Héctor Corrada Bravo

I. Education and Appointments

- Ph.D., Computer Science, University of Wisconsin, Madison, WI
  September 2003 - August 2008
  Dissertation: Graph-based data analysis
  Advisor: Grace Wahba and Raghu Ramakrishnan
- D.M.A., Indiana University School of Music, Bloomington, IN (ABD)
  September 2000 - August 2003
- M.M., Peabody Institute of Music, Baltimore, MD
  September 1997 - May 1999
- B.M., Peabody Institute of Music, Baltimore, MD
  September 1993 - May 1997
- Associate Professor with Tenure, Department of Computer Science
  University of Maryland, College Park, MD
  July 2016-Present
- Associate Professor with Tenure, Institute for Advanced Computer Studies
  University of Maryland, College Park, MD
  July 2016-Present
- Affiliate Associate Professor, Applied Math, Statistics and Scientific Computation
  University of Maryland, College Park, MD
  July 2016-Present
- Assistant Professor, Department of Computer Science
  University of Maryland, College Park, MD
  July 2010-June 2016
- Assistant Professor, Institute for Advanced Computer Studies
  University of Maryland, College Park, MD
  July 2010-June 2016
- Affiliate Assistant Professor, Applied Math, Statistics and Scientific Computation
  University of Maryland, College Park, MD
  July 2011-June 2016

II. Honors

1. Ford Fellowship, National Academies of Science.
2. Advanced Opportunity Fellowship, University of Wisconsin-Madison.

III. Extramural Funding

1. Title: R01: Overcoming bias and unwanted variability in next generation sequencing
   Funding Agency: NIH HG005220
   Recipient Institution: Dana Farber Cancer Institute, Rafael A. Irizarry (PI)
   Amount Awarded: $397,903 subcontracted to UMCP
   Dates: March 2015-February 2019
   Role: PI

2. Title: R01: Integrative visual and computational exploratory analysis of genomics data
   Funding Agency: NIH GM114267
   Recipient Institution: University of Maryland, College Park
   Amount Awarded: $1,800,421
   Dates: September 2015-August 2019
   Role: PI

3. Title: NRT-DESE; Network biology: from data to information to insights
   Funding Agency: NSF 1632976
   Recipient Institution: University of Maryland, College Park, Michelle Girvan (PI)
   Amount Awarded: $2,999,847
   Dates: September 2016-August 2021
   Role: co-PI

4. Title: CGDNet: Cancer Gene Drug Network: Using patient-specific drug-gene networks for recommending targeted cancer therapies
   Funding Agency: NIH
   Recipient Institution: Georgetown University, Simina Boca (PI)
   Amount Awarded: $149,051 subcontracted to UMCP
   Dates: September 2017-August 2019
   Role: PI

5. Title: Illuminating neurodevelopment through integrate analysis and visualization of multi-omic data
   Funding Agency: NIH
   Recipient Institution: University of Maryland, Baltimore, Ronna Hertzano (PI)
   Amount Awarded: $415,443 subcontracted to UMCP
   Dates: September 2018-May 2021
   Role: PI

IV. Teaching Experiences

Term	Course	Enrollment	Description
Fall 2017	CSMC798E	23	Graduate Seminar in Computer Science: Research Colloqium
Fall 2017	CSMC828O	31	Analysis of Biological Networks across Scales
Spring 2017	CMSC 423	52	Bioinformatic Databases, Tools and Algorithms
Fall 2017	CMSC643	11	Machine Learning & Data Mining (Data Mining Professional Master's Certificate
Fall 2017	CMSC899	2	Doctoral Dissertation Research (Individual instruction)
Fall 2017	CMSC798	1	Graduate Seminar in Computer Science (Individual instruction)
Fall 2017	CMSC499A	1	Independent Undergraduate Research (Individual instruction)
Fall 2017	CMSC898	1	Pre-candidacy Research (Individual instruction)
Spring 2016	CMSC 320	50	Introduction to Data Science

