Barcelona), S. Durand (U. Paris Descartes), M. Lindenbaum (Technion, Israël), P. Musé (U. de la República, Uruguay), A. Sobolevskii (Poncelet Lab., Moscou), T. Buades and A. Desolneux (U. Paris Descartes), S. Masnou (Paris 6), Mila Nikolova (ENS-Cachan), I. Lyuboshenko (PhaseView), M. Alexa (CG Lab, TU Berlin).

Main events International Color Consortium (ICC), digital printing days (March 2009).

Tetxure and Natural Images Modeling This research theme deals with the stochastic modeling of natural images. First, generative models taking into account scaling phenomena in natural images have been developed. These models (dead leaves, shot-noise, transparent models) are grounded in the theory of marked point processes, whose marks are geometrical structures [831]. In particular, we have shown that some models enable the simultaneous representation of geometry and scaling properties in natural images [853]. More recently, we applied such models to image and texture synthesis. A second research direction is concerned with the mathematical analysis of variational methods for image restoration, and in particular the influence of such methods on the geometry and textures within images. In particular, we have shown that the popular TV-L1 model is equivalent to some morphological filtering [1241]. Another contribution is concerned with the variational decomposition of color images.

Mathematical Methods for Image Analysis and Computer Vision These last years, we have developed or applied various mathematical tools for the analysis indexing or matching of images. Among these tools, let us first mention optimal transportation equations. These equations enable the definition of metrics between weighted features and yield elegant ways to compare images. Another methodological aspect of our researches deals with *a contrario* methods, developed by Desolneux et al. to automatically fix detection thresholds for image analysis. In particular, we applied these methods to the problem of image matching. Among the other tools that we have investigated and applied, let us mention topographic maps, scale spaces, and deformable models.

We first proposed solutions to the decision problem for shape matching [870]. We also have developed a complete chain for the matching of images from local descriptors (such as SIFTs). This procedure encompasses the descriptors themselves, a transportation metric adapted to circular histograms to compare them, an unsupervised matching criterion and a validation, RANSAC-like step [1250, 1116, 1117]. Another research direction concerns the indexing of satellite images, invariant to resolution changes [863, 864] or relying on morphological tools [865]. More recently, we have proposed an original method for the indexing of texture, respecting a wide range of geometrical and radiometric changes [1253]. This method can be seen as an extension of the classical granulometry from mathematical morphology. We also took interest in the indexing and matching of museal artworks, first through the unsupervised comparison of the color composition of images [858], and then through the automatic analysis of artistic hand drawings [1053]. In the domain of artwork, original contributions on multispectral imaging have been developed for high quality image acquision [878]. A mathematical framework for spatial and color gamut mapping has also been proposed, leading to adpative algorithms with real applications for color printing [1078, 953, 1238]. In the domain of aerial image matching, we have shown under which conditions a matching is licit, with a precision of a tenth of a pixel. This enables one to develop stereoscopic vision systems with very small b/h [1222, 840, 1121].

Restoration of Old Movies As part of a research project (FREEDOM JCJC ANR project), we have proposed several contributions in the field of movie and videos restoration, in collaboration with researchers from the CMLA (ENS Cachan) and J-L Lions Lab (Paris 6 University). In these contributions, various tools have been used (statistical tests, variationnal approaches, copy-paste methods, patch-based methods, Fourier analysis) and both theoretical and applied points have been tackled, as for instance: the automatic combination of patch-based methods and geometrical interpolation for image inpainting [1240]; the variational interpretation of copy-paste methods [1245]; the automatic detection of occulting defects (dust, scratches) and the restoration of local radiometric problems [839], for which it has been shown that a precise motion estimation was not necessary, etc. Some of the algorithms developed by the team should soon be made available as plugins for standard movie processing softwares.

At the same time, we also took interest in superresolution and irregular sampling problems. A first direction deals with subspace methods. We continue researches previously developed several years ago at the TSI department and include regularity constraints to circumvent the intricate

problem of source separation in the image superresolution context [1031]. A second direction uses total variation for restoration and superresolution in the case of irregular sampling [847].

Finally, our work on phase reconstruction for optical waves was pursued, for incoherent cameras and several axial views (in collaboration with PhaseView and I. Lyuboshenko).

3D Computer Graphics The group has a long history in 3D image and object acquisition, modeling, processing and interpretation. A new focus of our research activities concerns computer graphics, with the arrival in fall 2008 of Tamy Boubekeur. We have mainly focused on efficient and scalable methods for geometric modeling and realtime rendering.

We have introduced *TopStoc* [832], a fast mesh simplification algorithm. The two main components are stochastic vertex selection and re-indexing of triangles. The probability for vertex selection depends on a local feature estimator, which prefers areas of high curvatures but still ensures sufficient sampling in flat parts. Re-indexing the triangles is done by breadth-first traversal starting from the selected vertices and then identifying triangles incident upon three regions. Both steps are linear in the number of triangles, require minimal data, and are very fast, while still preserving geometrical and topological features. Additional optional processing steps improve sampling properties and/or guarantee homotopy equivalence with the input. These properties provide an alternative to vertex clustering especially for CAD/CAM models in the areas of previewing or network graphics.

Ambient occlusion captures a subset of global illumination effects, by computing for each point of the surface the amount of incoming light from all directions and considering potential occlusion by neighboring geometry. We have introduced an approach to ambient occlusion [1118] combining object and image space techniques in a deferred shading context. It is composed of three key steps: an on-the-fly voxelization of the scene, an occlusion sampling based on this voxelization and a bilateral filtering of this sampling in screen space. The result are smoothly varying ambient terms in occluded areas at interactive frame rates without any pre-computation. In particular, all computations are performed dynamically on the GPU while eliminating the problem of screen-space methods, namely ignoring geometry that is not rasterized into the Z-buffer.

As for perspectives, scalable geometric optimizations such as our simplification algorithm, offer a nice framework for large scale problems involved in *Cloud Visual Computing*. We will study deeper how such methods can be used in a realtime context, to allow high resolution dynamic geometries with all-frequencies content in interactive applications. On the other side of the computer graphics pipeline, we have built our ambient occlusion algorithm on an hybrid object-image space basis. This opens a way toward a more general hybrid rendering engine capable of achieving complex illumination effects such as color bleeding, subsurface scattering or even global indirect reflections, while using volumetric representations as a medium between object and image spaces. This also emphasizes the current convergence between computer graphics (object space) and computer vision (image space) methods.

4.2.4 Medical Imaging

Staff E. Angelini, I. Bloch, T. Boubekeur, J. Delon.

Main events IEEE ISBI 2008 (program chair, finance chair, organization).

Projects collaborations within ANR MARIO, INCA, Fondation Santé et Radiofréquences FEMONUM, GET, MINIARA (pôle de compétitivité MEDICEN) projects, J. Rolland and A. Santhanam (Univ. South Florida), A. Laine (Univ. Columbia, NY), J. Darbon (UCLA), Y. Petegnief, D. Hasboun and H. Duffau (CHU Pitié-Salpêtrière), IFR 49, E. Mandonnet (CHU Lariboisière), B. Devaux (Ste Anne hospital), C. Adamsbaum (Hôpital Saint Vincent de Paul), E. Mousseaux (HEGP), M. Paques and S. Tick (XV-XX Hospital), C. Prunier (CHU Tours), A. Herment and F. Frouin (INSERM, LIF), A. Osorio (LIMSI), M. Teichmann (INSERM), P. Moireau and D. Chapelle (INRIA/MACS), Jean-Christophe Olivo-Marin (Institut Pasteur), F. Rossant (ISEP), O. Gérard (Philips, GE), S. Muller (General Electric), J.F. Stevenet and S.

Hammer (Segami), J. Wiart (FT R&D), Gareth Funka-Lea (Siemens), H. Kafrouni, C. Diaz, and A. Guimond (Dosisoft), R. Ferrand (CPO), Volcano, Fovéa, V. Miette et L. Sandrin (Echosens).

In order to address difficult problems in medical imaging related to the huge size of the data, the complexity of knowledge and information to be processed, the inter-individual variability and the potential presence of pathology, we develop approaches in which knowledge representation plays a central role. Our research focuses mainly on segmentation, recognition and longitudinal analysis of pathological images, in particular for oncology and tumoral pathologies. While the analysis of normal images for several years has led to a very good understanding of the image content in several imaging modalities, the extension to pathological case is difficult and methods relying only on shape and appearance often reach their limits. Our proposal for modeling anatomical knowledge is to make an intensive use of spatial relations (see Section 4.2.1), formalized using fuzzy mathematical morphology, ontologies and graph-based representations. Their integration in deformable models and the analysis of their stability among individuals and in case of pathologies led to robust and accurate segmentation and recognition results [837, 869].

Detection of tumors in MRI data has been addressed using a combination of fuzzy methods and deformable models, and was evaluated on a large data base [859]. Recognition of the normal structures could then be addressed using the same method as for normal cases, since most spatial relations remain stable in pathological cases. We introduced more flexibility in the spatial constraints, for the relations that are prone to strong changes due to the presence of the tumors [930]. Another approach for the segmentation of multi-modal images has been proposed, based on an extension of the multi-phase level sets model to the multi-channel case. As for the longitudinal follow-up of tumors, a new method for normalizing MRI images and a statistical analysis of difference maps have been developed, which allow designing a framework for automatic quantification of tumoral growth.

All these results have been incorporated in a graph representing both generic knowledge and information extracted from images, with the aim of enriching digital patient records [874]. The graph representation is also exploited in a web application dedicated to medical teaching, developed in collaboration with D. Hasboun.

Our work on pathologies does not only focus on brain imaging. In thoracic oncology, we have improved our previous non-linear registration methods with a new formalism for constraining the deformations of the pathologies during the registration, while preserving a continuous deformation field (project with Segami) [833]. Moreover, a breathing model developed at the University of Central Florida was integrated in the registration, thus guaranteeing physiological consistent deformations [868]. A new project was initiated with Dosisoft (within the "Pôle de compétitivité" MEDICEN) on the segmentation of CT and PET images for radiotherapy applications.

In mammography, our collaboration with General Electric has led to one of the first methods for micro-calcification and mass detection on data obtained with new 3D digital mammography techniques. Recently, new methods for denoising such images and for detecting convergence areas using an a contrario method have been proposed.

In the context of a collaboration with Columbia University (New York, USA), several projects were carried out focusing on the processing of 3D real-time ultrasound data for the characterization of cardiac function (one NIH project, collaborations with Philips Healthcare and Siemens). Dedicated speckle-tracking algorithms and real-time deformable models formulated with active graph functions [1014], in prolate spheroidal coordinates, have lead to novel methods for extraction of myocardial surfaces and tracking of myocardial points. Extensive clinical studies on dog experiments [1016] have been performed to precisely assess the accuracy of local myocardial deformation quantification on ultrasound data. In addition, we also have an on-going collaboration with INSERM LIF group, focusing on the segmentation and quantification of cine and delayed-enhancement MR images, leading to quantitative results on myocardial infarct transmurality and on the estimation of regional mean transition times and radial velocities [846]. In vascular imaging, a collaboration with Siemens Corporate Research (Princeton, USA) led to the development of several novel methods for the tracking and segmentation of coronaries in high resolution CT im-

ages, using morphological image filtering and tracking with minimal paths and particle filters. Very accurate results have been obtained on an publicly available data base. A collaborative project with Columbia University and Volcano had focused on the exploitation of multiscale texture-based brushlet analysis for the decomposition of intra-vascular ultrasound (IVUS) data and the extraction of coronary arteries lumen borders.

Regarding the modeling of the human body, which concerned mainly adult and children head until now [887], a new direction was taken and focuses on fetus modeling, based on MRI and US data (in collaboration with Saint Vincent de Paul Hospital and France Telecom R&D). A variational segmentation method has been developed for 3D US data, taking into account the statistical distributions of maternal and fetal tissues. In MRI, the segmentation is based on anatomical knowledge, driving a graph-cut segmentation. Meshed models are then derived from the segmentation using recent geometry processing methods derived from mesh-based computer graphics techniques and embedded in a synthetic woman body. Preliminary results on dosimetry simulations show that the local and the whole body specific absorption rates are lower in the fetus than in the mother and that they depend on position and morphology but not on gestational age. A common lab with France Telecom R&D (Orange Labs) is currently being launched on this topic.

Recently, a collaboration with ISEP and the XV-XX Hospital was initiated on the analysis of OCT and adaptive optics images of the retina, which led to the development of an automated method for segmenting all layers of the retina. The proposed method was a basis for a preliminary quantitative study of variation of the morphology of foveal and perifoveal layers within a population of healthy subjects.

Finally, a new research axis has been initiated recently, in collaboration with Institut Pasteur, on biological imaging, for tracking and compressed sensing applications. Original multiple hypotheses tracking methods have been proposed, by joint estimation of kinetic and image models [986, 989], and CS-based denoising and acquisition protocols have been designed for improved image quality with reduced acquisition times, in the context of fluorescence imaging [1083].

4.2.5 CoC

Faculty M. Campedel, M. Datcu, H. Maître, S. Rital, M. Roux, T. Tanzi.

Main events Organization of the 2nd Scientific Meeting of the Health and Radiofrequencies Foundation. 20-21 October 2009, at Telecom ParisTech, Paris (T. Tanzi).

The joint CNES-DLR-Télécom ParisTech competence center (CoC) was created in June 2005. Its research activities focus on information extraction and image content understanding, for both satellite and optical images (Télécom ParisTech), and SAR images (DLR). It regularly involves about five permanent researchers and 10 PhD candidates. Both theoretical [864, 863, 854] and applied researches are carried out and deal with image indexing and their usage. The images are characterized by their large size, with an important semantical variety of scenes, and their huge number (the Pleiade satellites will send 450 images per day with a 70cm/pixel resolution in 2010!). It becomes urgent to develop (semi)-automatic methods for rapidly accessing the contents of these images. Our current research directions allow us to describe the image content in terms of colorimetry, geometry, texture, and semantics, by using learning methods or pattern detection from which semantical objects are derived (river or road networks, buildings). The learning can be performed either interactively and adapted to the user (photo-interpreter) using relevance feedback, or using statistical inference methods. Finally, the CoC is involved in close collaborations with EADS and Thalès, within the Infom@gic project, and with INSERM and Mondeca within the ANR DAFOE project. The latter aims at developing better knowledge representations (ontologies) for satellite images and their applications to allow reasoning on these representations, using in particular the approaches described in Section 4.2.1. The objective is to benefit from both the “bottom-up” learning approach and the “top-down” expert reasoning one, with applications to interactive satellite image annotation.

A new research axis concerns risk assessment and management [1235, 1236], promoting the excellence of the research accomplished in the group by applying it to the management of disasters [1201]. These works concern the mapping of damages caused by disaster. The EXITER project was accomplished in collaboration with CNES as part of the international charter of risks [1244]. The EXITER project relies on the experience of the group in image analysis, knowledge extraction, classification and spatial reasoning.

4.2.6 Aerial and Satellite Imaging

Faculty A. Almansa, J.-M. Nicolas, M. Roux, F. Tupin.

Main events Organization of the 2007 Urban Remote Sensing Joint Event (F. Tupin and M. Roux).

Projects ANR MEGATOR (2004-2007), ANR EFIDIR (2008-2012), collaborations with CNES, DLR, ONERA, DGA, CEA, EADS, Thales, Magellium, M.-P. Doin and P. Briole (ENS), J. Darbon (UCLA), L. Denis (CPE Lyon), C. Tison (CNES), P. Gamba (University of Pavie), V. Pascazio and G. Ferraioli (University of Naples), D. Riccio (Naples, Galileo project), P. Refrégier and F. Galland (Institut Fresnel), E. Trouvé (University of Savoie), M. Gay (GIPSA-Lab), L. Moreau (EDYTEM), B. Fruneau and J.P. Rudant (UMLV), W. Pieczinsky (Telecom Sud Paris), C.Sintes (Telecom Bretagne).

