

Short CV

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Education

University of Nebraska-Lincoln, 1977. B.Sc. in Mathematics. Minors: Physics, English
Cornell University, 1979. M.Sc. in Mathematics
Cornell University, 1990. M.Sc. in Computer Science. Ph.D. in Mathematics. Dissertation:
Relating Kripke Models and Realizability. Adviser: Prof. Anil Nerode.

Teaching and Research Appointments

Associate Prof. of Computer Science, Dept. of Mathematics, Wesleyan University, 1997-
Assistant Prof. of Computer Science, Dept. of Mathematics, Wesleyan University, 1993-1996.
Instructor, Dept. of Mathematics, University of Pennsylvania, 1990-1993.
Postdoctoral Research Associate, Dept. of Computer Science and MSI, Cornell University,
Jan.-Sept. 1990.

Visiting appointments

Visiting Professor, University of Pisa, May 24-Jun5, 2010.
Visiting Researcher, Technical University of Madrid (Summer, 1997, Oct. -Dec. 2000, Summer
2002, Jan.- Aug. 2003, Jan.- Aug. 2004, Summer 2005, Spring 2007)
Visiting Professor of Computer Science, International Masters Programme in Computational
Logic, University of Dresden, June, 2003, June, 1999.
Visiting Researcher, University of Pisa, Summer 2000.
Visiting Researcher, Isaac Newton Institute, Cambridge University, August-September 1995.
Visiting Professor of Computer Science, University of Nancy, France, May-June 1994 & 1995.

Fellowships

Sloane Dissertation Fellow, July, 1988 – August, 1989
MSI Graduate Research Fellow, Cornell University, 1987-88, summer 1987, summer 1988
Hutchinson Fellow, Cornell University, spring 1987

Languages

Fluent in written and spoken Spanish, proficient in spoken French, some conversational Italian.

Research Interests

Logic Programming, Relational Programming, Categories and Computer Science, Intuitionistic
Semantics, Constructive Set Theory, Linear Logic, Security.

Selected Recent Publications (A full list of publications is available on request)

- [1] “Declarative Compilation for Constraint Logic Programming”, proceedings of LOPSTR 2014 (Logic-based program synthesis and transformation), Canterbury, England, to appear, (with Emilio Jesús Gallego, Julio Mariño).
- [2] “Logic Programming in Tabular Allegories”, (Technical Communication), ICLP 2012, Leibniz International Proceedings in Informatics (LIPIcs), Schloss Dagstuhl–Leibniz-Zentrum für Informatik, Dagstuhl, Germany, 2012.
- [3] “First-order unification using variable-free relational algebra”, *Logic Journal of the IGPL* and, in electronic form as doi:10.1093/jigpal/jzq011 Mar. 2011, Oxford University Press, (with Emilio Jesús Gallego, Julio Mariño, Pablo Nogueira).
- [4] “Completeness and Cut Elimination in the Intuitionistic Theory of Types”, Part 2 *The Journal of Logic and Computation*, 2010 20(2):597-602; (5pp.,) Oxford University Press, 2010 (with Olivier Hermant).
- [5] “On The Algebraic Structure of Declarative Programming Languages” *Theoretical Computer Science*, *Theoretical Computer Science*, 410 (2009), pp. 4626–4671 Elsevier, (with Gianluca Amato, and Robert McGrail).
- [6] “Cut elimination in the intuitionistic theory of types with axioms and rewriting cuts, constructively”, in In C. E. Benz Müller, C. E. Brown, J. Siekmann, and R. Statman, editors, *Reasoning in Simple Type Theory*, Studies in Logic and the Foundations of Mathematics. College Publications, 2008, 34 pp., ISBN: 1904987702 (with Olivier Hermant).
- [7] “A constructive semantic approach to cut elimination in type theories with axioms”, in *Proc. CSL '08*, pages 169–183, Springer, 2008 (with Olivier Hermant).
- [8] “Formal treatment of secure protocols”, in Evangelos Kranakis, Evgueni Haroutunian, and Elisa Shahbazian, editors, *Aspects of Network and Information Security*, pages 74–91. IOS Press, 2008 (with Danny Krizanc).
- [9] “Higher Order Logic Programming Languages with Constraints: a Semantics”, in *Typed Lambda Calculus and Applications, TLCA '07*, LNCS 4583, pp. 272-289, Springer Verlag, Berlin, 2007, (with Susana Nieva).
- [10] “Completeness and Cut Elimination in the Intuitionistic Theory of Types”, *The Journal of Logic and Computation*, 15(6), pp. 821-854, Oxford University Press, 2005, (with Mary de Marco).
- [11] “Hiord: A Type-free Higher-Order Logic Programming Language with Predicate Abstraction”, *Proceedings of Ninth Asian Computing Conference (ASIAN'04)*, LNCS, 3321, pages 93-108, Springer-Verlag, December 2004, (with Daniel Cabeza and Manuel Hermenegildo).
- [12] “A New Framework for Declarative Programming”, *Theoretical Computer Science*, vol:300 pp. 91-160, 2003, (with Peter Freyd and Stacy Finkelstein).

