

Héctor Corrada Bravo

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Postdoctoral Fellow hcorrada@jhsph.edu
Department of Biostatistics <http://www.biostat.jhsph.edu/~hcorrada/>
Bloomberg School of Public Health
Johns Hopkins University
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Education:

Ph.D., Computer Sciences August 2008
University of Wisconsin, Madison
Graph-based data analysis
Advisors: Grace Wahba and Raghu Ramakrishnan

Doctor of Musical Arts (ABD) August 2003
Indiana University School of Music
Guitar Performance and Literature
Bloomington, Indiana

Master of Music May 1999
Peabody Institute of Music
Johns Hopkins University
Guitar Performance
Baltimore, Maryland

Bachelor of Music May 1997
Peabody Institute of Music
Johns Hopkins University
Guitar Performance
Baltimore, Maryland

Research Experience:

Postdoctoral Fellow September 2008-
Department of Biostatistics
Johns Hopkins Bloomberg School of Public Health
Supervisor: Rafael A. Irizarry

Research in computational genomics, second-generation sequencing,
gene expression analysis and machine learning

Research Assistant
University of Wisconsin-Madison
Departments of Computer Sciences and Statistics
Advisors: Grace Wahba and Raghu Ramakrishnan

2003-2008

Research in machine learning, bioinformatics, data mining and statistical-relational learning.

Visiting Researcher
University of Puerto Rico
Departments of Computer Science and Biology
Arbimon Project

Summer 2007

Machine learning techniques for automatic species recognition by audio signal processing.

Research Intern
IBM Almaden Research Center
Advisors: Rakesh Agrawal, Srikant Ramakrishnan and Alexandre Evfimievski

Summer 2004

Research in accuracy characteristics of entity resolution algorithms and systems.

Peer-Reviewed Journal Publications:

H. Corrada Bravo, R.A. Irizarry (2009). Model-based quality assessment and base-calling for second-generation sequencing data. *Under revision, Biometrics*.

H. Corrada Bravo, K.E. Lee, B.E.K. Klein, R. Klein, S.K. Iyengar and G. Wahba (2009). Examining the relative influence of familial, genetic and environmental covariate information in flexible risk models. *Proceedings of the National Academy of Science*, 106, no. 20: 8128-8133.

K. H. Eng, **H. Corrada Bravo** and S. Keles (2009). A phylogenetic mixture model for the evolution of gene expression. *In press, Molecular Biology and Evolution*. Published online before print July 14, 2009.

M. Acevedo, T.M. Aide, L. J. Villanueva-Rivera, **H. Corrada Bravo**, C. J. Corrada-Bravo (2009). Automated classification of bird and amphibian calls using machine learning: a comparison of methods. *In press, Ecological Informatics*.

A. T. Evan, R. Bennartz, V. Bennington, **H. Corrada Bravo**, A. K. Heidinger, N. M. Mahowald, C. S. Velde, G. Myhre and J. P. Kossin (2008). Ocean temperature forcing by aerosols across the Atlantic tropical cyclone development region. *Geochem, Geophys. Geosyst.*, 9, Q05V04, doi: 10.1029/2007GC001774.

Peer-Reviewed Conference Proceedings:

H. Corrada Bravo, K. Eng, S. Keles, G. Wahba and S. Wright (2009). Estimating tree-structured covariance matrices via mixed integer programming. *Proceedings of the Twelfth International Conference on Artificial Intelligence and Statistics (AISTATS '09); Journal of Machine Learning Research Workshop and Conference Proceedings*, 5, 33:40.

H. Corrada Bravo, R. Ramakrishnan (2007). Optimizing MPF queries: decision support and probabilistic inference. *Proc. of the 26th ACM SIGMOD Intl. Conf. on Management of Data* 701:712.

H. Corrada Bravo, D. Page, R. Ramakrishnan, J. Shavlik, V. Santos Costa (2005). A framework for set-oriented computation in inductive logic programming and its application in generalizing inverse entailment. *Proc. of the 15th ILP Conf.* 69:86.

Software:

Rcplex: An interface to the CPLEX optimization engine for R. Released Jan. 2008.

<http://cran.r-project.org/web/packages/Rcplex/index.html>

Rcsdp: An interface to the CSDP semidefinite programming library for R. Released Dec. 2008. <http://cran.r-project.org/web/packages/Rcsdp/index.html>

Editorial Activities:

Referee for: *Journal of Machine Learning Research*, *Biostatistics*, *Journal of Artificial Intelligence Research*, *Genome Biology*, *Journal of the Royal Statistical Society (Series C)*.

Presentations:

Model-based quality assessment and base-calling for second-generation data. *WNAR/IMS annual meeting*. Portland, OR, June 2009.

Optimizing MPF queries: decision support and probabilistic inference. *26th ACM SIGMOD Intl. Conf. on Management of Data*. Beijing, China. June 2007.

A framework for set-oriented computation in inductive logic programming and its application in generalizing inverse entailment. *15th ILP Conf.* Bonn, Germany, August 2005.

Posters:

Estimating tree-structured covariance matrices with mixed-integer programming. *12th AISTATS Conference.* Clearwater, FL, April 2009.

Towards an intensity-based error model for short read alignment. *Statistical and Computational Challenges in Next-Generation Sequencing.* Berkeley, CA, October 2008.

Estimating tree-structured covariance matrices via mixed-integer programming with an application to phylogenetic analysis of gene expression. *Second Annual Young Investigators Symposium on Genomics and Bioinformatics.* Baltimore, MD, September 2008.

Honors and Awards:

2003-2007 Ford Fellowship, National Academies of Science.

2004-2005 Advanced Opportunity Fellowship, University of Wisconsin-Madison, Dept. of Computer Sciences.

2001 Second Place, Classic Guitar National Collegiate Artist Competition, Music Teachers National Association.

Teaching Experience:

2007 Statistics 860, "Estimation of functions from data". Gave invited lectures. Prof. Grace Wahba. Graduate level course.

2007 Teaching Assistant for CS704 "Principles of Programming Languages". Held office hours for student assistance, graded assignments, created new programming projects. Prof. Thomas Reps. Graduate level course.

2000-2003 Associate Instructor, Indiana University School of Music, Guitar Department. Teach group and individual lessons. Teach undergraduate guitar majors of all levels, from entrance to Senior Recital performance.

Skills:

Programming Languages: R, Matlab, C/C++, Python, Java, Prolog, Scheme, ML.

Database Management Systems: PostgreSQL, MySQL.

System Administration: Mac OS X, Linux (Debian/Red Hat).

Other Information:

- Presented concerts as soloist in San Juan, Puerto Rico; Baltimore, Maryland; Washington, District of Columbia; Brasilia, Brazil; Bloomington, Indiana.
- Produced, wrote, and hosted a radio music program for Public Radio in San Juan, Puerto Rico. (1997-1998).