In aerial imaging, we extended our previous work to the processing of 3D point sets, acquired using laser techniques. Our contributions concern the soft non-parametric registration between such data and a numerical surface model obtained from photogrammetric images, in order to compensate for attitude movements of the sensor. Another contribution deals with change detection between two point sets or a point set and a polygonal model. These works are now integrated within the TerraNumerica project (CapDigital), which aims at modeling complete urban scenes via the fusion of aerial images and data acquired at ground level. Moreover, detection of objects in aerial and satellite images is addressed using learning methods based on Adaboost. Missing learning data were successfully compensated by generating examples through image synthesis. This work is carried out in collaboration with EADS.

Concerning Synthetic Aperture Radar imagery (SAR imagery), three main axes are developed. The first one is concerned with differential interferometry and ground movement monitoring, the second one deals with high resolution SAR imagery and optical and radar data fusion, and the third one with SAR data regularization.

In SAR differential interferometry, our works focus on two applicative and methodological fields. The first axis deals with subsidence study in Mexico in collaboration with the geology laboratory of ENS [862]. The second axis is the glacier monitoring in the framework of MEGATOR project (ANR 2004-2007), which has lead to the development of a new SAR processor (SYTER) which is well adapted to high mountains [873]. These two axes are now fused in a new project which started in 2008 for 4 years: EFIDIR (ANR MDCO). This project groups together 7 teams with methodologists and thematicians. All space agencies will provide SAR data in the framework of this project, specially of Argentiere glacier.

High resolution SAR imagery and the fusion of SAR and optical data is an important research axis, with increased interest due to the recent launch of metric SAR sensors in 2007 and 2008. A methodology of automatic registration has been developed, as well as a joint classification with SVM. In the frame of a CIFRE PhD with Thales, a processing chain for the detection of building and estimation of their height has been proposed. Interferometric aspects and 3D reconstruction have been studied in collaboration with ONERA and in a CNES project, and polarimetric aspects during the doctoral stay of Y. Wang (2008). The developments on SAR statistics and specially the Fisher distributions have been integrated in the active grid developed by Fresnel Institut [850]. SAR urban areas have also been studied through a simulator of wave propagation.

The last axis deals with SAR data regularization. It is a recent research axis based on the development of two families of approaches: Markovian methods coupled with graph-cut optimization and non-local means. General contributions have been brought: first a fast graph-cut based algorithm for optimization of vectorial data have been developed [843]; secondly, a probabilitic patch-based method has been proposed, which is able to deal with any kind of noise. These works have been applied to the regularization of amplitude data and interferometric data [844], specially in the frame of a CNES project and a collaboration of Naples University [849].

Other specific themes of SAR imagery have been developed. On change detection a collaboration has started with CEA in 2008. In the frame of a collaboration with Télécom Sud Paris in 2007, a classification coupling Fisher distributions and triplet Markov fields has been proposed. Improvements of previous works on road detection have been done in the frame of a collaboration with University of Pavie [871] [861]. A PhD on SAR data compression in relation with DGA has been led. Micro-Doppler have also been studied in a collaboration with ONERA [852].

In general, the team has developed an expertise on TerraSAR-X data through its participation to different projects, and specially on urban area processing [851]. Moreover, its competence in coherent imagery (in particular on temporal approach [1249]) is used for sonar imagery (project with Telecom Bretagne) and in ultrasound imagery (PhD with SuperSonic Imagine).

4.3 References

4.3.1 ACL: Articles in ISI-Indexed Journals

[814] R. Abdelfattah and J. M. Nicolas. Interferometric SAR coherence magnitude estimation using second kind statistics. *IEEE Transactions on Geoscience and Remote Sensing*, 44(7 part 2):1942– 1953, July 2006.

[815] C. B. Akgul, B. Sankur, Y. Yemez, and F. Schmitt. Density-based 3d shape descriptors. *JASP - EURASIP Journal on Applied Signal Processing*, 2007(Article ID 32503):1–16, 2007.

[816] C. B. Akgül, B. Sankur, Y. Yemez, and F. Schmitt. 3d model retrieval using probability density-based shape descriptors. *IEEE Pattern Analysis and Machine Intelligence*, 31(6):1117–1133, June 2009.

[817] E. Angelini, T. Song, B. Mensh, and A. Laine. Brain MRI segmentation with multiphase minimal partitioning: A comparative study. *International Journal of Biomedical Imaging*, 2007.

[818] E. D. Angelini, S. Homma, G. Pearson, J. W. Holmes, and A. F. Laine. Segmentation of real-time three-dimensional ultrasound for quantification of ventricular function: a clinical study on right and left ventricles. *Ultrasound in Medicine and Biology*, 31(9):1143–1158, Sept. 2005.

[819] E. D. Angelini, O. Clatz, E. Mandonnet, E. Konukoglu, L. Capelle, and H. Duffau. Glioma dynamics and computational models: A review of segmentation, registration and in silico growth algorithms and their clinical validations. *Current Medical Imaging Review*, 3(4):262–276, Mar. 2007.

[820] A. Bhattacharya, M. Roux, M. Maître, I. Jermyn, X. Descombes, and J. Zerubia. Computing Statistics from Man-Made Structures on the Earth's Surface for Indexing Satellite Images. *International Journal of Simulation Modelling*, 6(2):73–83, June 2007.

[821] L. Bibin, J. Anquez, E. D. Angelini, and I. Bloch. Hybrid 3D modeling of mother and fetus from medical imaging for dosimetry studies. *International Journal of Computer Assisted Radiology and Surgery*, 2009.

[822] I. Bloch. Fuzzy Skeleton by Influence Zones - Application to Interpolation between Fuzzy Sets. *Fuzzy Sets and Systems*, 159:1973–1990, 2008.

[823] I. Bloch. Duality vs. Adjunction for Fuzzy Mathematical Morphology and General Form of Fuzzy Erosions and Dilations. *Fuzzy Sets and Systems*, 160:1858–1867, 2009.

[824] I. Bloch. Spatial Reasoning under Imprecision using Fuzzy Set Theory, Formal Logics and Mathematical Morphology. *International Journal of Approximate Reasoning*, 41(2):77–95, Feb. 2006.

[825] I. Bloch. Defining Belief Functions using Mathematical Morphology – Application to Image Fusion under Imprecision. *International Journal of Approximate Reasoning*, 48:437–465, 2008.

[826] I. Bloch. Fuzzy Spatial Relationships for Image Processing and Interpretation: A Review. *Image and Vision Computing*, 23(2):89–110, Feb. 2005.

[827] I. Bloch, O. Colliot, O. Camara, and T. Géraud. Fusion of Spatial Relationships for Guiding Recognition. Example of Brain Structure Recognition in 3D MRI. *Pattern Recognition Letters*, 26(4):449–457, Mar. 2005.

[828] I. Bloch, J. Pescatore, and L. Garnero. A New Characterization of Simple Elements in a Tetrahedral Mesh. *Graphical Models*, 67(4):260–284, July 2005.

[829] I. Bloch, O. Colliot, and R. Cesar. On the Ternary Spatial Relation Between. *IEEE Transactions on Systems, Man, and Cybernetics SMC-B*, 36(2):312–327, Apr. 2006.

[830] I. Bloch, N. Milisavljevic, and M. Acheroy. Multisensor Data Fusion for Spaceborne and Airborne Reduction of Mine Suspected Areas. *International Journal of Advanced Robotics Systems*, 4(2):173–186, June 2007.

[831] C. Bordenave, Y. Gousseau, and F. Roueff. The dead leaves model: an example of a general tessellation. *Advances in Applied Probability*, 38(1):31–46, Mar. 2006.

[832] T. Boubekeur and M. Alexa. Mesh simplification by stochastic sampling and topological clustering. *Computer and Graphics - Special Issue on IEEE Shape Modeling International 2009*, 33(3):241–249, 2009.
[833] O. Camara, G. Delso, O. Colliot, A. Moreno, and I. Bloch. Explicit Incorporation of Prior Anatomical Information into a Non-Rigid Registration of Thoracic and Abdominal CT and 18-FDG Whole-Body Emission PET Images. *IEEE Transactions on Medical Imaging*, 26(2):164–178, Feb. 2007.
[834] F. Cao, J. Delon, A. Desolneux, P. Muse, and F. Sur. A unified framework for detecting groups and application to shape recognition. *Journal of Mathematical Imaging and Vision*, 27(2):91–200, Feb. 2007.
[835] R. Cesar, E. Bengoetxea, I. Bloch, and P. Larrañaga. Inexact graph matching for model-based recognition: Evaluation and comparison of optimization algorithms. *Pattern Recognition*, 38(11):2099–2113, Nov. 2005.
[836] F. Chaabane, A. Avallone, F. Tupin, P. Briole, and H. Maître. Multitemporal correction of tropospheric effects in differential sar interferometry. *IEEE Transactions on Geoscience and Remote Sensing*, 45(6):1605–1615, June 2007.
[837] O. Colliot, O. Camara, and I. Bloch. Integration of Fuzzy Spatial Relations in Deformable Models - Application to Brain MRI Segmentation. *Pattern Recognition*, 39(8):1401–1414, Aug. 2006.
[838] R. Dehak, I. Bloch, and H. Maître. Spatial Reasoning with Incomplete Information about Relative Positioning. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 27(9):1473–1484, Sept. 2005.
[839] J. Delon. Movie and video scale-time equalization ; application to flicker reduction. *IEEE Transactions on Image Processing*, 15(1):241–248, Jan. 2006.
[840] J. Delon and B. Rougé. Small baseline stereovision. *Journal of Mathematical Imaging and Vision*, 28(3):209–223, July 2007.
[841] J. Delon, A. Desolneux, J.-L. Lisani, and A.-B. Petro. A non parametric approach for histogram segmentation. *IEEE Transactions on Image Processing*, 16(1):253–261, Jan. 2007.
[842] J. Delon, A. Desolneux, J.-L. Lisani, and A.-B. Petro. Automatic color palette. *Inverse Problems and Imaging (IPI)*, 1(2):265–287, May 2007.
[843] L. Denis, F. Tupin, J. Darbon, and M. Sigelle. SAR Image Regularization with Fast Approximate Discrete Minimization. *IEEE Transactions on Image Processing*, 18(7):1588–1600, 2009.
[844] L. Denis, F. Tupin, J. Darbon, and M. Sigelle. Joint Regularization of Phase and Amplitude of InSAR Data: Application to 3D reconstruction. *IEEE Transactions on Geoscience and Remote Sensing*, 2009.
[845] Q. Duan, E. D. Angelini, S. L. Herz, C. M. Ingrassia, K. D. Costa, J. W. Holmes, S. Homma, and A. F. Laine. Region-based endocardium tracking on real-time three-dimensional ultrasound. *Ultrasound in Medicine and Biology*, 35 (2):256–265, Feb. 2009.
[846] R. El-Berbari, N. Kachenoura, A. Redheuil, A. Giron, E. Mousseaux, A. Herment, I. Bloch, and F. Frouin. An automated estimation of regional mean transition times and radial velocities from cine magnetic resonance images. evaluation in normal subjects. *Journal of Magnetic Resonance Imaging*, 30:236–242, 2009.
[847] G. Facciolo, A. Almansa, J. F. Aujol, and V. Caselles. Irregular to regular sampling, denoising and deconvolution. *SIAM Multiscale Modelling and Simulation*, 2008.
[848] M. Ferecatu and D. Geman. A statistical framework for image category search from a mental picture. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 31(6):1087–1101, June 2009.
[849] G. Ferraioli, A. Shabou, F. Tupin, and V. Pascazio. Multichannel phase unwrapping with graph-cuts. *Geoscience and Remote Sensing Letters*, May 2009.
[850] F. Galland, J. M. Nicolas, H. Sportouche, M. Roche, F. Tupin, and P. Réfrégier. Unsupervised Synthetic Aperture Radar image partitioning using Fisher distributions. *IEEE Transactions on Geoscience and Remote Sensing*, 2009.
[851] P. Gamba, F. Tupin, and Q. Weng. Foreword to the special issue on Remote Sensing of Human Settlements: Status and Challenges. *IEEE JSTAR Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 1(2):82–86, Aug. 2008.
[852] A. Ghaleb, L. Vignaud, and J. M. Nicolas. Micro-doppler analysis of wheels and pedestrians in ISAR imaging. *IET Signal Processing*, 2(3):301–311, Sept. 2008.
[853] Y. Gousseau and F. Roueff. Modeling occlusion and scaling in natural images. *SIAM Multiscale Modeling and Simulation*, 6(1):105–134, 2007.
[854] L. Gueguen and M. Datcu. Image time-series data mining based on the information-bottleneck principle. *IEEE Transactions on Geoscience and Remote Sensing*, 45(4), Apr. 2007.
[855] P. Heas and M. Datcu. Modelling trajectory of dynamic clusters in image time-series for spatio-temporal reasoning. *IEEE Transactions on Geoscience and Remote Sensing*, 43(7):1635– 1647, Nov. 2005.
[856] C. Hernandez, F. Schmitt, and R. Cippola. Silhouette coherence for camera calibration under circular motion. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 29(2):343–349, Feb. 2007.
[857] C. Hudelot, J. Atif, and I. Bloch. Fuzzy Spatial Relation Ontology for Image Interpretation. *Fuzzy Sets and Systems*, 159:1929–1951, 2008.
[858] T. Hurtut, Y. Gousseau, and F. Schmitt. Adaptive image retrieval based on the spatial organization of colors. *Computer Vision and Image Understanding CVIU*, 112(2):101–113, 2008.
[859] H. Khotanlou, O. Colliot, J. Atif, and I. Bloch. 3D Brain Tumor Segmentation in MRI Using Fuzzy Classification, Symmetry Analysis and Spatially Constrained Deformable Models. *Fuzzy Sets and Systems*, 160:1457–1473, 2009.
[860] M. Lienou, M. Datcu, and H. Maître. Semantic annotation of satellite images using latent dirichlet allocation. *IEEE trans on Geosciences & Remote Sensing*, May 2009.
[861] G. Lisini, C. Tison, F. Tupin, and P. Gamba. Feature fusion to improve road network extraction in high-resolution SAR images. *IEEE Geoscience and Remote Sensing Letters*, 3(2):217–221, Apr. 2006.

