

David Jiménez

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Employment:

01/2011-Present

Postdoctoral Fellow

University of Houston, Texas, USA

09/2008-01/2011

Visiting Assistant Professor

Texas A&M University, Texas, USA

08/2003-07/2008

Graduate Teaching/Research Assistant

Georgia Institute of Technology, Georgia, USA

08/2001-07/2003

Instructor

Universidad de Costa Rica, San Jose, Costa Rica

Education:

08/2008

Ph.D. in Mathematics

Georgia Institute of Technology, Georgia, USA

Advisor: Prof. Yang Wang

Thesis: Analysis of two problems in signal quantization for A/D conversion

07/2001

B.Sc. in Mathematics

Universidad de Costa Rica, San Jose, Costa Rica

Research Interests:

Image and Signal Processing

Medical Imaging

Compressive Sensing

Applied Harmonic Analysis

Wavelets and Frame Theory

Teaching Experience:

Texas A & M University: Business Mathematics I, Analytic Geometry and Calculus, Mathematics for Engineering I, II & III.

Georgia Institute of Technology: Calculus III, Linear Algebra, Survey of Calculus.

Universidad de Costa Rica: Differential Equations, Linear Algebra, Calculus I& II

Research Papers:

1. P. HERNANDEZ, D. JIMÉNEZ, I. A. KAKADIARIS, A. KOUTSOGIANNIS, D. LABATE, F. LAEZZA, M. PAPADAKIS; A Harmonic Analysis View on Neuroscience Imaging. (submitted)
2. D. JIMÉNEZ, G. PETROVA; On Point-Configuration Matching, *Linear Algebra and its Applications* (Submitted)
3. D. JIMÉNEZ, Y. WANG, $\beta\alpha$ -Encoders for Robust A/D Conversion, *Acta Applicanda Mathematicae*, **1-3** (2009), 313-323.
4. D. JIMÉNEZ, Y. WANG, L. WANG; White Noise Hypothesis for Uniform Quantization Errors, *SIAM Journal on Mathematical Analysis*, **38** (2007), 2042-2056.
5. L. BARATCHART, A. MARTÍNEZ-FINKELSHTEIN, D. JIMÉNEZ, D. LUBINSKY, H.N. MHASKAR, I. PRITSKER, M. PUTINAR, N. STYLIANOPOULOS, V. TOTIK, P. VARJU, Y. XU; Open Problems in Constructive Function Theory, *Electronic Transactions on Numerical Analysis*, **25** (2006), 511-525.

Current Projects:

1. D. JIMÉNEZ, I. A. KAKADIARIS, D. LABATE, F. LAEZZA, M. PAPADAKIS; The Effects of Directional Filtering in Morphological Neuron Reconstruction. (In Preparation)
2. F. FUTAMURA, D. JIMÉNEZ; Frame Diagonalization and Rank-One Decomposition, (In Preparation)
3. D. JIMÉNEZ, A Robust Linear Encoder with an Uncertainty Interval Centered at the Threshold, (In Preparation)

Conference Talks:

1. U. of Alberta, **International Conference on Applied Harmonic Analysis and Multiscale Computing**, *Multidimensional A/D Conversion and Directional Bias*, Edmonton, Alberta, Canada, July 2011
2. Vanderbilt U., **International Symposium in Approximation Theory**, *The Effects of Directional Filtering in Analog to Digital Conversion in Multidimensions*, Nashville, Tennessee, May 2011.
3. LSU, **Workshop in Analysis and Geometry**, *On the Match of Point Configurations*, Baton Rouge, Louisiana, January 2011.
4. GATech, **26th Southeastern Analysis Meeting**, *Matching of Point Configurations through the Grammian and the Associated Frame Operator*, Atlanta, Georgia, March 2010.
5. ICAT, **13th International Conference in Approximation Theory**, *Matching of Point Configurations: An Approach Through Grammians*, San Antonio, Texas, March 2010.
6. SPIE, **Wavelets XII**, *One bit $\beta\alpha$ -Encoders*, San Diego, California, August 2007.
7. BIRS, **Coarsely Quantized Redundant Representations**, *PCM Quantization Errors and the White Noise Hypothesis*, Banff, Alberta, Canada, March 2006.
8. LSU, **Harmonic Analysis, Fractal Geometry and Wavelets**, *White Noise Hypothesis and Tight Frame Representation Encoding*, Baton Rouge, Louisiana, February 2006.
9. UGA, **Interactions between Wavelets and Splines**, *Mean Square Error on PCM Quantization with Tight Frames*, Athens, Georgia, May 2005.

Expository Talks:

1. *Bytes and Notes: How Analog to Digital Conversion Works*, AMUSE: Applied Math Undergrad Seminar, Texas A& M University, March 2011.
2. *On the Match of Point Configurations*, Analysis Graduate Seminar, University of Houston, November 2010.
3. *Scalar Quantization for Audio Encoding: From Sound to Ones and Zeros*, MCTP/REU (Undergraduate) Colloquium, Texas A& M University, July 2010.
4. *A/D Conversion with Imperfect Quantizers: Beta-type Encoders*, Analysis Graduate Seminar, University of Houston, April 2010.
5. *Scalar Quantization for A/D Quantization*, Analysis Seminar (Undergraduate), Southwestern University, April 2010.

6. *On Matching of Point Configurations*, Postdoctoral Lecture Series 2009, Texas A& M University, October 2009.
7. *Linear Quantization Errors and the White Noise Hypothesis*, Postdoctoral Lecture Series 2008, Texas A& M University, October 2008.
8. *One bit $\beta\alpha$ -Encoders*, Approximation Theory Seminar, Texas A& M University, September 2008.

Honors and Awards:

Festa Fellowship Award, **Georgia Institute of Technology** 2007

Other Activities:

1. Student coordinator for the Georgia Tech High School Mathematics Competition organizing team, 2006-2008.
2. Voluntary tutor for the Costa Rican teams to the Iberoamerican Mathematical Olympiad and Central American Mathematical Olympiad, 2001-2003.

Personal Information:

Citizenship: Costa Rican Citizen on **H1B** visa.

Languages: Spanish (native speaker), English (fully fluent).