Omar De la Cruz C.

CONTACT INFORMATION

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RESEARCH INTERESTS

Statistical Genetics, gene expression, genetic epidemiology. Geometric approaches to data analysis, high dimensional data, kernel methods. Previously, my field of work was Set Theory.

EDUCATION

University of Chicago, Chicago, IL USA

Ph.D. in Statistics. August 2008.

- Dissertation Topic: "Geometric approaches in the analysis of genetic data."
- Advisor: Dan L. Nicolae

University of Florida, Gainesville, FL USA

Ph.D. in Mathematics. August 2000.

- Dissertation Topic: "Three topics in Set Theory: Finiteness and Choice, Cardinality of Compact Spaces, and Singular Jónsson Cardinals."
- Advisor: William J. Mitchell

IVIC, Venezuelan Institute for Scientific Research, Caracas, Venezuela

M.Sc. in Mathematics, 1996

Universidad Lisandro Alvarado, Barquisimeto, Venezuela

B.Sc. (*Licenciado*) in Mathematics, 1993.

HONORS AND AWARDS

Consultant of the Year Award, 2006-07. Department of Statistics, University of Chicago.

International Student Office Award for Academic Achievement. University of Florida, 1997.

Summa cum Laude Mention. IVIC, Venezuela, 1996.

Cum Laude Mention and Scholarship. Universidad Lisandro Alvarado, Venezuela, 1993.

Gran Mariscal de Ayacucho Scholarship. Venezuela, 1988–93.

EMPLOYMENT

Stanford University: VIGRE Postdoctoral Scholar, 2008–present.

University of Chicago: Graduate assistant. 2004–2008.

Université de la Réunion, La Réunion, France: Visiting professor (*Maître de conférence invité*). April–May 2004.

CRM (*Centre de Recerca Matemàtica*), Barcelona, Spain: Visiting Researcher. 2003–04.

Purdue University, West Lafayette, Indiana: Visiting Assistant Professor. 2000–2003.

University of Florida, Gainesville, Florida: Graduate assistant. 1995–2000.

PUBLICATIONS

Statistical Methods

De la Cruz, Omar and Holmes, Susan P. The Duality Diagram in Data Analysis: Examples of Modern Applications. *Annals of Applied Statistics*, accepted, 2010.

De la Cruz, Omar; Barnett, Alex; Tang, Hua; and Holmes, Susan P. Tensor product of kernel models. In preparation.

Gene Expression

De la Cruz, Omar; Zhang, Xiaohong; Pinto, Jayant M.; Nicolae, Dan; Firestein, Stuart; and Gilad, Yoav. A signature of evolutionary constraint on ectopically expressed olfactory receptor genes. *Mol Biol Evol.* 2009 Mar;**26**(3):491-4.

Zhang, Xiaohong; De la Cruz, Omar; Pinto, Jayant M.; Nicolae, Dan; Firestein, Stuart; and Gilad, Yoav. Characterizing the expression of the human olfactory receptor gene family using a novel DNA microarray. *Genome Biol.* 2007 **8**(5):R86.

De la Cruz, Omar. Extracting cell cycle information from the expression profiles of single cells. Submitted.

Genetic Epidemiology

De la Cruz, Omar; Wen, Xiaoquan; Ke, Baoguan; Song, Minsun; and Nicolae, Dan. Gene, region and pathway level analyses in whole-genome studies. *Genet Epidemiol.* 2010 Apr;**34**(3):222-31.

Kernel based adjustment for population structure in association studies. In preparation.

Population Dynamics

Vonesh, James and De la Cruz, Omar. Complex life cycles and density dependence: assessing the contribution of egg mortality to amphibian declines. *Oecologia*, **133**(3)325–333, 2002.

Set Theory:

De la Cruz, Omar; Hall, Eric; Howard, Paul; Keremedis, Kyriakos; and Rubin, Jean. Unions and the axiom of choice. *MLQ Math. Log. Quart.* **54**(6)652–665, 2008. Published Online: Nov 4 2008 8:38AM

De la Cruz, Omar; Dzhafarov, Damir D.; and Hall, Eric J. Definitions of finiteness based on order properties. *Fundamenta Mathematicae* **189**(2)155–172, 2006.

De la Cruz, Omar; Hall, Eric; Howard, Paul; Keremedis, Kyriakos; and Tachtsis, Eleftherios. Properties of the real line and weak forms of the axiom of choice. *MLQ Math. Log. Quart.* **51**(6)598–609, 2005

De la Cruz, Omar; Hall, Eric; Howard, Paul; Keremedis, Kyriakos; and Rubin, Jean E. Metric spaces and the axiom of choice. *MLQ Math. Log. Quart.* **49**(5)455–466, 2003.