[862] P. Lopez Quiroz, M. P. Doin, F. Tupin, P. Briole, and J. M. Nicolas. Time series analysis of Mexico city subsidence constrained by radar interferometry. *Journal of Applied Geophysics*, 2009.
[863] B. Luo, J. F. Aujol, Y. Gousseau, S. Ladjal, and H. Maître. Resolution- independent characteristic scale dedicated to satellite images. *IEEE Trans. on Image Processing*, 16(10):2503–2514, Oct. 2007.
[864] B. Luo, J. F. Aujol, Y. Gousseau, and S. Ladjal. Indexing of Satellite Images with Different Resolutions by Wavelet Features. *IEEE Transactions on Image Processing*, 17(8):1465–1472, Aug. 2008.
[865] B. Luo, J. F. Aujol, and Y. Gousseau. Local scale measure from the topographic map and application to remote sensing images. *SIAM Multiscale Modeling and Simulation*, 2009.
[866] N. Milisavljevic and I. Bloch. Possibilistic vs. Belief Function Fusion for Anti-Personnel Mine Detection. *IEEE Transactions on Geoscience and Remote Sensing*, 46(5):1488–1498, May 2008.
[867] C. Millet, I. Bloch, P. Hède, and P. A. Moellic. Automatic cleaning and segmentation of web images based on colors to build learning databases. *Image and Vision Computing*, 2009.
[868] A. Moreno, S. Chambon, A. Santhanam, J. Rolland, E. Angelini, and I. Bloch. Combining a Breathing Model and Tumor-Specific Rigidity Constraints for Registration of CT-TEP Thoracic Data. *Computer Aided Surgery*, 13(5): 281–298, Sept. 2008.
[869] A. Moreno, C. M. Takemura, O. Colliot, O. Camara, and I. Bloch. Using Anatomical Knowledge Expressed as Fuzzy Constraints to Segment the Heart in CT images. *Pattern Recognition*, 41:2525–2540, 2008.
[870] P. Muse, F. Sur, F. Cao, Y. Gousseau, and J.-M. Morel. An a contrario decision method for shape element recognition. *International Journal of Computer Vision*, 69(3):295 – 315, Sept. 2006.
[871] M. Negri, P. Gamba, G. Lisini, and F. Tupin. Junction-aware extraction and regularization of road networks in SAR images. *IEEE Transactions on Geoscience and Remote Sensing*, 44(10, part 2):2962 – 2971, Oct. 2006.
[872] O. Nempont, J. Atif, E. Angelini, and I. Bloch. A New Fuzzy Connectivity Measure for Fuzzy Sets and Associated Fuzzy Attribute Openings. *Journal of Mathematical Imaging and Vision*, 34:107–136, 2009.
[873] J. M. Nicolas, G. Vasile, M. Gay, F. Tupin, and E. Trouvé. SAR processing in the temporal domain : application to direct interferogram generation and mountain glacier monitoring. *Canadian Journal of Remote Sensing*, 33(1): 52–29, Feb. 2007.
[874] J. Puentes, B. Batrancourt, J. Atif, E. Angelini, L. Lecornu, A. Zemirline, I. Bloch, G. Coatrieux, and C. Roux. Integrated Multimedia Electronic Patient Record and Graph-Based Image Information for Cerebral Tumors. *Computers in Biology and Medicine*, 38(4):425–437, 2008.
[875] I. Rentschler, M. Gschwind, H. Brettel, E. Osman, and T. Caelli. Structural and view-specific representations for the categorization of three-dimensional objects. *Vision Research*, 48:2501–2508, Nov. 2008.
[876] A. Ribés and F. Schmitt. Linear inverse problems in imaging: An introductory survey. *IEEE Signal Processing Magazine*, 25(4):84–99, July 2008.
[877] A. Ribes, F. Schmitt, R. Pillay, and C. Lahanier. Calibration and spectral reconstruction for crisatel: an art painting multispectral acquisition system. *Journal of Imaging Science and Technology*, 49(6):563–573, Nov. 2005.
[878] A. Ribés, R. Pillay, F. Schmitt, and C. Lahanier. Studying That Smile: A tutorial on multispectral imaging of paintings using the Mona Lisa as a case study. *IEEE Signal Processing magazine*, 25(4):14–26, July 2008.
[879] F. Rossant and I. Bloch. Robust and Adaptive OMR System Including Fuzzy Modeling, Fusion of Musical Rules, and Possible Error Detection. *EURASIP Journal on Advances in Signal Processing*, 2007:1–25, 2007.
[880] S. Tilie, I. Bloch, and L. Laborelli. Fusion of Complementary Detectors for Improving Blotch Detection in Digitized Films. *Pattern Recognition Letters*, 28:1735–1746, 2007.
[881] C. Tison, F. Tupin, and H. Maître. A fusion scheme for joint retrieval of urban map and classification from high resolution interferometric SAR images. *IEEE Transactions on Geoscience and remote Sensing*, 45(2):495–505, Feb. 2007.
[882] E. Trouvé, G. Vasile, M. Gay, L. Bombrun, P. Grussenmeyer, T. Landes, J. M. Nicolas, P. Bolon, I. Petillot, A. Julea, L. Valet, J. Chanussot, and M. Koehl. Combining airborne photographs and spaceborne SAR data to monitor temperate glaciers: Potentials and limits. *IEEE Transactions on Geoscience and Remote Sensing*, 45(4):905–924, Apr. 2007.
[883] T. Tung. An augmented multiresolution reeb graph approach for content-based retrieval of 3d models. *International Journal of Shape Modeling*, 11(1):91–120, May 2005.
[884] F. Tupin and M. Roux. Markov random field on region adjacency graphs for the fusion of sar and optical data in radargrammetric applications. *IEEE Transactions on Geoscience and Remote Sensing*, 43(8):1920–1928, Aug. 2005.
[885] G. Vasile, E. Trouvé, I. Petillot, P. Bolon, J. M. Nicolas, M. Gay, J. Chanussot, T. Landes, P. Grussenmeyer, V. Buzuloiu, I. Hajnsek, C. Andres, M. Keller, and R. Horn. High resolution SAR interferometry: estimation of local frequencies in the context of alpine glaciers. *IEEE Transactions on Geoscience and Remote Sensing*, 46(4): 1079–1090, Apr. 2008.
[886] J. Wiart, A. Hadjem, N. Gadi, I. Bloch, M. F. Wong, A. Pradier, D. Lautru, V. F. Hanna, and C. Dale. Modeling of RF Exposure in Children. *Bioelectromagnetics*, 26(S7):S19–S30, 2005.
[887] J. Wiart, A. Hadjem, M. F. Wong, and I. Bloch. Analysis of RF Exposure in the Head Tissues of Children and Adults. *Physics in Medicine and Biology*, 53(13):3681–3695, July 2008.
[888] B. Zhang, J. Zerubia, and J.-C. Olivo-Marin. Gaussian approximation of fluorescence microscopic PSF. *Applied Optics*, 46(10):1819–1829, Apr. 2007.

4.3.2 ACLN: Articles in Other Refereed Journals

[889] I. Bloch. Knowledge-Driven 3D Medical Image Interpretation: A Few Examples. *Computer Society of India Technical Communications*, 31(10):24–26, Jan. 2008.

[890] M. Campedel. Traitement du signal et des images. *SIGNAUX*, (100):22–31, Dec. 2005.

[891] M. Campedel and E. Moulines. Classification et sélection de caractéristiques de textures. *Revue d'Intelligence Artificielle / RSTI (Hermès)*, 19:633–659, Sept. 2005.

[892] O. Colliot, O. Camara, and I. Bloch. Un modèle déformable intégrant des relations spatiales pour la segmentation de structures cérébrales. *Information, Interaction, Intelligence, I3*, 5(1):29–58, 2005.

[893] L. Denis, F. Tupin, J. Darbon, and M. Sigelle. Filtrage conjoint de la phase interférométrique et de l'amplitude en imagerie radar par champs de Markov et coupes minimales. *Traitement du Signal*, 2009.

[894] R. El-Berbari, F. Frouin, A. Redheuil, E. Angelini, E. Mousseaux, I. Bloch, and A. Herment. Développement et évaluation d'une méthode de segmentation automatique de l'endocarde sur des images acquises par résonance magnétique. *ITBM-RBM Innovation et Technologie en Biologie et Médecine*, 28:117–123, 2007.

[895] C. Hudelot, J. Atif, and I. Bloch. FSRO : une ontologie de relations spatiales floues pour l'inteprétation d'images. *RNTI*, 14:55–86, 2008.

[896] A. Kermi, I. Bloch, and M. T. Laskri. A Non-Linear Registration Method Guided by B-Splines Free-Form Deformations for Three-Dimensional Facial Reconstruction. *International Review on Computers and Software (IRECOS)*, 2(6):609–619, Nov. 2007.

[897] J.-F. Marcotorchino, C. Malis, P. Constant, and H. Maître. Analyse de l'information par fusion multimodale. *Revue de l'Electricité et de l'Electronique*, 72:1–17, Feb. 2007.

[898] J. Puentes, L. Lecornu, G. Coatrieux, C. Roux, E. Angelini, and I. Bloch. Aide au dossier patient multimédia en neurochirurgie. *Techniques hospitalières*, 703:41–48, May 2007.

[899] T. Tung and F. Schmitt. Indexation de modèles 3D par graphe de Reeb multirésolution augmenté / Augmented multiresolution Reeb graph for 3D models indexing. *Annales des télécommunications*, 60(11-12), Nov. 2005.

4.3.3 INV: Invited Talks

[900] E. Angelini, T. Song, B. Mensh, and A. Laine. Segmentation and quantitative evaluation of brain mri data with multiphase three-dimensional implicit deformable model. In *SIAM conference on Imaging Science*, Minneapolis, USA, Apr. 2006.

[901] I. Bloch. Fuzzy and Bipolar Mathematical Morphology, Applications in Spatial Reasoning. In *Symbolic and Quantitative Approaches to Reasoning with Uncertainty ECSQARU*, volume LNAI 5590, pages 1–13, Verona, Italy, 2009.

[902] I. Bloch. Quelques perspectives en imagerie médicale. In *GRETSI 2005*, pages 283–286, Louvain-la-Neuve, Belgique, Sept. 2005.

[903] I. Bloch. Fusion d'informations numériques : panorama méthodologique. In *Journées Nationales de la Recherche en Robotique 2005*, pages 79–88, Guidel, France, Oct. 2005.

[904] I. Bloch. Morphologie mathématique floue, applications en raisonnement spatial et en logique. In *LFA 2008*, pages 2–9, Lens, France, 2008.

[905] I. Bloch, C. Hudelot, and J. Atif. On the Interest of Spatial Relations and Fuzzy Representations for Ontology-Based Image Interpretation. In *International Conference on Advances in Pattern Recognition, ICAPR'07*, pages 15–25, Kolkata, India, Jan. 2007.

[906] H. Maître. Indexing and retrieval in large satellite image databases. In *5th MIPPR, MIPPR2007, Remote Sensing and GIS Data Processing and Applications.*, volume 6790, pages 1–15, Wuhan (China), Nov. 2007.

[907] H. Maître. Et si la 3D nous venait d'ailleurs ? In *Des images au 3D, SEE*, Paris, June 2005.

[908] H. Maître. L'indexation des très grandes bases de données satellitaires. In *Traitement et Analyse de l'Information: Méthodes et Applications -TAIMA'07*, Hammamet (Tunisie), July 2007.

[909] F. Tupin. Markov Random Fields for SAR image analysis and 3D reconstruction. In *SPIE European Symposium on Remote Sensing*, Stockholm, Suède, Sept. 2006.

4.3.4 ACTI: Articles in Proceedings of International Conferences

[910] R. Abdelfattah and J. M. Nicolas. Coherence estimation from complex coherence map using second kind statistics. In *IGARRS 2005*, Séoul, Corée du sud, July 2005.

[911] R. Abdelfattah and J. M. Nicolas. Mixture model for the segmentation of the InSAR coherence map. In *IGARSS 2007*, Barcelone, Espagne, July 2007.

[912] C. B. Akgul, B. Sankur, F. Schmitt, and Y. Yemez. 3D object matching via multivariate shape distributions. In *IEEE 13th Signal Processing and Communications Applications*, Kayseri, Turkey, May 2005.

[913] C. B. Akgul, B. Sankur, F. Schmitt, and Y. Yemez. Density-based shape descriptors for 3D object retrieval. In *Int. Workshop on Multimedia Content Representation, Classification and Security (MRCS)*, pages 322–329, Istanbul, Turkey, Sept. 2006.

[914] C. B. Akgul, B. Sankur, Y. Yemez, and F. Schmitt. A framework for histogram-induced 3D descriptors. In *14th European Signal Processing Conference - EUSIPCO'2006*, Florence, Italy, Sept. 2006.

[915] C. B. Akgul, B. Sankur, Y. Yemez, and F. Schmitt. Improving efficiency of density-based shape descriptors for 3D object retrieval. In *MIRAGE 2007 - Computer Vision / Computer Graphics Collaboration Techniques and Applications*, volume 4418, pages 330–340, Rocquencourt, France, Mar. 2007.

[916] C. B. Akgul, B. Sankur, Y. Yemez, and F. Schmitt. Multivariate density-based 3D shape descriptors. In *Shape Modeling International (SMI)*, pages 3–12, Lyon, France, June 2007.

[917] C. B. Akgül, B. Sankur, Y. Yemez, and F. Schmitt. Similarity score fusion by ranking risk minimization for 3D object retrieval. In *Eurographics 2008 Workshop on 3D object retrieval*, Crete, Grece, Apr. 2008.

[918] E. Aldea, J. Atif, and I. Bloch. Image Classification using Marginalized Kernels for Graphs. In *6th IAPR-TC15 Workshop on Graph-based Representations in Pattern Recognition, GbR'07*, volume 1, pages 103–113, Alicante, Spain, June 2007.

[919] E. Aldea, G. Fouquier, J. Atif, and I. Bloch. Kernel Fusion for Image Classification Using Fuzzy Structural Information. In *3rd International Symposium on Visual Computing ISVC07*, volume LNCS 4842, pages 307–317, Lake Tahoe, USA, Nov. 2007.

[920] E. Angelini and O. Gerard. Review of myocardial motion estimation methods from optical flow tracking on ultrasound data. In *IEEE EMBS Annual International Conference*, volume 1, pages 1537–1540, New York USA, Aug. 2006.

[921] E. Angelini, T. Song, and A. Laine. Homogeneity measures for multiphase level set segmentation of brain MRI. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, volume 1, pages 746–749, Arlington USA, Apr. 2006.

[922] E. Angelini, J. Atif, J. Delon, E. Mandonnet, H. Duffau, and L. Capelle. Detection of glioma evolution on longitudinal MRI studies. In *Internation Symposium on Biomedical Imaging*, volume 1, pages 49–52, Arlington USA, Apr. 2007.

[923] J. Anquez, E. Angelini, I. Bloch, V. Merzoug, A. E. Bellaiche-Millischer, and C. Adamsbaum. Interest of the Steady State Free Precession (SSFP) Sequence for 3D Modeling of the Whole Fetus. In *Engineering in Medicine and Biology Conference, EMBC 2007*, pages 771–774, Lyon, France, Aug. 2007.

[924] J. Anquez, E. Angelini, and I. Bloch. Segmentation of Fetal 3D Ultrasound Images based on Statistical Prior and Deformable Model. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, pages 17–20, Paris, France, May 2008.

[925] J. Anquez, E. Angelini, I. Bloch, V. Merzoug, A. E. Bellaiche-Millischer, and C. Adamsbaum. In Vivo 3D Modeling of the Fetus with MRI. In *ESPR 2008*, Edimburgh, UK, June 2008.

[926] J. Anquez, E. Angelini, and I. Bloch. Automatic Segmentation of Head Structures on Fetal MRI. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, Boston, USA, 2009.

[927] J. Anquez, T. Boubekeur, L. Bibin, E. D. Angelini, and I. Bloch. Utero-fetal unit and pregnant woman modeling using a computer graphics approach for dosimetry studies. In *MICCAI*, London, UK, Sept. 2009.

[928] J. Atif, H. Khotanlou, E. Angelini, H. Duffau, and I. Bloch. Segmentation of Internal Brain Structures in the Presence of a Tumor. In *MICCAI Workshop on Clinical Oncology*, pages 61–68, Copenhagen, Oct. 2006.

[929] J. Atif, O. Nempont, O. Colliot, E. Angelini, and I. Bloch. Level Set Deformable Models Constrained by Fuzzy Spatial Relation. In *Information Processing and Management of Uncertainty in Knowledge-Based Systems, IPMU*, pages 1534–1541, Paris, France, 2006.

[930] J. Atif, C. Hudelot, G. Fouquier, I. Bloch, and E. Angelini. From Generic Knowledge to Specific Reasoning for Medical Image Interpretation using Graph-based Representations. In *International Joint Conference on Artificial Intelligence IJCAI'07*, pages 224–229, Hyderabad, India, Jan. 2007.

[931] J. Atif, C. Hudelot, O. Nempont, N. Richard, B. Batrancourt, E. Angelini, and I. Bloch. GRAFIP: A Framework for the Representation of Healthy and Pathological Cerebral Information. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, pages 205–208, Washington DC, USA, Apr. 2007.

[932] B. Batrancourt, J. Atif, O. Nempont, E. Angelini, and I. Bloch. Integrating Information from Pathological Brain MRI into an Anatomo-Functional Model. In *24th IASTED International Multi-Conference on Biomedical Engineering*, pages 236–241, Innsbruck, Austria, Feb. 2006.

