

## Joaquin A. Zepeda

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INRIA/IRISA Campus Universitaire de Beaulieu, 35042 Rennes Cedex, FRANCE  
+(33) 2.99.84.25.43 / +(33) 6.65.67.51.68

### EDUCATION

*Ph.D.*, Computer Science  
INRIA / Universite de Rennes 1, Rennes, France, expected November 2010  
Topic: Image compression and description

*Master of Engineering*, Electrical Engineering  
McGill University, Montreal, Canada, November 2006  
GPA: 3.77 / 4.00, *Dean's Honor List*  
Research group: Multimedia and Signal Processing

*Bachelor of Engineering*, Electrical Engineering  
McGill University, Montreal, Canada, June 2003  
GPA: 3.53 / 4.00  
Concentration: Telecommunications and Signal Processing

### SKILLS

*Programming & Software*: Matlab, C/C++, Linux shell scripting, Sun Grid Engine (grid computing), SQL, Php, Javascript.  
*Languages*: Spanish, English, French.

### EXPERIENCE

*Internship and PhD* May 2007-Present  
National Institute for Research in Computer Science and Control - INRIA, Rennes, France

- Developed an overcomplete dictionary training method (patent filed, I have an 85% share).
- Outperformed state-of-the-art dictionary-based image denoising.
- Developed a facial image compression codec that outperforms JPEG2000.
- Developed a low-complexity image matching method using sparse representations.

*Research Assistant* January 2005 - February 2006  
Dept. of Psychology / Mech. Eng. McGill University, Canada

- Built an acoustic array and related signal processing software used for parameter tuning of mining machinery.
- Designed and implemented a computer vision solution to automatically log laboratory mouse actions.

### CONFERENCE PUBLICATIONS

- J. Zepeda , E. Kijak and C. Guillemot: The Iteration-Tuned Dictionary for Sparse Representations, in Proc. IEEE Workshop on Multimedia Signal Processing (MMSP) (St. Malo, France), November 2010 (accepted).
- J. Zepeda , E. Kijak and C. Guillemot: Approximate Nearest Neighbors Using Sparse Representations, in Proc. IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) (Dallas, TX), March 2010.
- J. Zepeda , E. Kijak and C. Guillemot: SIFT-Based Local Image Description Using Sparse Representations, in Proc. IEEE Workshop on Multimedia Signal Processing (MMSP) (Rio de Janeiro, Brazil), October 2009.
- J. Zepeda and F. Labeau: Tandem Filter Bank-DFT Code for Bursty Erasure Correction, in Proc. IEEE Vehicular Technology Conference - Fall (Montreal, QC), September 2006.

- S. Martins, J. Zepeda, B. Picard, P. Radziszewski and D. Roy, Investigating On-The-Shell acoustics, Proceedings of the Autogeneous and Semiautogeneous Grinding Technology Conference, (Vancouver), 2006.

**JOURNAL  
PUBLICATIONS  
AND PATENT**

- J. Zepeda (85%), C. Guillemot (10%) and E. Kijak (5%): Patent covering the new dictionary training method and sparse representation system, filed April 2010.
- J. Zepeda , C. Guillemot and E. Kijak: Iteration-Tuned Dictionaries for Sparse Representations and their Tree-Structured Variant, IEEE Transactions on Signal/Image Processing, 2010 (submitted).
- J. Zepeda , C. Guillemot and E. Kijak: The Iteration-Tuned and Aligned Dictionary and its Application to Image Compression and Denoising, IEEE Transactions on Signal/Image Processing, 2010 (submitted).
- J. Zepeda , C. Guillemot and E. Kijak: Image Compression using Sparse Representations and the Iteration-Tuned and Aligned Dictionary, IEEE Transactions on Signal/Image Processing, 2010 (submitted).
- C. Morand, J. Benois-Pineau, J.-Ph. Domenger, J. Zepeda, E. Kijak and Ch. Guillemot, Scalable Object-based Video Retrieval in HD Video Databases, Signal Processing: Image Communication, Elsevier (Accepted).
- J. Zepeda , C. Guillemot and E. Kijak: A letter on a rate/distortion analysis for overcomplete dictionaries, IEEE Signal Processing Letters, 2010 (to be submitted).

**REFERENCES**

Christine Guillemot (PhD supervisor) - Research Director, INRIA  
christine.guillemot@irisa.fr / +33 2.99.84.74.29

Ewa Kijak (PhD co-supervisor) - Associate Professor, Rennes 1 University  
ewa.kijak@irisa.fr / +33 2.99.84.75.55

Fabrice Labeau (Master's supervisor) - Associate Professor, McGill University  
fabrice.labeau@mcgill.ca / +514 3.98.81.04