

Lluís Antoni Jiménez Rugama

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EDUCATION

- 2013 – 2016 **Illinois Institute of Technology (IIT)**, *Chicago (US)*.
PhD in applied mathematics: development of an automatic and adaptive multi-level quasi-Monte Carlo algorithm for infinite dimensional integrals.
- 2009 – 2012 **Ecole des Ponts ParisTech (ENPC)**, *Paris (France)*.
Ecole des Ponts engineer + Master 2 in applied mathematics in finance.
- 2005 – 2012 **Technical University of Catalonia (UPC)**, *Barcelona (Spain)*.
Master's degree in civil engineering.
- 2005 – 2011 **Technical University of Catalonia (UPC)**, *Barcelona (Spain)*.
Bachelor's degree in mathematics.

EXPERIENCE

- June 2015 - **Fermi National Accelerator Laboratory**, *Chicago*.
Now CDF Experiment: quasi-Monte Carlo error estimation for the top quark mass measurement and development of a GNU C++ package for the error estimation (<http://mcuncert.hepforge.org/>).
- June 2014 - **GAIL software (Illinois Institute of Technology)**, *Chicago*.
Now Development of automatic quasi-Monte Carlo cubature algorithms via discrete transforms (http://gailgithub.github.io/GAIL_Dev/). Ongoing research on automatic multi-level quasi-Monte Carlo cubatures.
- Oct 2012 - **Illinois Institute of Technology**, *Chicago*.
Aug 2013 Visiting student. Research in Monte Carlo and quasi-Monte Carlo methods with Professor Fred J. Hickernell.
- May 2012 - **CERMICS (ENPC mathematics laboratory)**, *Marne-la-Vallée*.
Sept 2012 Master's thesis on quasi-Monte Carlo methods: ergodic theory and unbounded variation functions.
- July 2010 - **Société Générale (French bank)**, *Paris*.
Aug 2011 14 months internship in the Asset Liabilities Management modelling team in charge of creating models to control liquidity, interest and exchange risks for Société Générale's entities.

PUBLICATIONS AND SOFTWARE

- [1] S.-C. T. Choi, Y. Ding, F. J. Hickernell, L. Jiang, Ll. A. Jiménez Rugama, X. Tong, Y. Zhang, and X. Zhou. GAIL: Guaranteed Automatic Integration Library (versions 1.0–2.0). MATLAB software, 2013–2014. <http://code.google.com/p/gail>.

- [2] S.-C. T. Choi, Y. Ding, F. J. Hickernell, L. Jiang, Ll. A. Jiménez Rugama, X. Tong, Y. Zhang, and X. Zhou. GAIL: Guaranteed Automatic Integration Library (versions 1.0–2.1). MATLAB software, 2013–2015. https://github.com/GailGithub/GAIL_Dev, http://gailgithub.github.io/GAIL_Dev/, ArXiv:1503.06544.
- [3] L. Gilquin and Ll. A. Jiménez Rugama. Reliable error estimation for Sobol’ indices. *Statistics and Computing*, 2016+. Submitted for publication: <https://hal.inria.fr/hal-01358067/document>.
- [4] L. Gilquin, Ll. A. Jiménez Rugama, E. Arnaud, F. J. Hickernell, H. Monod, and C. Prieur. Iterative construction of replicated designs based on Sobol’ sequences. *Comptes Rendus Mathématique*, 2016+. Submitted for publication: <https://hal.inria.fr/hal-01349444/document>.
- [5] Fred J. Hickerenll and Ll. A. Jiménez Rugama and Da Li. Adaptive quasi-Monte Carlo methods. 2016+. Manuscript in preparation.
- [6] F. J. Hickernell and Ll. A. Jiménez Rugama. Reliable adaptive cubature using digital sequences. In Ronald Cools and Dirk Nuyens, editors, *Monte Carlo and Quasi-Monte Carlo Methods: MCQMC, Leuven, Belgium, April 2014*, pages 367–383, Cham, 2016. Springer International Publishing.
- [7] Ll. A. Jiménez Rugama and F. J. Hickernell. Adaptive multidimensional integration based on rank-1 lattices. In Ronald Cools and Dirk Nuyens, editors, *Monte Carlo and Quasi-Monte Carlo Methods: MCQMC, Leuven, Belgium, April 2014*, pages 407–422, Cham, 2016. Springer International Publishing.