[933] B. Batrancourt, D. Hasboun, J. Atif, C. Hudelot, E. Angelini, and I. Bloch. A Clustering View of the Human Brain Mapping Literature and an Anatomo-Functional Cerebral Model. In *Human Brain Mapping*, Florence, Italy, June 2006.

[934] D. Benboudjema, F. Tupin, W. Pieczynski, M. Sigelle, and J. M. Nicolas. Unsupervised sar images segmentation using triplet markov fields and fisher noise distributions. In *IGARSS 2007*, Barcelone, Spain, July 2007.

[935] A. Bhattacharya, I. H. Jermyn, X. Descombes, and J. Zerubia. Computing Statistics from a Graph Representation of Road Networks in Satellite Images for Indexing and Retrieval. In *CompIMAGE - Computational Modelling of Objects Represented in Images: Fundamentals, Methods and Applications*, Coimbra, Portugal, Oct. 2006.

[936] A. Bhattacharya, M. Roux, H. Maître, I. Jermyn, X. Descombes, and J. Zerubia. Indexing satellite images with features computed from man-made structures on the earth's surface. In *Proc. 5th International Workshop on Content-Based Multimedia Indexing (CBMI 2007)*, pages 244 – 250, Bordeaux (France), July 2007.

[937] A. Bhattacharya, M. Roux, H. Maître, I. Jermyn, X. Descombes, and J. Zerubia. Indexing of mid-resolution satellite images with structural attributes. In *IEEE - ISPRS 2008*, Beijing (Chine), July 2008.

[938] L. Bibin, J. Anquez, E. Angelini, and I. Bloch. Hybrid 3D Modeling of Mother and Fetus from Medical Imaging for Dosimetry Studies. In *CARS 2009 Computer Assisted Radiology and Surgery*, pages 378–379, Berlin, Germany, June 2009.

[939] L. Bibin, J. Anquez, A. Hadjem, E. D. Angelini, J. Wiart, and I. Bloch. Dosimetry studies on a fetus model combining medical image information and synthetic woman body. In *11th World Congress on Medical Physics and Biomedical Engineering*, Munich, Germany, Sept. 2009.

[940] L. Bin, J. F. Aujol, and Y. Gousseau. Local scale measure in remote sensing images. In *2nd International Conference on Scale Space and Variational Methods in Computer Vision*, pages 856–867, June 2009.

[941] R. Bizamba and T. J. Tanzi. Real-time system for crisis management in reunion island. In *UDMS 2006, 25th Urban Data Management Symposium*, Aalborg (Dk), May 2006.

[942] I. Bloch. A Contribution to the Representation and Manipulation of Fuzzy Bipolar Spatial Information: Geometry and Morphology. In *Workshop on Soft Methods in Statistical and Fuzzy Spatial Information*, pages 7–25, Toulouse, France, Sept. 2008.

[943] I. Bloch. An Extension of Skeleton by Influence Zones and Morphological Interpolation to Fuzzy Sets. In *International Symposium on Mathematical Morphology (ISMM 2007)*, pages 3–14, Rio de Janeiro, Brazil, Oct. 2007.

[944] I. Bloch. Mathematical Morphology on Bipolar Fuzzy Sets. In *International Symposium on Mathematical Morphology (ISMM 2007)*, volume 2, pages 3–4, Rio de Janeiro, Brazil, 2007.

[945] I. Bloch. Bipolar Fuzzy Mathematical Morphology for Spatial Reasoning. In *International Symposium on Mathematical Morphology ISMM'09*, Groningen, The Netherlands, Aug. 2009.

[946] I. Bloch. Duality vs Adjunction and General Form for Fuzzy Mathematical Morphology. In *WILF*, volume LNAI 3849, pages 354–361, Crema, Italy, Sept. 2005.

[947] I. Bloch. Dilation and Erosion of Spatial Bipolar Fuzzy Sets. In *International Workshop on Fuzzy Logic and Applications WILF 2007*, volume LNAI 4578, pages 385–393, Genova, Italy, July 2007.

[948] I. Bloch. Geometry of Spatial Bipolar Fuzzy Sets based on Bipolar Fuzzy Numbers and Mathematical Morphology. In *International Workshop on Fuzzy Logic and Applications WILF*, volume LNAI 5571, pages 237–245, Palermo, Italy, June 2009.

[949] I. Bloch, O. Colliot, and R. M. Cesar. Mathematical Modeling of the Relationship "Between" Based on Morphological Operators. In *ISMM 2005*, pages 299–308, Paris, France, Apr. 2005.

[950] I. Bloch, G. Martino, and A. Petrosino. A Fuzzy Mathematical Morphology Approach for Multiseeded Image Segmentation. In *WILF*, number LNAI 3849, pages 362–368, Crema, Italy, Sept. 2005.

[951] I. Bloch, R. Pino-Pérez, and C. Uzcátegui. Mediation in the Framework of Morphologic. In *European Conference on Artificial Intelligence ECAI 2006*, pages 190–194, Riva del Garda, Italy, 2006.

[952] N. Bonnier, F. Schmitt, H. Brettel, and S. Berche. Evaluation of spatial gamut mapping algorithms. In *IS&T/SID's Fourteenth Color Imaging Conference*, Scottsdale, Arizona, USA (CIC 14), Nov. 2006.

[953] N. Bonnier, F. Schmitt, M. Hull, and C. Leynadier. Spatial and color adaptive gamut mapping: A mathematical framework and two new algorithms. In *IS&T/SID's Fifteenth Color Imaging Conference CIC 15*, Albuquerque, New Mexico, USA, Nov. 2007.

[954] N. Bonnier, A. Lindner, C. Leynadier, and F. Schmitt. Compensating printer's modulation transfer function in spatial and color adaptive rendering workflows. In *IS&T/SID's Sixteenth Color Imaging Conference CIC 16*, Portland, Oregon, USA, Nov. 2008.

[955] N. Bonnier, F. Schmitt, and C. Leynadier. Improvements in spatial and color adaptive gamut mapping algorithms. In *IS&T/SPIE 4th European Conference on Colour in Graphics, Imaging and Vision,*, pages 341–346, Terrassa, Spain, 2008.

[956] N. Bonnier, A. Lindner, F. Schmitt, and C. Leynadier. Compensation of printer MTFs. In *SPIE Color Imaging XIV: Displaying, Hardcopy, Processing, and Applications*, San Jose, California, USA, 2009.

[957] B.-B. Bordes and H. Maître. Semantic annotation of satellite images. In *5th International Conference on Machine Learning and Data Mining MLDM 2007, (Perner Ed, LNAI, 4571)*, volume 2, pages 120–133, Leipzig (Germany), July 2007.

[958] J. B. Bordes and V. Prinet. Mixture distributions for weakly supervised classification in Remote Sensing images. In *British Machine Vision Conference*, Leeds (GB), Sept. 2008.

[959] J. B. Bordes and M. Roux. Detection of roundabouts in satellite images. In *ISPRS Workshop on Topographic Mapping from Space*, volume XXXVI-1, Ankara (Turkey), Feb. 2006.

[960] M. Brédif, D. Boldo, M. Pierrot-Deseilligny, and H. Maître. 3D building reconstruction with parametric roof superstructures. In *IEEE ICIP*, volume 2, pages 537–540, San Antonio (Texas), Sept. 2007.

[961] F. Bretar and M. Roux. Extraction of 3D planar primitives from raw airborne laser data: a normal driven RANSAC approach. In *IAPR Machine Vision and Applications 2005*, Tsukuba, Japan, May 2005.

[962] F. Bretar and M. Roux. Hybrid segmentation using LIDAR 3D planar primitives. In *ISPRS Workshop Laser Scanning 2005*, Enschede, the Netherlands, Sept. 2005.

[963] F. Bretar, M. Pierrot-Deseilligny, and M. Roux. Recognition of building roof facets by merging aerial images and 3D lidar data in a hierarchical segmentation framework. In *The 18th Int. Conf. on Pattern Recognition, ICPR 2006*, Hong Kong, Chine, Aug. 2006.

[964] H. Brettel and F. Schmitt. Interactive multispectral image acquisition and analysis. In *International Workshop on Recording, Modeling and Visualization of Cultural Heritage*, Ascona, Suisse, May 2005.

[965] M. Campedel, E. Moulines, and M. Datcu. Feature selection for satellite image indexing. In *IGARSS'05*, Séoul, Corée, July 2005.

[966] M. Campedel, E. Moulines, H. Maître, and M. Datcu. Feature selection for satellite image indexing. In *ESA-EUSC: Image Information Mining*, Frascati (Italy), Oct. 2005.

[967] M. Campedel, I. Kyrgyzov, and H. Maître. Unsupervised feature selection applied to spot5 satellite images indexing. In *FSDM*, Anvers (Belgique), Sept. 2008.

[968] B. Cannelle, D. Craciun, N. Paparoditis, and D. Boldo. Bundle adjustement and pose estimation of images of a multiframe panoramic camera. In *9th Conference on Optical 3-D*, Vienna, Austria, July 2009.

[969] F. Cellier and E. Colin. Building height estimation using fine analysis of altimetric mixtures in layover areas on polarimetric interferometric X-band SAR images. In *IGARSS'06*, Denver, USA, Aug. 2006.

[970] F. Cellier, H. Oriot, and J. M. Nicolas. Introduction of the Mean Shift algorithm in SAR imagery : application to shadow extraction. In *EARSeL*, Porto, Portugal, June 2005.

[971] F. Cellier, H. Oriot, and J. M. Nicolas. Study of altimetric mixtures in layover areas on high resolution InSAR images. In *EUSAR06*, Dresde, Allemagne, May 2006.

[972] F. Cellier, H. Oriot, and J. M. Nicolas. Hypothesis management for building reconstruction from high resolution InSAR imagery. In *IGARSS'06*, Denver, USA, Aug. 2006.
[973] D. Cerra, A. Mallet, L. Gueguen, and M. Datcu. Complexity based analysis of earth observation imagery: an assessment. In *ESA EUSC*, Frascati (Italie), Mar. 2008.
[974] F. Chaabane, F. Tupin, and H. Maître. An empirical model for interferometric coherence. In *SPIE Remote Sensing 2005*, page 9, Bruges (Belgium), Sept. 2005.
[975] F. Chaabane, M. Sellami, J. M. Nicolas, and F. Tupin. INSAR permanent scatterers selection using SAR SVA filtering. In *IGARSS 2009*, Cape Town, Afrique du Sud, July 2009.
[976] H. Chaabouni-Chouayakh and M. Datcu. Optimized PCA based feature extraction from multi-look / multi-resolution TerraSAR-X data. In *ESA EUSC*, Frascati (Italie), Mar. 2008.
[977] H. Chaabouni-Chouayakh and M. Datcu. Covariance based analysis of relevant scatterers in high resolution SAR images. In *ESA-EUSC 2006*, 2006.
[978] H. Chaabouni-Chouayakh and M. Datcu. Linear versus non-linear analysis of relevant scatterers in high resolution SAR images. In *IGARSS'07*, Barcelona (Spain), 2007.
[979] H. Chaabouni-Chouayakh and M. Datcu. Relevant scatterers characterization in SAR images. In *MaxEnt 2006*, Paris (France), 2006.
[980] H. Chaabouni-Chouayakh and M. Datcu. PCA vs. ICA decomposition of HR SAR images: Application to urban structures recognition. In *SPIE Europe Remote Sensing 2007*, Florence (Italy), 2007.
[981] H. Chaabouni-Chouayakh and M. Datcu. Azimuth sub-band and eigenspace decomposition for high resolution SAR image analysis. In *SSD'07*, Tunisia (Hammamet), 2007.
[982] S. Chambon, A. Moreno, A. Santhanam, J. Rolland, E. Angelini, and I. Bloch. CT-PET Landmark-based Registration using a Dynamic Lung Model. In *International Conference on Image Analysis and Processing ICIAP 2007*, pages 691–696, Modena, Italy, Sept. 2007.
[983] Q. Chen and H. Maître. Reliable image/video watermark retrieval in the presence of lossy compression. In *EUSIPCO 05*, Istambul (Turkey), Sept. 2005.
[984] N. Chenouard, I. Bloch, and J.-C. Olivo-Marin. Feature-Aided Particle Tracking. In *IEEE International Conference on Image Processing ICIP*, pages 1796 – 1799, San Diego, CA, USA, Oct. 2008.
[985] N. Chenouard, F. De Chaumont, I. Bloch, and J.-C. Olivo-Marin. Improving 3D Tracking in Microscopy by Joint Estimation of Kinetic and Image Models. In *MIIAB 2008 (MICCAI Workshop)*, New York, USA, Sept. 2008.
[986] N. Chenouard, S. Vernhettes, I. Bloch, and J.-C. Olivo-Marin. Morphological Source Separation for Particle Tracking in Complex Biological Environments. In *ICPR 2008*, Tampa, FL, USA, Dec. 2008.
[987] N. Chenouard, I. Bloch, and J.-C. Olivo-Marin. Particle tracking in fluorescent microscopy images improved by morphological source. In *IEEE International Conference on Image Processing ICIP*, Cairo, Egypt, 2009.
[988] N. Chenouard, I. Bloch, and J.-C. Olivo-Marin. Multiple hypothesis tracking in cluttered condition. In *IEEE International Conference on Image Processing ICIP*, Cairo, Egypt, 2009.
[989] N. Chenouard, I. Bloch, and J.-C. Olivo-Marin. Multiple Hypothesis Tracking in Microscopy Images. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, Boston, USA, 2009.
[990] M. Ciucu and M. Datcu. Information theoretical approach for searching very large image archives. In *ESA EUSC Conference on Information Mining*, Frascati (Italie), Oct. 2005.
[991] M. Ciucu and M. Datcu. Incremental grid based adaptive vector quantization for indexing very large eo image archives. In *ESA EUSC Conference on Information Mining*, Frascati (Italie), Oct. 2005.
[992] L. A. Consularo, R. M. Cesar, and I. Bloch. Structural Image Segmentation with Interactive Model Generation. In *IEEE International Conference on Image Processing (ICIP 2007)*, volume 6, pages 45–48, San Antonio, Texas, USA, Sept. 2007.
[993] L. A. Consularo, R. M. Cesar, L. H. De Figueiredo, and I. Bloch. Oversegmentation Control for Inexact Graph Matching: First Results. In *International Symposium on Mathematical Morphology (ISMM 2007)*, pages 375–386, Rio de Janeiro, Brazil, Oct. 2007.
[994] M. Costache, M. Lienou, and M. Datcu. On Bayesian Inference, Maximum Entropy and Support Vector Machines Methods. In *MaxEnt 2006*, Paris, France, July 2006.
[995] M. Costache, H. Maître, and M. Datcu. Categorization based relevance feedback search engine for Earth observation images repositories. In *IEEE IGARSS 2006*, Denver (Colorado), July 2006.
[996] D. Craciun, N. Paparoditis, and F. Schmitt. Automatic pyramidal intensity-based laser scan matcher for 3D modeling of large scale unstructured environments. In *CRV 08 - Fifth Canadian Conference on Computer and Robot Vision*, Windsor, Ontario, Canada, May 2008.
[997] D. Craciun, N. Paparoditis, and F. J. M. Schmitt. Automatic gigapixel mosaicing in large scale unstructured underground environments. In *IAPR Machine Vision Applications*, Yokohama, Japan, May 2009.
[998] J. Darbon and C. B. Akgul. An efficient algorithm for attribute openings and closings. In *European Signal Processing Conference*, volume 13, Antalya (Turkey), Sept. 2005.
[999] J. Darbon, M. Sigelle, and F. Tupin. The use of levelable regularization functions for MRF restoration of SAR images while preserving reflectivity. In *S&T/SPIE 19th Annual Symposium Electronic Imaging Conf. E112*, San Jose (USA), Jan. 2007.
[1000] M. Datcu, M. Soccorsi, D. Solimini, and F. Del Frate. Rate distortion theory method for eo data assessment and model selection. In *ESA EUSC Conference on Information Mining*, Frascati (Italy), Oct. 2005.
[1001] J. Dellière, A. Maruani, H. Maître, and P. Benjamin. A full electromagnetic SAR image simulator for urban structures. In *4th IEEE-GRSS - ISPRS workshop - URBAN 2007*, Paris (France), Apr. 2007.
[1002] J. Dellière, A. Maruani, H. Maître, P. Benjamin, and J. P. Piau. A full electromagnetic SAR simulator for urban structures. In *Physics in Signal and Image Processing, PSIP'07*, Mulhouse, Jan. 2007.