De la Cruz, Omar; Hall, Eric; Howard, Paul; Keremedis, Kyriakos; and Rubin, Jean E. Products of compact spaces and the axiom of choice II. *MLQ Math. Log. Quart.* **49**(1)57–71, 2003.

PUBLICATIONS (CONTINUED)

De la Cruz, Omar; Hall, Eric; Howard, Paul; Keremedis, Kyriakos; and Rubin, Jean E. Products of compact spaces and the axiom of choice. *MLQ Math. Log. Quart.* **48**(4)508–516, 2002.

De la Cruz, Omar. Finiteness and choice. *Fundamenta Mathematicae* **173**(1)57–76, 2002.

De la Cruz, Omar; Hall, Eric; Howard, Paul; Rubin, Jean E.; and Stanley, Adrienne. Definitions of compactness and the axiom of choice. *J. Symbolic Logic* **67**(1)143–161, 2002

De la Cruz, Omar and Di Prisco, Carlos Augusto. Weak forms of the axiom of choice and partitions of infinite sets. in *Set theory (Curaçao, 1995; Barcelona, 1996)*, 47–70. Kluwer Acad. Publ., Dordrecht, 1998.

De La Cruz, Omar and Di Prisco, Carlos Augusto. Weak choice principles. *Proc. Amer. Math. Soc.* **126**(3)867–876, 1998.

INVITED TALKS

Seminar, Department of Statistics, University of Florida. Gainesville, Florida, 2008

Seminar, Department of Mathematics, University of the Aegean. Samos, Greece, 2003

Colloquium, Department of Mathematics, Bowling Green University, 2003

Colloquium, Department of Mathematics, City University of New York, 2002

Colloquium, Department of Mathematics, Eastern Michigan University, 2002

Colloquium, Kenyon College, 2002

Coloquio, Departamento de Matemáticas, Universidad Central de Venezuela, 2001

CONFERENCE PRESENTATIONS

Twenty-Fourth Annual Conference on Neural Information Processing Systems (NIPS). Vancouver, BC, December 2010.

18th Annual International Genetic Epidemiology Society (IGES) Meeting. Kahuku, Hawaii, 2009.

Fifth International Symposium on Bioinformatics Research and Applications (ISBRA). Ft. Lauderdale, FL, 2009.

First Midwest Statistics Research Colloquium. Chicago, 2008.

Spring Meeting, International Biometric Society, Eastern North American Region. Arlington, VA, 2008.

Boise Extravaganza in Set Theory (BEST). Boise, Idaho, 2004.

Barcelona Conference on Set Theory. Barcelona, Spain, 2003

Winter Meeting of the Association for Symbolic Logic. San Diego, CA, 2002

CONFERENCE PRESENTATIONS (CONTINUED)

Annual Meeting, Association for Symbolic Logic. Philadelphia, 2001

Winter Meeting of the Association for Symbolic Logic. Washington, DC, 2000

Logic Colloquium. Prague, 1998

Latin American Symposium in Mathematical Logic. Merida, Venezuela, 1998

Winter Meeting of the Association for Symbolic Logic. Orlando, 1996

Latin American Symposium in Mathematical Logic. Bogota, 1995

Combinatorial Set Theory. Curaçao, 1995

Teaching

Postdoctoral Scholar/Instructor, Stanford University, 2008–present (Biostatistics; graduate and undergraduate courses in Statistics)

Co-instructor in an intensive, one-week workshop on the use of R and Exploratory Data Analysis for Multivariate Data in Biomedical research. Stanford Medical School, August 2009 (Lead instructor: Susan Holmes).

Mentor, VIGRE undergraduate Summer research program, Stanford University, 2009 and 2010.

Graduate Teaching Assistant. University of Chicago, 2004–2008 (Discussion sessions, self-contained courses in Statistics)

Intensive Masters level course at the Université de la Réunion, 2004.

Undergraduate research co-advisor for a student at Purdue University. From 2002 to 2005 (together with Eric Hall)

Visiting Assistant Professor, Department of Mathematics, Purdue University. From 2000 to 2003 (Undergraduate and graduate courses)

Instructor, Step Up Program, College of Engineering. University of Florida, Summer of 1998 (Self-contained intensive course in Calculus)

Instructor, Achievent in Mainstreaming (AIM) Program. University of Florida, Summer of 1997 (Self-contained intensive course in College Algebra)

Graduate Teaching Assistant. University of Florida, 1995 to 2000 (Discussion sessions, self-contained courses in Mathematics)

Computer Skills

R, Matlab, Maple, C++.

Other Activities

Organizer of the Logic Seminar at Purdue University (Spring 2002).

Organizer of the Computational Biology Seminar at Stanford University (2009-2010).