- [13] “Indexed Categories and Bottom-Up Semantics of Logic Programs”, *Logic Programming and Automated Reasoning (LPAR 01)*, LNCS, Springer, 2002, (with Gianluca Amato).

Conferences and Workshops Organized:

- “TPR 07 (Types, Proof and Rewriting)”, Program Committee, University of Paris, June 2007.
 “MoveLog 05: Mobile Code Safety and Program Verification Using Computational Logic Tools.”
 Sitges, Spain, Oct. 5, 2005
 “Logic Programming: new Perspectives”, Wesleyan University, May 1996.
 “Categories and Logic programming” workshop, Isaac Newton Institute, Cambridge University,
 Sept. 1995.

Ph. D. Students at Wesleyan:

- Robert McGrail, Wesleyan University, topic: *Monads, Control and Side Effects in Logic Programming*, 1998.
- Mary de Marco, Wesleyan University, topic: *The Semantics of Higher Order Hereditarily Harrop Logic Programming.*, 1998.
- Claudio Gutierrez, Wesleyan University, topic: *The Arithmetic and Geometry of Allegories: Normal Forms and Complexity in a Fragment of the Theory of Relations* , 1998 (second advisor, with Daniel Dougherty).
- Ayalur Krishnan, Wesleyan University, topic: *Universal Quantification and Category change in Logic Programming*, 2005.
- Ed Morehouse, Wesleyan University, topic: *An Adjunction Theoretic Foundation for Proof Search in Intuitionistic First-Order Categorical Logic Programming*, 2013.

M. A. Students:

- Emilio Gallego, UPM (Technical University of Madrid), *First Order Unification Using Variable-Free Relational Algebra*, 2007
- Matt Ruhlen, Wesleyan University, *Relational Compilation of Declarative Programs*, 1995.

Grants

- PROMESAS, Spanish Ministry of Education grant, 2009-2013, with the Universidad Complutense, and Universidad Politécnica, Madrid.
- “Protocol Analysis with Declarative Tools”, Pitney-Bowes, 2004-2007. Co-PI: Danny Krizanc, Wesleyan.
- “Integrating Proof Theoretic Techniques and Semantic Tools”, European Union IA (Integrated Action) grant, with the École Polytechnique, Paris, and the Technical University of Madrid, (UPM), 2004-2007.
- MERIT, Spanish Ministry of Education grant, 2005-2008, with the Universidad Complutense, and Universidad Politécnica, Madrid.
- CUBICO, Spanish Ministry of Education grant, 2002-2004, with the Universidad Complutense, and Universidad Politécnica, Madrid.
- “Categorical Logic Programming”, CNRS grant, University of Pisa, Italy, 1997-2000.
- Semantics of Computation, ONR travel grant for the year of Semantics of Computation, Cambridge, England, August-October, 1995.

- “Categorical and Relational Logic Programming”, ONR, 1995-1997. Co-PIs: Peter Freyd, University of Pennsylvania, Dan Dougherty, Wesleyan.
- “Programming with Relations”, ONR, 1992-1995. Co-PI: Peter Freyd.
- “Higher-order proof systems”, NSF, with André Scedrov and Dale Miller, University of Pennsylvania, 1990-1993.