[1003] L. Denis, F. Tupin, J. Darbon, and M. Sigelle. Joint filtering of SAR interferometric phase and amplitude data in urban areas by TV minimization. In *IGARSS'08*, Boston, USA, July 2008.
[1004] L. Denis, F. Tupin, J. Darbon, and M. Sigelle. A regularization approach for InSAR and optical data fusion. In *IGARSS'08*, Boston, USA, July 2008.
[1005] L. Denis, F. Tupin, M. Sigelle, and J. Darbon. Sar amplitude filtering using tv prior and its application to building delineation. In *EUSAR 08*, Friedrichhaffen, Allemagne, June 2008.
[1006] S. Dib, M. Barkat, J. M. Nicolas, and M. Grimes. A reduced rank STAP with change of PRF. In *EUSIPCO*, Poznan, Pologne, Sept. 2007.
[1007] Q. Duan, E. Angelini, S. Herz, C. Ingrassia, O. Gerard, K. Costa, J. Holmes, and A. Laine. Cardiac dynamic information from optical flow using three-dimensional ultrasound. In *IEEE EMBS conference*, Shangai, China, Sept. 2005.
[1008] Q. Duan, E. Angelini, S. Herz, C. Ingrassia, O. Gerard, K. Costa, J. Holmes, and A. Laine. Evaluation of optical flow algorithms for tracking endocardial surfaces on three-dimensional ultrasound data. In *SPIE Medical Imaging*, San Diego, CA, USA, Feb. 2005.
[1009] Q. Duan, E. D. Angelini, S. L. Herz, O. Gerard, P. Allain, C. M. Ingrassia, K. D. Costa, J. W. Holmes, S. Homma, and A. F. Laine. Tracking of lv endocardial surface on real-time three-dimensional ultrasound with optical flow. In *Functional Imaging and Modeling of the Heart*, volume 1, pages 434–445, Barcelona, Spain, June 2005.
[1010] Q. Duan, E. Angelini, O. Gerard, S. Homma, and A. Laine. Comparing optical-flow based methods for quantifiation of myocardial deformations on RT3D ultrasound. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, volume 1, pages 173–176, Arlington USA, Apr. 2006.
[1011] Q. Duan, E. Angelini, S. Homma, and A. Laine. Tracking the endocardium using optical flow along iso-value curves. In *IEEE EMBS Annual International Conference*, pages 707–710, New York USA, Aug. 2006.
[1012] Q. Duan, E. Angelini, S. Homma, and A. Laine. Validation of optical-flow for quantification of myocardial deformations on simulated RT3D ultrasound. In *IEEE Internation Symposium on Biomedical Imaging*, pages 944–947, Arlington, USA, Apr. 2007.
[1013] Q. Duan, P. Moireau, E. D. Angelini, D. Chapelle, and A. Laine. Simulation of 3D ultrasound with a realistic electromechanical model of the heart. In *Functional Imaging and Modeling of the Heart (FIMH)*, volume LNCS 4466, pages 463–473, Salt Lake City, USA, June 2007.
[1014] Q. Duan, E. D. Angelini, S. Homma, and A. F. Laine. Real-time segmentation of 4d ultrasound by active geometric functions. In *ISBI*, pages 233–236, Paris, France, May 2008.
[1015] Q. Duan, E. D. Angelini, A. Lorsakul, S. Homma, J. Holmes, and A. F. Laine. Coronary occlusion detection with 4d optical flow. In *Functional Imaging and Modeling of the Heart (FIMH)*, volume 1, pages 211–219, Nice, France, June 2009.
[1016] Q. Duan, K. Parker, A. Lorsakul, E. Angelini, E. Hyodo, S. Homma, J. Holmes, and A. Laine. Quantitative validation of optical flow based myocardial strain measures using sonomicrometry. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, June 2009.
[1017] F. Duguet, C. Hernandez, G. Drettakis, and F. Schmitt. Level of detail continuum for huge geometric data. In *ACM SIGGRAPH 2005*, volume Posters, Los Angeles, Aug. 2005.
[1018] M. Eitz, K. Hildebrand, T. Boubekeur, and M. Alexa. A descriptor for large scale image retrieval based on sketched feature lines. In *Eurographics Symposium on Sketch-Based Interfaces and Modeling 2009*, New Orleans (co-located with SIGGRAPH), USA, Aug. 2009.
[1019] M. Eitz, K. Hildebrand, T. Boubekeur, and M. Alexa. Photosketch: A sketch based image query and compositing system. In *ACM SIGGRAPH 2009 Talk Program*, New Orleans, USA, Aug. 2009.
[1020] R. El-Berbari, N. Kachenoura, A. Redheuil, I. Bloch, E. Mousseaux, and F. Frouin. Using Cine MR Images to Evaluate Myocardial Infarct Transmurality on Delayed Enhancement Images. In *Third IEEE International Symposium on Biomedical Imaging ISBI 2006*, pages 145–148, Arlington, Virginia, USA, 2006.
[1021] R. El-Berbari, I. Bloch, A. Redheuil, E. Angelini, E. Mousseaux, F. Frouin, and A. Herment. Automated segmentation of the left ventricle including papillary muscles in cardiac magnetic resonance images. In *Functional Imaging and Modeling of the Heart (FIMH)*, volume LNCS 4466, pages 453–462, Salt Lake City, USA, June 2007.
[1022] R. El-Berbari, I. Bloch, A. Redheuil, E. Angelini, E. Mousseaux, F. Frouin, and A. Herment. An Automated Myocardial Segmentation in Cardiac MRI. In *Engineering in Medicine and Biology Conference, EMBC 2007*, pages 4508–4511, Lyon, France, Aug. 2007.
[1023] R. El-Berbari, N. Kachenoura, F. Frouin, A. Herment, E. Mousseaux, and I. Bloch. An automated quantification of the transmural myocardial infarct extent using cardiac de-mr images. In *31st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'09)*, Minneapolis, USA, Sept. 2009.
[1024] M. Ferecatu and H. Sahbi. TELECOM ParisTech at ImageClefphoto 2008: Bi-modal text and image retrieval with diversity enhancement. In *QUAERO/CLEF workshop*, Sept. 2008.
[1025] G. Ferraioli, A. Shabou, F. Tupin, and V. Pascazio. Fast InSAR multichannel phase unwrapping for DEM generation. In *Joint Urban Remote Sensing Event*, Shanghai-China, May 2009.
[1026] G. Fouquier, J. Atif, and I. Bloch. Local Reasoning in Fuzzy Attributes Graphs for Optimizing Sequential Segmentation. In *6th IAPR-TC15 Workshop on Graph-based Representations in Pattern Recognition, GbR'07*, volume 1, pages 138–147, Alicante, Spain, June 2007.
[1027] G. Fouquier, L. Likforman, J. Darbon, and B. Sankur. The Biosecure Geometry-based System for Hand Modality. In *IEEE ICASSP 32nd International Conference on Acoustics, Speech, and Signal Processing*, number I, pages 801–804, Honolulu, Hawaii, USA, Apr. 2007.
[1028] G. Fouquier, J. Atif, and I. Bloch. Sequential Spatial Reasoning in Images based on Pre-Attention Mechanisms and Fuzzy Attribute Graphs. In *European Conference on Artificial Intelligence ECAI*, pages 611–615, Patras,

Greece, July 2008.
[1029] G. Fouquier, J. Atif, and I. Bloch. Incorporating a pre-attention mechanism in fuzzy attribute graphs for sequential image segmentation. In *International Conference on Information Processing and Management of Uncertainty*, pages 840–847, Torremolinos (Malaga), Spain, June 2008.
[1030] F. Galland, F. Tupin, J. M. Nicolas, and H. Maître. Registering of SAR and optical data. In *IGARSS 2005*, Corée, July 2005.
[1031] M. Gastaud, S. Ladjal, and H. Maître. Blind filter identification and image superresolution using subspace methods. In *Eusipco 2007*, Poznan (Poland), Sept. 2007.
[1032] A. Ghaleb, L. Vignaud, and J. M. Nicolas. Fine micro-Doppler analysis in ISAR imaging. In *IGARSS 2007*, Barcelone, Espagne, July 2007.
[1033] A. Ghaleb, L. Vignaud, and J. M. Nicolas. A refined micro-doppler analysis of pedestrians in ISAR imaging. In *EUSAR 08*, Frierichhaffen, Allemagne, June 2008.
[1034] A. Ghaleb, L. Vignaud, and J. M. Nicolas. Micro-doppler analysis of pedestrians in ISAR imaging. In *RADAR'08*, Rome, Italie, May 2008.
[1035] D. Girardeau-Montaut, M. Roux, R. Marc, and G. Thibault. Change detection on point cloud data acquired with a ground laser scanner. In *ISPRS workshop Laser scanning 2005*, Enschede, the Netherlands, Sept. 2005.
[1036] D. Gleich and M. Datcu. Wavelet based feature extraction for sar data. In *ESA EUSC Conference on Information Mining*, Frascati (Italie), Oct. 2005.
[1037] J.-F. Goudou and S. Ladjal. Noises study in super-resolution. In *PSIP 2007*, Mulhouse, France, Jan. 2007.
[1038] Y. Gousseau and F. Roueff. A geometrical a priori for capturing the regularity of images. In *EUSIPCO 2005*, Aug. 2005.
[1039] A. B. V. Graciano, R. M. Cesar Junior, and I. Bloch. Graph-based Object Tracking Using Structural Pattern Recognition. In *SIBGRAPI*, pages 179–186, Belo Horizonte, Brazil, Oct. 2007.
[1040] L. Gueguen and M. Datcu. The Model Based Similarity Metric. In *DCC*, page 382, Snowbird, Utah, USA, Mar. 2007.
[1041] L. Gueguen and M. Datcu. Spatio-temporal textures characterization based on information bottleneck principle. In *ESA EUSC Conference on Information Mining*, Frascati (Italie), Oct. 2005.
[1042] L. Gueguen and M. Datcu. Spatio-temporal structures characterization based on multi-information bottleneck. In *ESA-EUSC 2006: Image Information Mining for Security and Intelligence*, Madrid, Nov. 2006.
[1043] L. Gueguen, M. Trocan, B. Pesquet-Popescu, A. Giros, and M. Datcu. Comparison of Multispectral Satellite Sequence Compression Appoaches. In *International Symposium on Signal, Circuits and Systems*, volume 1, pages 87–90, Iasi - Romania, July 2005.
[1044] L. Gueguen, C. Le Men, and M. Datcu. Analysis of Satellite Image Time Series based on Information Bottleneck. In *MaxEnt 2006*, pages 367–374, Paris, July 2006.
[1045] A. Hadjem, D. Lautru, N. Gadi, I. Bloch, C. Dale, M. F. Wong, V. F. Hanna, and J. Wiart. Influence of the Ear's Morphology on Specific Absorption Rate (SAR) Induced in a Child Head Using two Source Models. In *IEEE MTT-S 2005 International Microwave Symposium*, volume 3, pages 1453 – 1456, Long Beach, Ca, USA, June 2005.
[1046] O. Harant, R. Fallourd, L. Bombrun, M. Gay, E. Trouvé, G. Vasile, and J. M. Nicolas. Preliminary terrasar-X observations for temperate glaciers on the Chamonix Mont Blanc test site. In *IGARSS 2009*, Cape Town, Afrique du Sud, July 2009.
[1047] G. Hochard, R. Binet, and J. M. Nicolas. Stable coherent area in SAR interferometry. In *IGARSS 2009*, Cape Town, Afrique du Sud, July 2009.
[1048] S. Homayouni and M. Roux. A non-supervised material mapping technique for hyperspectral image analysis in urban area. In *URBAN2005*, Phenix, Arizona, USA, Mar. 2005.
[1049] C. Hudelot, J. Atif, O. Nempont, B. Batrancourt, E. Angelini, and I. Bloch. GRAFIP: a Framework for the Representation of Healthy and Pathological Anatomical and Functional Cerebral Information. In *Human Brain Mapping*, Florence, Italy, June 2006.
[1050] C. Hudelot, J. Atif, and I. Bloch. An Ontology of Spatial Relations using Fuzzy Concrete Domains. In *AISB symposium on Spatial Reasoning and Communication*, Newcastle, UK, Apr. 2007.
[1051] C. Hudelot, J. Atif, and I. Bloch. A Spatial Relation Ontology Using Mathematical Morphology and Description Logics for Spatial Reasoning. In *ECAI-08 Workshop on Spatial and Temporal Reasoning*, pages 21–25, Patras, Greece, July 2008.
[1052] T. Hurtut, H. Dalazoana, Y. Gousseau, and F. Schmitt. Spatial color image retrieval without segmentation using thumbnails and the earth mover's distance. In *CGIV 2006*, pages 54–59, Leeds (UK), June 2006.
[1053] T. Hurtut, Y. Gousseau, F. Cheriet, and F. Schmitt. Pictorial analysis of line-drawings. In *International Symposium on Computational Aesthetics in Graphics, Visualization, and Imaging (CAe 2008)*, Lisbon, Portugal, June 2008.
[1054] C. Iorga and M. Datcu. Survey on methods for feature extraction of sar data, esa eusc conference on information mining. In *ESA EUSC Conference on Information Mining*, Frascati (Italie), Oct. 2005.
[1055] V. Israel-Jost, E. Breton, E. Angelini, P. Choquet, I. Bloch, and A. Constantinesco. Vectorial Multi-Phase Mouse Brain Tumor Segmentation in T1-T2 MRI. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, pages 5–8, Paris, France, May 2008.
[1056] A. Katouzian, E. D. Angelini, and A. F. Laine. Classification of blood regions in IVUS images using three dimensional brushlet expansions. In *International Conference of the IEEE Engineering in Medicine and Biology Society*, Minneapolis, USA, Sept. 2009.
[1057] A. Katouzian, E. D. Angelini, A. Lorsakul, B. Sturm, and A. F. Laine. Lumen border detection of intravascular ultrasound via denoising of directional wavelet representations. In *Functional Imaging and Modeling of the Heart*

FIMH, volume 1, pages 104–113, Nice, France, June 2009.

[1058] A. Kermi, M. T. Laskri, and I. Bloch. A Three-Dimensional Computerized Facial Reconstruction Using Non-Linear Registration of a Reference Head. In *First Mediterranean Conference on Intelligent Systems and Automation CISA'08*, pages 9–14, Annaba, Algeria, June 2008.

[1059] H. Khotanlou, J. Atif, O. Colliot, and I. Bloch. 3D Brain Tumor Segmentation Using Fuzzy Classification and Deformable Models. In *WILF*, volume LNCS 3849, pages 312–318, Crema, Italy, Sept. 2005.

[1060] H. Khotanlou, J. Atif, E. Angelini, H. Duffau, and I. Bloch. Adaptive Segmentation of Internal Brain Structures in Pathological MR Images Depending on Tumor Types. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, pages 588–591, Washington DC, USA, Apr. 2007.

[1061] H. Khotanlou, O. Colliot, and I. Bloch. Automatic Brain Tumor Segmentation using Symmetry Analysis and Deformable Models. In *International Conference on Advances in Pattern Recognition ICAPR*, pages 198–202, Kolkata, India, Jan. 2007.