CONFERENCE: POSTERS AND TALKS

Posters

- [1] Information-Based Complexity and Stochastic Computation Workshop: *Generalizing the Tolerance for Guaranteed QMC Algorithms*, ICERM (Brown University), Providence RI, September 15-19, 2014.

Talks

- [1] MCQMC 2016: *Adaptive Quasi-Monte Carlo Where Each Integrand Value Depends on All Data Sites: the American Option Case*, Stanford University, Stanford US, August 14-19, 2016.
- [2] Joint Statistical Meetings 2016: *Automatic Estimation of Sobol’ Indices Based on Quasi-Monte Carlo Methods*, IIT, Chicago US, July 30- August 4, 2016.
- [3] Spring Research Conference 2016: *Minimizing the Number of Function Evaluations to Estimate Sobol’ Indices Using Quasi-Monte Carlo Methods*, IIT, Chicago US, May 25-27, 2016.

- [4] Joint Mathematics Meetings 2016: *Applications of Adaptive Guaranteed Cubatures*, Washington State Convention Center, Seattle US, January 6-9, 2016.
- [5] American Mathematical Society - Frontiers in Computational Mathematics: *Efficient Resource Allocation Based on Error and Cost Analysis: Guaranteed Automatic Integration Library*, Loyola University, Chicago US, October 3-4, 2015.
- [6] Approximation of High-Dimensional Numerical Problems - Algorithms, Analysis and Applications Workshop: *Applications for Guaranteed Adaptive Quasi-Monte Carlo Algorithms*, Banff International Research Station, Banff CANADA, September 27-October 2, 2015.
- [7] CASSC 2015: *Generalizing the Tolerance Function for Guaranteed Algorithms*, IIT, Chicago US, April 11, 2015.
- [8] SIAM Annual Meeting: *Reliable Error Estimation for Quasi-Monte Carlo Methods*, Palmer House (Hilton), Chicago US, July 10-14, 2014.
- [9] MCQMC 2014: *Error Estimation for Multidimensional Integration Based on Rank-1 Lattices*, KU Leuven, Leuven BELGIUM, April 6-11, 2014.
- [10] Meshfree Methods Seminar: *Multilevel Quasi-Monte Carlo*, IIT, Chicago US, January 22, 2014.
- [11] Meshfree Methods Seminar: *Automatic Algorithms for Function Approximation Using Its Series Decomposition in a Basis*, IIT, Chicago US, May 30, 2013.

AWARDS AND VARIOUS

Awards "La Caixa" fellowship for graduate studies in the US (Spanish fellowship that covers all PhD and living expenses for 2 years, approximately \$100,000).

UPC-Alumni scholarship.

SAMSI \$710 financial aid for attending the MCQMC 2016 at Stanford.

NSF/Stanford \$2,000 financial aid for attending the MCQMC 2014.

First position in the poster competition of the Applied Mathematics department, IIT, March 31, 2014.

First position in the "I UPC's Debating League" by pairs, Barcelona, Winter 2009.

Management President of the IIT SIAM Student Chapter.

Events Chicago Area SIAM Student Conference 2015 organizer: <https://sites.google.com/a/hawk.iit.edu/cassc-2015/>.

Meshfree methods seminar organizer at IIT for the Summer 2013, Fall 2013, Spring 2014, Summer 2014, and Fall 2015 (<http://www.math.iit.edu/~Meshfree-methods-seminar>).

Coding Matlab, C++, git, Scilab, VBA, PHP.

LANGUAGES

Fluent Spanish, Catalan, French, and English.
Beginner German.