[1062] F. Kurz and M. Datcu. On the problematic of data integrity for communication of large eo repositories and information mining systems. In *ESA EUSC Conference on Information Mining*, Frascati (Italie), Oct. 2005.

[1063] I. Kyrgyzov, H. Maître, and M. Campedel. Combining clustering results for the analysis of textures of SPOT5 images. In *ESA-EUSC: Image Information Mining*, Frascati (Italy), Oct. 2005.

[1064] I. O. Kyrgyzov, O. O. Kyrgyzov, H. Maître, and M. Campedel. Kernel mdl to determine the number of clusters. In *5th International Conference on Machine Learning and Data Mining MLDM 2007, (Perner Ed, LNAI, 4571)*, pages 203–217, Leipzig, Germany, July 2007.

[1065] I. O. Kyrgyzov, H. Maître, and M. Campedel. A method of clustering combination applied to satellite image analysis. In *IEEE - International Conference on Image Analysis and Processing ICIAP 2007*, pages 81–86, Modena, Italy, Sept. 2007.

[1066] C. Lahanier, O. Feihl, M. Jeanlin, D. Pitzalis, and F. Schmitt. 3D modelling of archaeological objects for conservation, visualisation, colour and shape characterisation, details comparison. In *ICOM-2005*, The Hague, The Netherlands, Sept. 2005.

[1067] T. Landes, M. Gay, E. Trouvé, J. M. Nicolas, L. Bombrun, G. Vasile, and I. Hajnsek. Monitoring temperate glaciers by high resolution Pol-InSAR data: First analysis of Argentière E-SAR acquisitions and in-situ measurements. In *IGARSS 2007*, Barcelone, Espagne, July 2007.

[1068] C. Le Men, A. Julea, N. Méger, M. Datcu, P. Bolon, and H. Maître. Radiometric evolution classification in a high resolution satellite image time series (STIS). In *ESA-EUSC on Image Information Mining: pursuing automation of geospatial intelligence for environment and security*, Frascati, Italy, May 2008.

[1069] V. Le Moigne, F. Galland, J. M. Nicolas, and F. Tupin. Statistical polygonal snakes with Fisher distribution. In *EUSAR 2006*, Dresde, Allemagne, May 2006.

[1070] V. Le Moigne, F. Tupin, and J. M. Nicolas. Statistical Polygonal Snakes for 3D building reconstruction using High Resolution SAR data. In *URBAN - 2007 - IEEE/ISPRS Joint Workshop on Remote Sensing and data fusion over urban areas*, Paris, FRANCE, Apr. 2007.

[1071] G. Lehureau, F. Tupin, C. Tison, G. Oller, and D. Petit. Registration of metric resolution sar and optical images in urban areas. In *EUSAR 08*, Friedrichhaffen, Allemagne, June 2008.

[1072] D. Lesage, J. Darbon, and C. B. Akgul. An efficient algorithm for connected attribute thinnings and thickenings. In *International Symposium on Visual Computing (ISVC'06)*, volume 4292, pages 393–404, Lake Tahoe, Nevada, USA, Nov. 2006.

[1073] D. Lesage, E. Angelini, I. Bloch, and G. Funka-Lea. Medial-based Bayesian Tracking for Vascular Segmentation: Application to Coronary Arteries in 3D CT Angiography. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, pages 268–271, Paris, France, May 2008.

[1074] D. Lesage, E. Angelini, I. Bloch, and G. Funka-Lea. Design and Study of Flux-based Features for 3D Vascular Tracking. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, Boston, USA, 2009.

[1075] D. Lesage, E. D. Angelini, G. Funka-Lea, and I. Bloch. Bayesian maximal paths for coronary artery. In *MICCAI*, London, UK, Sept. 2009.

[1076] X. Li, M. Roux, M. He, and F. Schmitt. A new method of image fusion based on redundant wavelet transform. In *5th Int. Conf. on Visual Information Theory, VIE 2008*, pages 12–17, July 2008.

[1077] A. Lindner, N. Bonnier, C. Leynadier, and F. Schmitt. Evaluation of characterization methods of printer mtf. In *Electronic Imaging Science and Technology, IS&T/SPIE 20th Annual Symposium*, number 6808, pages 6808061–68080612, San Jose, California, USA, Jan. 2008.

[1078] A. Lindner, N. Bonnier, C. Leynadier, and F. Schmitt. Measurement of printer mtfs. In *Electronic Imaging, San Jose, United States Of America*, volume 7242, San Jose, California, USA, Jan. 2009.

[1079] P. Lopez Quiroz, J. M. Nicolas, F. Tupin, P. Briole, and F. Chaabane. Permanent scatterers: comparison of identification methods. In *EUSAR 2006*, Dresden, Allemagne, May 2006.

[1080] P. Lopez Quiroz, F. Tupin, P. Briole, M. P. Doin, and J. M. Nicolas. Spatial and temporal analysis of Mexico city subsidence by means of interferometric techniques. In *AGU 2007 Joint Assembly*, Acapulco, Mexico, May 2007.

[1081] B. Luo, J. F. Aujol, Y. Gousseau, and S. Ladjal. Extrapolation of wavelet features for satellite images with different resolutions. In *IEEE IGARSS-06*, Denver, Colorado, July 2006.

[1082] B. Luo, J. F. Aujol, Y. Gousseau, S. Ladjal, and H. Maître. Characteristic scale in satellite images. In *IEEE ICASSP-06*, volume 2, pages II 809– II 812, Toulouse, France, May 2006.

[1083] M. Marim, E. Angelini, and J.-C. Olivo-Marin. A compressed sensing approach for biological microscopic image processing. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, Boston, USA, June 2009.

[1084] J. Marquez, P. Delmas, I. Bloch, and F. Schmitt. Morphological Averaging of Anatomical Shapes Using Three-Dimensional Distance Transforms. In *Image and Vision Computing New Zealand IVCNZ*, pages 337–342, Great

Barrier Island, New Zealand, Nov. 2006.

[1085] D. Martinez, I. Bloch, and J. T. Hernandez. Assessing the Variability of Internal Brain Structures Using PCA on Sampled Surface Points. In *International Conference on Computer Vision Theory and Applications VISAPP 2009*, volume 2, pages 172–179, Lisbon, Portugal, Feb. 2009.

[1086] N. Milisavljevic and I. Bloch. Possibilistic Multi-Sensor Fusion for Humanitarian Demining. In *IGARSS*, pages 14–17, Barcelona, 2007.

[1087] C. Millet, I. Bloch, P. Hède, and P. A. Moellic. Using Relative Spatial Relationships to Improve Individual Region Recognition. In *European Workshop on the Integration of Knowledge, Semantics and Digital Media Technologies, EWIMT'05*, pages 119–126, London, UK, 2005.

[1088] C. Millet, G. Grefenstette, I. Bloch, P. A. Moellic, and P. Hède. Automatically populating an image ontology and semantic color filtering. In *Ontoimage 2006, Language Resources for Content-Based Image Retrieval*, pages 34–39, Genoa, Italy, May 2006.

[1089] C. Millet, I. Bloch, and A. Popescu. Using the Knowledge of Object Colors to Segment Images and Improve Web Image Search. In *RIAO*, Pittsburgh, PA, USA, 2007.

[1090] A. Moreno, G. Delso, O. Camara, and I. Bloch. CT and PET Registration using Deformations Incorporating Tumor-Based Constraints. In *10th Iberoamerican Congress on Pattern Recognition, CIARP*, number LNCS 3773, pages 1–12, La Havana, Cuba, Nov. 2005.

[1091] A. Moreno, G. Delso, O. Camara, and I. Bloch. Non-linear Registration Between 3D Images Including Rigid Objects: Application to CT and PET Lung Images With Tumors. In *Workshop on Image Registration in Deformable Environments (DEFORM'06)*, pages 31–40, Edinburgh, UK, Sept. 2006.

[1092] A. Moreno, C. M. Takemura, O. Colliot, O. Camara, and I. Bloch. Heart Segmentation in Medical Images Using the Fuzzy Spatial Relation "Between". In *Information Processing and Management of Uncertainty in Knowledge-Based Systems, IPMU*, pages 2052–2059, Paris, France, 2006.

[1093] A. Moreno, S. Chambon, A. Santhanam, R. Brocardo, P. Kupelian, J. Rolland, E. Angelini, and I. Bloch. Thoracic CT-PET Registration Using a 3D Breathing Model. In *MICCAI 2007*, volume LNCS 4791, pages 626–633, Brisbane, Australia, 2007.

[1094] F. Mosca, J. M. Nicolas, L. Kopp, and M. Couade. Temporal approach of the synthetic aperture imaging using hadamard matrix. In *Acoustics 2008*, Paris, July 2008.

[1095] B. Mougel and C. Lelong. Classification and information extraction in very high resolution satellite images for tree crops monitoring. In *28th EARSeL Symposium and Workshops*, Istanbul, June 2008.

[1096] B. Mougel, C. Lelong, A. Bégué, and J. M. Nicolas. Comparison of three segmentation methods for groves recognition in very high resolution satellite images. In *PSIP 2007*, Mulhouse, France, Jan. 2007.

[1097] T. Napoléon, T. Adamek, F. Schmitt, and N. E. O'Connor. Shrec'08 entry: Multi-view 3D retrieval using multi-scale contour representation. In *IEEE International Conference on Shape Modeling and Applications - SMI'08*, pages 227–228, Stony Brook University, NY, USA, June 2008.

[1098] O. Nempont, J. Atif, A. Herment, I. Bloch, and P. Carlier. Graph-Based Segmentation of Muscles on NMR Images: Preliminary Results. In *2005 Workshop on Investigation of Human Muscle Function*, Nashville, TN, USA, 2005.

[1099] O. Nempont, P. Carlier, A. Herment, and I. Bloch. Towards Automatic Muscle and Fat Volume Quantitation on NMR Images: Preliminary Results. In *International Congress of Myology*, page 106, Nantes, France, May 2005.

[1100] O. Nempont, J. Atif, E. Angelini, and I. Bloch. Combining Radiometric and Spatial Structural Information in a New Metric for Minimal Surface Segmentation. In *Information Processing in Medical Imaging (IPMI 2007)*, volume LNCS 4584, pages 283–295, Kerkrade, The Netherlands, July 2007.

[1101] O. Nempont, J. Atif, E. Angelini, and I. Bloch. A New Fuzzy Connectivity Class. Application to Structural Recognition in Images. In *Discrete Geometry for Computer Imagery DGCI*, volume LNCS 4992, pages 446–457, Lyon, 2008.

[1102] O. Nempont, J. Atif, E. Angelini, and I. Bloch. Structure Segmentation and Recognition in Images Guided by Structural Constraint Propagation. In *European Conference on Artificial Intelligence ECAI*, pages 621–625, Patras, Greece, July 2008.

[1103] O. Nempont, J. Atif, E. Angelini, and I. Bloch. Fuzzy Attribute Openings Based on a New Fuzzy Connectivity Class. Application to Structural Recognition in Images. In *IPMU'08*, pages 652–659, Malaga, Spain, June 2008.

[1104] J. M. Nicolas, F. Tupin, G. Vasile, and E. Trouvé. SAR processing in the temporal domain. application to direct interferogram generation and mountain glacier monitoring. In *advanced ASAR 2005*, Longueil, CANADA, Nov. 2005.

[1105] G. Palma, I. Bloch, and S. Muller. Fuzzy Connected Filters for Fuzzy Gray Scale Images. In *IPMU'08*, pages 667–674, Malaga, Spain, June 2008.

[1106] G. Palma, G. Peters, S. Muller, and I. Bloch. Masses Classification using Fuzzy Active Contours and Fuzzy Decision Trees. In *SPIE Medical Imaging: Computer-Aided Diagnosis*, number 6915, San Diego, CA, USA, Feb. 2008.

[1107] G. Palma, I. Bloch, S. Muller, and R. Iordache. Fuzzifying Images using Fuzzy Wavelet Denoising. In *IEEE International Conference on Fuzzy Systems FUZZ-IEEE'09*, Jeju, Korea, 2009.

[1108] G. Palma, S. Muller, I. Bloch, and R. Iordache. Fast Detection of Convergence Areas in Digital Breast Tomosynthesis. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, Boston, USA, 2009.

[1109] G. Palma, S. Muller, I. Bloch, and R. Iordache. Convergence Areas Detection in Digital Breast Tomosynthesis Volumes using a Contrario Modeling. In *SPIE Symposium on Medical Imaging: Computer-Aided Diagnosis*, Lake Buena Vista, FL, USA, Feb. 2009.

[1110] X. Perrotton, M. Sturzel, and M. Roux. Automatic object detection on aerial images using local descriptors and image synthesis. In *6th International Conference on Computer Vision Systems, ICVS 2008*, Santorin, Greece,

May 2008.
[1111] G. Peters, S. Muller, S. Bernard, R. Iordache, F. Wheeler, and I. Bloch. Reconstruction-Independent 3D CAD for Calcification Detection in Digital Breast Tomosynthesis Using Fuzzy Particles. In *10th Iberoamerican Congress on Pattern Recognition, CIARP*, number LNCS 3773, pages 400–408, Havana, Cuba, Nov. 2005.
[1112] G. Peters, S. Muller, S. Bernard, R. Iordache, and I. Bloch. Reconstruction-Independent 3D CAD for Mass Detection in Digital Breast Tomosynthesis using Fuzzy Particles. In *SPIE Medical Imaging*, San Diego, CA, USA, Feb. 2006.
[1113] G. Peters, S. Muller, S. Bernard, and I. Bloch. A Hybrid Active Contour Model for Mass Detection in Digital Breast Tomosynthesis. In *SPIE Medical Imaging*, San Diego, CA, USA, Feb. 2007.
[1114] G. Piella, M. Campedel, and B. Pesquet-Popescu. Adaptive wavelets for image representation and classification. In *EUSIPCO'05*, Sept. 2005.
[1115] J. Puentes, B. Batrancourt, L. Lecornu, J. Atif, A. Zemirline, G. Coatrieux, E. Angelini, I. Bloch, and C. Roux. Enhancing Electronic Patient Record Functionality through Information Extraction from Images. In *IEEE International Conference on Information and Communication Technologies: From Theory To Applications ICTTA 2006*, pages 978–983, Damascus, Syria, Apr. 2006.
[1116] J. Rabin, J. Delon, and Y. Gousseau. Circular earth mover's distance for the comparison of local features. In *ICPR 08*, Tampa, Etats-Unis, Dec. 2008.
[1117] J. Rabin, J. Delon, and Y. Gousseau. A contrario matching of SIFT-like features. In *ICPR 08*, Tampa, Etats-Unis, Dec. 2008.
[1118] C. K. Reinbothe, T. Boubekeur, and M. Alexa. Hybrid ambient occlusion. In *Eurographics 2009 - Areas Papers*, pages 51–57, Munich, Germany, Apr. 2009.
[1119] A. Ribés and F. Schmitt. Improving spectral reflectance reconstruction accuracy using bootstrap. In *MCS'07 - Int. Symp. on Multispectral Color Science and Application*, Taipei, Taiwan, May 2007.
[1120] S. Rital, M. Costache, and M. Campedel. Plato for information mining in satellite imagery. In *Semantic and Digital Media Technologies (SAMT)*, Koblenz, Germany, Dec. 2008.
[1121] M. Rodriguez, J. Preciozzi, G. Facciolo, and A. Almansa. Simulation and real-time visualization of changing baseline in a stereo pair. In *The Eighth IASTED International Conference on Visualization, Imaging and Image Processing VIIP 2008*, number 630-075, Palma de Mallorca, Espagne, Sept. 2008.
[1122] F. Rossant and I. Bloch. Optical Music Recognition based on Fuzzy Modeling of Symbol Classes and Music Writing Rules. In *ICIP 2005*, volume II, pages 538–541, Genova, Italy, Sept. 2005.
[1123] F. Rossant, I. Ghorbel, I. Bloch, M. Pâques, and S. Tick. Automated Segmentation of Retinal Layers in OCT Imaging and Derived Ophtalmic Measures. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, Boston, USA, 2009.
[1124] H. Sahbi, J.-Y. Audibert, and R. Keriven. Graph-cut transducers for relevance feedback in content based image retrieval. In *International Conference on Computer Vision*, Oct. 2007.
[1125] H. Sahbi, J.-Y. Audibert, J. Rabarisoa, and R. Keriven. Object recognition and retrieval by context dependent similarity kernels (best regular paper award). In *Sixth International Workshop on Content-Based Multimedia Indexing, CBMI*, June 2008.
[1126] H. Sahbi, J.-Y. Audibert, J. Rabarisoa, and R. Keriven. Context dependent kernel design for object matching and recognition. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR),*, June 2008.
[1127] H. Sahbi, J.-Y. Audibert, J. Rabarisoa, and R. Keriven. Robust matching and recognition using context-dependent kernels. In *International Conference on Machine Learning (ICML)*, July 2008.
[1128] H. Sahbi, P. Etyngier, J.-Y. Audibert, and R. Keriven. Manifold learning using robust graph Laplacian for interactive image retrieval. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2008.
[1129] H. Sahbi, P. Etyngier, J.-Y. Audibert, and R. Keriven. Graph Laplacian for interactive image retrieval. In *International Conference on Acoustics, Speech, and Signal Processing (Image/Video Storage and Retrieval)*, Apr. 2008.
[1130] F. Schmitt, G. Aitken, G. Alquié, H. Brettel, M. B. Chouikha, P. Colantoni, P. Cotte, J. Cupitt, C. De Deyne, D. Dupraz, C. Lahanier, H. Liang, R. Pillay, A. Ribes, and D. Saunders. Crisatel multispectral imaging system. In *10th Congress of the International Colour Association AIC'05*, volume 1, pages 463–467, Granada, Spain, May 2005.
[1131] G. Schwarz and M. Datcu. Image information mining: perspectives seen by dlr. In *ESA EUSC*, Frascati (Italie), Mar. 2008.
[1132] G. Schwarz, D. Espinoza Molina, H. Breit, and M. Datcu. Adapting multilooking for joint radiometrical and geometrical SAR image enhancement. In *ESA EUSC*, Frascati (Italie), Mar. 2008.
[1133] G. Schwarz, D. Espinoza Molina, and M. Datcu. A new look at feature selection. In *ESA-EUSC*, Frascati (Italie), Mar. 2008.
[1134] S. Servigne, T. J. Tanzi, and G. Noel. Telegeomatic system and real time spatio-temporal database. In *UDMS 2006, 25th Urban Data Management Symposium*, Aaloborg (DK), May 2006.
[1135] C. Sintes, J. M. Nicolas, and R. Garello. Radar interferometry vs. sonar interferometry. In *EUSAR 2006*, Dresde, Allemagne, May 2006.
[1136] M. Soccorsi and M. Datcu. Terra SAR-X Data Feature Extraction. In *ESA-EUSC*, Frascati (Italie), Mar. 2008.
[1137] M. Soccorsi and M. Datcu. Bayesian texture based analysis of hr slc sar images. In *ESA-EUSC 2006*, Torrejon (Spain), 2006.
[1138] M. Soccorsi and M. Datcu. Stochastic models of slc hr sar images. In *IGARSS'07*, Barcelona (Spain), 2007.
[1139] M. Soccorsi and M. Datcu. Space-variant model fitting and selection for image information extraction. In *MaxEnt 2006*, Paris (France), 2006.

[1140] M. Soccorsi and M. Datcu. Phase characterization of polsar image. In *SPIE Europe Remote Sensing 2007*, Florence (Italy), 2007.
[1141] P. Soler, O. Gerard, P. Allain, E. Saloux, E. Angelini, and I. Bloch. Comparison of fusion techniques for RT3D echocardiography acquisitions from different acoustic windows. In *Computers in Cardiology*, pages 141–144, Lyon, France, Sept. 2005.
[1142] P. Soler, N. Villain, I. Bloch, and E. D. Angelini. Volume Reconstruction of Breast Echography from Anisotropically Degraded Scans. In *IASTED International Conference on Biomedical Engineering*, volume 9, pages 349–355, Innsbruck, Austria, Feb. 2005.
[1143] P. Soler, G. Delso, N. Villain, E. Angelini, and I. Bloch. Superresolution Spatial Compunding Techniques, with Application to 3D Breast Ultrasound Imaging. In *SPIE Medical Imaging*, volume 6147, San Diego, CA, USA, Feb. 2006.
[1144] H. Sportouche, F. Tupin, and L. Denise. Building Detection by Fusion of Optical and SAR Features in Metric Resolution Data. In *IGARSS - 2009*, Cap Town, SOUTH AFRICA, July 2009.
[1145] H. Sportouche, F. Tupin, and L. Denise. Building Extraction and 3D Reconstruction in Urban Areas from High-Resolution Optical and SAR Imagery. In *URBAN - 2009 - IEEE GRSS / ISPRS Joint Workshop on Data Fusion And Remote Sensing over Urban Areas*, Shangai, CHINA, May 2009.
[1146] C. M. Takemura, R. M. Cesar Junior, and I. Bloch. Fuzzy Modeling and Evaluation of the Spatial Relation “Along”. In *10th Iberoamerican Congress on Pattern Recognition, CIARP*, number LNCS 3773, pages 837–848, La Havana, Cuba, Nov. 2005.
[1147] H. Tang, H. Maître, and N. Boujemaa. Similarity measure for satellite images with heterogeneous contents. In *URBAN - 2007 - IEEE/ISPRS Joint Workshop on Remote Sensing and data fusion over urban areas*, Paris (France), Apr. 2007.
[1148] T. J. Tanzi. ITS, the issues: sharing and using information. In *The 5th International Conference on ITS Telecommunications*, ”le Quartz” Congress Center, Brest - FRANCE, June 2005.
[1149] S. Tilie, L. Laborelli, and I. Bloch. Blotch Detection for Digital Archives Restoration based on the Fusion of Spatial and Temporal Detectors. In *FUSION 2006*, Florence, Italy, 2006.
[1150] S. Tilie, I. Bloch, and L. Laborelli. A Contrario False Alarms Removal for Improving Blotch Detection in Digital Film Restoration. In *EC-SIPMCS*, Maribor, Slovenia, June 2007.
[1151] C. Tison, F. Tupin, and H. Maître. A Markovian scheme for joint retrieval of classification and height map from urban interferometric SAR images. In *IEEE Int. Conf. on Image Processing (ICIP'05)*, Genova (Italie), Sept. 2005.
[1152] C. Tison, F. Tupin, J. M. Nicolas, and H. Maître. Validation of a feature fusion scheme for urban DEM retrieval from high resolution SAR interferogram. In *IEEE Int. Geoscience and Remote Sensing Symposium (IGARSS'05)*, Seoul (Korea), July 2005.
[1153] E. Trouvé, G. Vasile, M. Gay, P. Grussenmeyer, and J. M. Nicolas. Combining optical and SAR data to monitor temperate glaciers. In *IGARSS 2005*, Séoul, Corée, July 2005.
[1154] E. Trouvé, I. Petillot, P. Bolon, M. Gay, L. Bombrun, J. M. Nicolas, F. Tupin, A. Walpersdorf, N. Cotte, I. Hajnsek, and M. Keller. Monitoring alpine glacier activity by a combined use of TerraSAR-X images and continuous GPS measurements – the Argentière glacier experiment. In *EUSAR 08*, Frierichhaffen, Allemagne, June 2008.
[1155] T. Tung and F. Schmitt. Shrec'08 entry: Shape retrieval of noisy watertight models using amrg. In *IEEE International Conference on Shape Modeling and Applications - SMI'08*, Stony Brook University, NY, USA, June 2008.
[1156] T. Tung, F. Schmitt, and T. Matsuyama. Topology matching for 3D video compression. In *IEEE conf. on Computer Vision and Patern Recognition - CVPR 2007*, pages 1–8, Minneapolis, USA, June 2007.
[1157] F. Tupin. Fusion of interferometric and optical data for 3D reconstruction. In *IGARSS'06*, Denver, USA, Aug. 2006.
[1158] F. Tupin and F. Galland. 3D information extraction by score optimization between SAR and optical data. In *EUSAR 2006*, Dresde, Allemagne, May 2006.
[1159] F. Tupin, M. Roux, and S. Homayouni. Evaluation of correlation criteria for sar images. In *Urban 2005*, Tempe, USA, Mar. 2005.
[1160] B. Vallet, E. Angelini, and A. Laine. Variational segmentation framework in prolate spheroidal coordinates for 3D real-time echocardiography. In *SPIE Conference on Medical Imaging*, volume 6144, pages 1370–1380, San Diego USA, Feb. 2006.
[1161] C. Vanegas, I. Bloch, H. Maître, and J. Inglada. Approximate Parallelism Between Fuzzy Objects: Some Definitions. In *International Workshop on Fuzzy Logic and Applications WILF*, volume LNAI 5571, pages 12–19, Palermo, Italy, June 2009.
[1162] M.-C. Vanegas, I. Bloch, H. Maître, and J. Inglada. Fuzzy Spatial Relations for High Resolution Rmote Sensing Image Analysis: The Case of “To Go Across”. In *IEEE IGARSS 2009*, Cape Town, 2009.
[1163] Y. Wang, D. Kim, E. Angelini, and A. Laine. Recognition of micro-array protein crystals images using multi-scale representation. In *SPIE Medical Imaging*, San Diego, CA, USA, Feb. 2005.
[1164] Y. Wang, F. Tupin, C. Han, and J. M. Nicolas. Building detection from high resolution POLSAR data by combining region and edge information. In *IGARSS 2008*, Boston, USA, July 2008.
[1165] G.-S. Xia, J. Delon, and Y. Gousseau. Locally invariant texture analysis from the topographic map. In *ICPR 08*, Tampa, Etats-Unis, Dec. 2008.
[1166] B. Zhang, J. Zerubia, and J.-C. Olivo-Marin. A study of Gaussian approximations of fluorescence microscopy PSF models. In *SPIE Three-Dimensional and Multidimensional Microscopy: Image Acquisition and Processing XIII*, volume 6090, pages 104–114, Mar. 2006.

4.3.5 ACTN: Articles in Proceedings of French Conferences

[1167] E. Aldea and I. Bloch. Vers une utilisation améliorée de relations spatiales pour l'apprentissage de données dans les modèles graphiques. In *Extraction et Gestion des Connaissances EGC'2009*, pages 271–282, Strasbourg, France, Jan. 2009.

[1168] E. Aldea, G. Fouquier, J. Atif, and I. Bloch. Classification d'images par fusion d'attributs flous de graphes, relations spatiales et noyaux marginalisés. In *Rencontres Francophones sur la Logique Floue et ses Applications (LFA 2007)*, pages 25–32, Nimes, France, Nov. 2007.

[1169] J. Atif, C. Hudelot, and I. Bloch. Adaptation de connaissances génériques pour l'interprétation d'images médicales : représentations par ontologies et par graphes et modélisation floue. In *7e journées francophones Extraction et Gestion des Connaissances - Extraction de Connaissances et Images (EGC-ECOI'07)*, pages 51–61, Namur, Belgique, Jan. 2007.

[1170] D. Benboudjema, F. Tupin, W. Pieczynski, M. Sigelle, and J. M. Nicolas. Modélisation et segmentation non supervisée d'images RSO par champs de markov triplets et lois de fisher. In *GRETSI*, Troyes, Sept. 2007.

[1171] R. Bizamba and T. J. Tanzi. Système télé-géomatique pour la gestion des risques d'inondation - application au département de la réunion. In *IASI 2005 Observation et analyse de la transformation des territoires ruraux*, IASI Roumanie, Apr. 2005.

[1172] I. Bloch. Squelette par zones d'influence flou - application à l'interpolation entre ensembles flous. In *Rencontres francophones sur la Logique Floue et ses Applications, LFA 2006*, pages 395–402, Toulouse, France, Oct. 2006.

[1173] I. Bloch. Représentation d'informations spatiales par des ensembles flous bipolaires et morphologie mathématique. In *Rencontres Francophones sur la Logique Floue et ses Applications (LFA 2007)*, pages 33–40, Nimes, France, Nov. 2007.

[1174] I. Bloch. Morphologie mathématique floue bipolaire pour l'ordre lexicographique. In *LFA 2009*, Annecy, France, 2009.

[1175] I. Bloch, O. Colliot, and R. Cesar. Modélisation floue des relations "entre" et "le long de". In *Plate-forme AFIA, Atelier "Représentation et raisonnement sur l'espace et le temps"*, pages 19–24, Nice, May 2005.

[1176] I. Bloch, O. Colliot, and R. Cesar. Modélisation de la relation spatiale "entre" pour des objets d'extensions spatiales très différentes. In *Reconnaissance des Formes et Intelligence Artificielle, RFIA'06*, Tours, France, Jan. 2006.

[1177] M. Campedel and E. Moulines. Méthodologie de sélection de caractéristiques pour la classification d'images satellitaires. In *CAP05*, pages 107–108, Nice - France, June 2005.

[1178] M. Campedel, I. Kyrgyzov, and H. Maître. Sélection non supervisée d'attributs - application à l'indexation d'images satellitaires. In *SFC'07*, Paris, Sept. 2007.

[1179] M. Campedel, M. Lienou, I. Kyrgyzov, and H. Maître. Vers la construction d'une ontologie appliquée à l'imagerie satellitaire. In *EGC'07 (atelier ECOI)*, Sophia Antipolis, Jan. 2008.

[1180] S. Chambon, A. Moreno, A. Santhanam, R. Brocardo, J. Rolland, E. Angelini, and I. Bloch. Introduction d'un modèle de respiration dans une méthode de recalage à partir de points d'intérêt d'images tep et tdm du poumon. In *Reconnaissance des Formes et Intelligence Artificielle RFIA*, pages 779–788, Amiens, France, Jan. 2008.

[1181] C.-A. Deledalle, L. Denis, and F. Tupin. Débruitage non-local itératif fondé sur un critère de similarité probabiliste. In *GRETSI*, Dijon, 2009.

[1182] R. El-Berbari, N. Kachenoura, F. Frouin, A. Redheuil, A. Herment, I. Bloch, and E. Mousseaux. Evaluation d'une segmentation automatique de l'endocarde pour l'estimation des temps moyens et vitesses radiales de contraction. In *Groupe de Recherche sur les Applications du Magnétisme en Médécine (GRAMM)*, page 70, Lyon, France, Mar. 2008.

[1183] R. El-Berbari, I. Bloch, N. Kachenoura, E. Mousseaux, A. Herment, and F. Frouin. Quantification automatisée de la transmuralité de l'infarctus du myocarde sur des images de rehaussement tardif en irm. In *Journées de Recherche en Imagerie et Technologies de la Santé RITS*, Lille, France, Mar. 2009.

[1184] R. Fallourd, J. M. Nicolas, E. Trouvé, and F. Tupin. La phase en imagerie cohérente : application au suréchantillonnage d'images rso. In *GRETSI*, Dijon, Sept. 2009.

[1185] M. Gastaud, S. Ladjal, and H. Maître. Superrésolution aveugle d'images par la méthode des sous-espaces. In *GRETSI-07*, Troyes (France), Sept. 2007.

[1186] D. Ghorbel, J. Anquez, V. Merzoug, C. Falip, E. Angelini, I. Bloch, and C. Adamsbaum. Quelle séquence T2 pour le poumon foetal ? In *Journées Francaises de Radiologie*, Paris, France, Oct. 2008.

[1187] C. Hudelot, J. Atif, and I. Bloch. Ontologie de relations spatiales floues pour l'interprétation d'images. In *Rencontres francophones sur la Logique Floue et ses Applications, LFA 2006*, pages 363–370, Toulouse, France, Oct. 2006.

[1188] C. Hudelot, J. Atif, and I. Bloch. Intégration de la morphologie mathématique floue dans une logique de description pour le raisonnement spatial. In *LFA*, pages 336–343, Lens, France, Oct. 2008.

[1189] A. Kermi, I. Bloch, and M. Laskri. Une approche intégrant recalage non rigide et modèle déformable pour la reconstruction faciale tridimensionnelle. In *JETIM*, pages 91–96, Alger, Algérie, Nov. 2006.

[1190] A. Kermi, I. Bloch, and M. Tayeb-Laskri. Recalage non rigide utilisant des déformations de forme libre (ffd) pour la reconstruction faciale tridimensionnelle. In *8ième Colloque Africain sur la Recherche en Informatique CARI'06*, pages 377–384, Cotonou, Benin, 2006.

[1191] H. Khotanlou, J. Atif, B. Batrancourt, O. Colliot, E. Angelini, and I. Bloch. Segmentation de tumeurs cérébrales et intégration dans un modèle de l'anatomie. In *Reconnaissance des Formes et Intelligence Artificielle, RFIA'06*, Tours, France, Jan. 2006.

[1192] S. Ladjal. Evaluation du flou dans les images naturelles. In *RFIA*, Tours, Jan. 2006.

[1193] B. Luo, J. F. Aujol, Y. Gousseau, and S. Ladjal. Interpolation d'attributs ondelettes pour l'indexation de bases d'images satellitaires à différentes résolutions. In *GRETSI2007*, pages 221–224, Sept. 2007.

[1194] G. Palma, O. Nempont, I. Bloch, and S. Muller. Extraction de "zones plates floues" dans des images de quantités floues. In *LFA*, pages 364–371, Lens, France, Oct. 2008.
[1195] X. Perrotton, M. Sturzel, and M. Roux. Détection automatique d'objets dans les images aériennes. In *RFIA 2008*, Amiens, France, Jan. 2008.
[1196] J. Rabin, Y. Gousseau, and J. Delon. Mise en correspondance de descripteurs géométriques locaux par méthode a contrario. In *GRETSI 2007*, Troyes, Sept. 2007.
[1197] F. Rossant and I. Bloch. Amélioration de la reconnaissance de partitions musicales par modélisation floue et indication des erreurs possibles. In *GRETSI 2005*, pages 937–940, Louvain-La-Neuve, Belgique, Sept. 2005.
[1198] F. Rossant, I. Ghorbel, I. Bloch, M. Pâques, and S. Tick. Segmentation des images oct de la rétine pour l'étude quantitative de la variabilité rétinienne. In *GRETSI*, Dijon, France, Sept. 2009.
[1199] E. Rousseau and I. Bloch. Gestion de la saturation et des conflits en cascade en transport ferroviaire prenant en compte les imprécisions. In *ROADEF*, Lille, France, 2006.
[1200] T. Tanzi. Communication & transports. In *4^o rencontres technologiques Mobilite, Objets Communicants, Haut débit*, volume CD, Brest, ENSIETA, Nov. 2005.
[1201] T. Tanzi and F. Lefeuvre. Apport des radio-sciences à la gestion des catastrophes. In *journées Scientifiques 2009 d'URSI-France, Propagation et Télédétection*, page 28, Paris France, June 2009.
[1202] T. J. Tanzi. Système de décision temps réel. In *IASI 2005 Observation et analyse de la transformation des territoires ruraux*, IASI, Roumanie, Apr. 2005.
[1203] T. J. Tanzi and S. Servigne. Surveillance vidéo des transports de matières dangereuses. In *INFORSID 2005*, pages 5 – 14, Grenoble France, May 2005.
[1204] N. Widynski, S. Dubuisson, and I. Bloch. Intégration de relations spatiales floues dans un filtre particulaire pour le suivi d'objets. In *GRETSI*, Dijon, France, Sept. 2009.

4.3.6 COM: Talks in Conferences Which Do Not Publish Proceedings

[1205] M. Costache and M. Datcu. Bayesian enhancement of a svm based image search engine. In *ESA EUSC 2006*, Spain Madrid, Nov. 2006.
[1206] L. Denis, F. Tupin, J. Darbon, and M. Sigelle. Sar image regularization with graph-cuts based fast approximate discrete minimization. In *Approximation and Optimization in Image Restoration and Reconstruction*, Ile de Porquerolles, France, June 2009.
[1207] T. Hurtut, H. Dalazoana, Y. Gousseau, F. Schmitt, and F. Cheriet. Recherche automatique dans une base de données d'enluminures selon l'organisation spatiale des couleurs. In *Signal Image et Arts, organisée par la Section Signal et Image du club EEA*, Paris, June 2006.
[1208] M. Lienou, H. Maître, and M. Datcu. Is it possible to automatically produce a CORINE land cover map from a single SPOT image? In *ESA EUSC*, Madrid, Espagne, Nov. 2006.
[1209] M. Marim, E. Angelini, and J.-C. Olivo-Marin. A compressed sensing approach for biological microscopic image denoising. In *SPARS*, Saint Malo, Apr. 2009.
[1210] F. Schmitt, C. Hernandez, and T. Tung. Indexation and 3d-modeling developed in sculpteur project. In *Digital Semantic Content across Cultures*, Paris, the Louvre, France, May 2006.

4.3.7 OS: Books and Book Chapters

[1211] I. Bloch. Knowledge-driven recognition and segmentation of internal brain structures in 3D MRI. In *Computional Surgery and Dual Training*. Springer, 2009.
[1212] I. Bloch. *(Ed). Information Fusion in Signal and Image Processing*. ISTE-Wiley, London, UK, 2008.
[1213] I. Bloch. Bipolar Fuzzy Spatial Information: First Operations in the Mathematical Morphology Setting. In R. K. De, D. P. Mandal, and A. Ghosh, editors, *Machine Interpretation of Patterns: Image Analysis, Data Mining and Bioinformatics*. World Scientific Press, 2009.
[1214] I. Bloch. Fuzzy Representations of Spatial Relations for Spatial Reasoning. In *Handbook of Granular Computing (W. Pedrycz, A. Skowron and V. Kreinovich, Eds.)*, chapter 28, pages 629–655. John Wiley & Sons, 2008.
[1215] I. Bloch. Ensembles flous et morphologie mathématique. In *Morphologie Mathématique (L. Najman and H. Talbot ed.)*. Hermès, Paris, France, 2009.
[1216] I. Bloch. Fuzzy methods in medical imaging. In *The Handbook of Biomedical Image Analysis (N. Ayache, J. Duncan and N. Paragios Eds.)*. Springer, 2009.
[1217] I. Bloch. Discrete Representations. In *Image Processing (H. Maître Ed.)*, chapter 3, pages 41–74. ISTE Wiley, London, UK, 2008.
[1218] I. Bloch. Mathematical Morphology. In *Image Processing (H. Maître Ed.)*, chapter 5, pages 97–140. ISTE Wiley, London, UK, 2008.
[1219] I. Bloch, H. Heijmans, and C. Ronse. Mathematical Morphology. In M. Aiello, I. Pratt-Hartman, and J. van Benthem, editors, *Handbook of Spatial Logics*, chapter 13, pages 857–947. Springer, 2006.
[1220] C. Cavaro-Ménard, A. Nait-Ali, J.-Y. Tanguy, E. Angelini, C. Lebozec, and J.-J. Le Jeune. Spécificités des signaux physiologiques et des images médicales. In *Compression des Images et des Signaux Médicaux*, chapter 3, pages 65–98. Hermes Science, Lavoisier, 2007.
[1221] C. Cavaro-Ménard, A. Nait-Ali, J.-Y. Tanguy, E. Angelini, C. Lebozec, and J.-J. Le Jeune. Specificities of Physiological Signals and Medical Images. In *Compression of Biomedical Images and Signals*, pages 43–74. Wiley, 2008.

[1222] J. Delon and A. Almansa. Reconstruction stéréo en imagerie satellitaire ou aérienne. In *Problèmes inverses en imagerie et en vision*, chapter 12. Hermès, 2008.
[1223] Q. Duan, E. Angelini, O. Gerard, K. D. Costa, J. W. Holmes, S. Homma, and A. Laine. Cardiac motion analysis based on optical-flow of real-time 3-d ultrasound data. In *Advances in Diagnostic and Therapeutic Ultrasound Imaging*, chapter 9, pages 227–246. J. S. Suri, C. Kathuria, R.-F. Chang, F. Molinari, A. Fenster (Artech House), 2008.
[1224] Q. Duan, E. Angelini, S. Homma, and A. Laine. Tracking endocardium using optical flow along isovalue curve. In *Principles and Advanced Methods in Medical Imaging and Image Analysis*, chapter 14, pages 337–360. World Scientific Publishing, Singapore, 2008.
[1225] S. Essid, M. Campedel, G. Richard, T. Piatrik, R. Benmokhtar, and B. Huet. Machine learning techniques for multimedia analysis. In *The Multimedia Semantics Handbook*, chapter 5. Wiley, 2009.
[1226] M. Gschwind, H. Brettel, and I. Rentschler. Prior knowledge and learning in 3D object recognition. In N. Osaka, I. Rentschler, and I. Biederman, editors, *Object Recognition, Attention, and Action*, chapter 7, pages 105–117. Springer, Tokyo, 2007.
[1227] C. Imieliska, J. Udupa, D. Metaxas, Y. Jin, E. Angelini, T. Chen, and Y. Zhuge. Hybrid segmentation methods. In T. Yoo, editor, *Principles and Practice for Segmentation, Registration, and Image Analysis*, chapter 12, pages 351–388. A.K. Peters, Wellesey, MA, USA, 2005.
[1228] H. Maître. *(Ed). Image Processing*. ISTE Wiley, London, UK, 2008.
[1229] N. Milisavljevic and I. Bloch. Improving Mine Recognition through Processing and Dempster-Shafer Fusion of Multisensor Data. In M. Sarfraz, editor, *Computer-Aided Intelligent Recognition, Techniques and Applications*, chapter 17, pages 319–343. J. Wiley, 2005.
[1230] N. Milisavljevic, I. Bloch, and M. Acheroy. Multi-Sensor Data Fusion Based on Belief Functions and Possibility Theory: Close Range Antipersonnel Mine Detection and Remote Sensing Mined Area Reduction. In *Humanitarian Demining: Innovative Solutions and the Challenge of Technology, M. K. Habib Ed.*, chapter 4, pages 392–418. ARS I-Tech Education and Publishing, Vienna, Austria, 2008.
[1231] N. Milisavljevic, I. Bloch, V. Alberga, and G. Satalino. Three strategies for fusion of land cover classification results of polarimetric SAR data. In *Sensor and Data Fusion (N. Milisavljevic Ed.)*, chapter 16, pages 277–298. InTech, Croatia, 2009.
[1232] A. Moreno, C. M. Takemura, O. Colliot, O. Camara, and I. Bloch. Using the Fuzzy Spatial Relation 'Between' to segment the Heart in Computerized Tomography Images. In B. Bouchon-Meunier, R. Yager, C. Marsala, and M. Rifqi, editors, *Uncertainty and Intelligent Information Systems*, chapter 26, pages 359–374. World Scientific, 2008.
[1233] P. Muse, F. Sur, F. Cao, Y. Gousseau, and J.-M. Morel. Shape recognition based on an a contrario methodology. In H. Krim and A. Yezzi, editors, *Statistic and Analysis of Shapes*, pages 107–136. Birkhauser, 2006.
[1234] G. Peters, S. Muller, S. Bernard, and I. Bloch. Wavelets and Fuzzy Contours in 3D-CAD for Digital Breast Tomosynthesis. In M. Nachtegael, D. van der Weken, E. Kerre, and W. Philips, editors, *Soft Computing in Image Processing: Recent Advances*, pages 296–326. Springer, 2006.
[1235] T. Tanzi and F. Delmer. *Ingénierie du risque*. Hermes, Coll. Sciences et technologies, Paris, 2006.
[1236] T. Tanzi and P. Perrot. *Télécoms et ingénierie des risques*. Collection Technique et Scientifique des Télécoms, Paris - France, 2009.

4.3.8 AP-P: Patents

[1237] E. Angelini, E. Mandonnet, and J. Delon. Procédé de quantification de l'évolution des changements de volumes de corps, notamment de tumeurs (submitted). (patent application 09 53578), May 2009.
[1238] N. Bonnier and F. Schmitt. Method, apparatus and computer program for transforming digital colour images. (patent application Europa: 07117464.3.), Sept. 2007.

4.3.9 AP-R: Selected Technical Reports and Preprints

[1239] M. Campedel. Performance evaluators for relevance feedback and classifiers. Technical report, École Nationale Supérieure des Télécommunications, July 2007.
[1240] F. Cao, Y. Gousseau, S. Masnou, and P. Pérez. Geometrically guided exemplar-based inpainting. Technical Report 2009D012, Telecom ParisTech, May 2009.
[1241] V. Duval, J. F. Aujol, and Y. Gousseau. The tvl1 model : a geometric point of view. Technical Report 2009D011, Telecom ParisTech, May 2009.
[1242] T. Hurtut, Y. Gousseau, F. Cheriet, and F. Schmitt. Pictorial content analysis of line-drawings using geometrical shape information. Technical report, 2008E001 TELECOM ParisTech, Mar. 2008.
[1243] V. Israel-Jost, J. Daron, E. Angelini, and I. Bloch. Multi-Phase and Multi-Channel Region Segmentation and Application in Brain MRI. Technical report, UCLA, CAM08-75, Nov. 2008.
[1244] I. O. Kyrgyzov, M. Campedel, M. Roux, T. Tanzi, and S. Rital. Exiter 08 final report. Technical Report 00, Télécom ParisTech, Jan. 2009.
[1245] S. Ladjal, J.-F. Aujol, and S. Masnou. Exemplar-based inpainting from a variational point of view. Technical Report CMLA Preprint 2008-42, CMLA, ENS Cachan, Dec. 2008.
[1246] M. Lienou, M. Campedel, M. Datcu, and H. Maître. Apprentissage automatique de la production de

cartes d'occupation des sols. Technical Report R-S05 - OT-0004-015, École Nationale Supérieure des Télécommunications, Dec. 2006.

[1247] T. Napoléon and H. Sahbi. From 2d photography to 3d object retrieval: Contributions and benchmarking. Technical report, TELECOM ParisTech, Feb. 2009.

[1248] T. Napoléon, T. Adamek, F. Schmitt, and N. E. O'Connor. Multi-view 3d retrieval using silhouette intersection and multi-scale contour representation. Technical Report In: Remco C. Veltkamp, Frank B. ter Haar (eds.), SHREC2007, 3D Shape Retrieval Contest, Technical Report UU-CS-2007-015, Department of Information and Computing Sciences, Utrecht University, June 2007.

[1249] J. M. Nicolas. Les approches temporelles en imagerie cohérente. Technical report, TELECOM ParisTech, 2008D016, Oct. 2008.

[1250] J. Rabin, J. Delon, and Y. Gousseau. Une approche à contrario pour la mise en correspondance de descripteurs locaux. Technical Report 2008D015, Telecom ParisTech, May 2008.

[1251] H. Sahbi, J.-Y. Audibert, J. Rabarisoa, and R. Keriven. Context-dependent kernel design for object matching and recognition. Technical report, Telecom ParisTech, 2007D018, Dec. 2007.

[1252] T. Tung and F. Schmitt. Shape retrieval of watertight models and cad models using amrg. Technical Report In: Remco C. Veltkamp, Frank B. ter Haar (eds.), SHREC2007, 3D Shape Retrieval Contest, Technical Report UU-CS-2007-015, Department of Information and Computing Sciences, Utrecht University, June 2007.

[1253] G.-S. Xia, J. Delon, and Y. Gousseau. Invariant texture indexing using topographic maps. Technical Report 2009D007, Telecom ParisTech, 2009.


INSTITUT
TELECOM


TELECOM
ParisTech


cnrs