Term	Course	Enrollment	Description
Spring 2016	CMSC 898	1	Pre-candidacy Research (Individual instruction)
Spring 2016	CMSC 899	1	Doctoral Dissertation Research (Individual instruction)
Fall 2016	CMSC 320	83	Introduction to Data Science
Fall 2016	CMSC 899	2	Doctoral Dissertation Research (Individual instruction)
Spring 2015	CMSC 498T	32	Introduction to Data Science II
Spring 2015	AMSC 899	2	Doctoral dissertation research (Individual instruction)
Spring 2015	CMSC 898	1	Pre-candidacy research (Individual instruction)
Spring 2015	CMSC 899	2	Doctoral dissertation research (Individual instruction)
Fall 2015	CMSC 423	49	Bioinformatics Databases, Tools and Algorithms
Fall 2015	CMSC 898	3	Pre-candidacy research (Individual instruction)
Fall 2015	CMSC 499A	1	Independent Undergraduate Research (Individual instruction)
Fall 2014	CMSC 423	35	Bioinformatics Databases, Tools and Algorithms
Fall 2014	CMSC 423	49	Bioinformatics Databases, Tools and Algorithms
Spring 2014	CMSC 702	30	Computational Systems Biology and Functional Genomics
Fall 2014	CMSC 898	1	Pre-candidacy research (Individual instruction)
Fall 2014	CMSC 899	2	Doctoral dissertation research (Individual instruction)
Fall 2014	CMSC 798	1	Graduate seminar (Individual instruction)
Fall 2014	AMSC 899	2	Doctoral dissertation research (Individual instruction)
Fall 2014	AMSC 760	1	Applied Statistics Practicum (Individual instruction)
Spring 2014	AMSC 899	3	Doctoral dissertation research (Individual instruction)
Spring 2014	CMSC 898	3	Pre-candidacy research (Individual instruction)
Spring 2014	CMSC 899	1	Doctoral dissertation research (Individual instruction)
Spring 2013	CMSC 702	35	Computational Systems Biology and Functional Genomics
Fall 2013	AMSC 689	1	Research Interactions: Regularized Regression Methods
Fall 2013	CMSC 423	48	Bioinformatics Databases, Tools and Algorithms
Fall 2013	AMSC 898	1	Pre-candidacy research (Individual instruction)
Fall 2013	CMSC 898	4	Pre-candidacy research (Individual instruction)
Fall 2013	AMSC 899	3	Doctoral dissertation research (Individual instruction)
Spring 2013	AMSC 898	3	Pre-candidacy research (Individual instruction)
Spring 2013	CMSC 898	2	Pre-candidacy research (Individual instruction)
Spring 2013	CMSC 798	1	Graduate seminar (Individual instruction)
Spring 2013	AMSC 899	1	Pre-candidacy research (Individual instruction)
Fall 2012	CMSC 726	48	Machine Learning
Fall 2012	CMSC 898	1	Pre-candidacy research (Individual instruction)
Fall 2012	AMSC 899	1	Doctoral dissertation research (Individual instruction)
Fall 2012	AMSC 898	3	Pre-candidacy research (Individual instruction)
Spring 2012	CMSC 858B	26	Computational Systems Biology and Functional Genomics
Spring 2012	CMSC 351	90	Introduction to Algorithms
Spring 2012	CMSC 898	1	Pre-candidacy research (Individual instruction)
Spring 2012	AMSC 898	4	Pre-candidacy research (Individual instruction)
Spring 2011	CMSC 858P	17	Computational Methods for High-Throughput Analysis of Biological Systems \
Spring 2011	AMSC 898	1	Pre-candidacy research (Individual instruction)
Fall 2011	CBMG 688P	12	Team-taught graduate 'Programming for Biologists' course
Fall 2011	AMSC 898	3	Pre-candidacy research (Individual instruction)
3rd Term 2010	140.644	16	Practical Machine Learning (Johns Hopkins University School of Public Health, Department of Biostatistics) \
Fall 2010	CBMG 688P	12	Team-taught graduate 'Programming for Biologists' course

V. Advising

Major professor for graduate students

Name	Department	Stage	Role
Aya Ismail	CS	Pre-candidacy	advisor
Mohammed Gunady	CS	Pre-candidacy	advisor
Domenick Braccia	CBMG	Pre-candidacy	advisor
Zhe Cui	EE	Candidacy	co-advisor
Faezeh Dorri	CS	Candidacy	advisor
Justin Wagner	CS	Candidacy	advisor
Senthil Muthiah	CBMG	Candidacy	co-advisor
Nathanael Olson	CBMG	Candidacy	advisor
Mahfuza Sharmin	CS	Completed Postdoc, Stanford University	co-advisor
Florin Chelaru	CS	Completed Postdoc, MIT Broad Institute	advisor
Chiao-Wen Hsiao	AMSC	Completed Postdoc, University of Chicago	advisor
Kwame Okrah	AMSC	Completed Biostatistician, Genentech Inc.	advisor
Wikum Dinalankara	CS	Completed Postdoc, Johns Hopkins University Medicine	advisor
Hisham Talukder	AMSC	Completed Data Scientist, Dow Jones	advisor
Joseph Paulson	AMSC	Completed Postdoc, Harvard/Dana-Farber Cancer Institute	co-advisor
Chengxi Ye	CS	Pre-candidacy	committee member
Viet-An Nguyen	CS	Completed Data Scientist, Facebook	committee member
Justin Malin	CBMG	Completed Postdoc, National Institutes of Health	committee member
Ted Gibbons	CBMG	Completed	committee member
Steven Smith	CBMG	Completed	committee member
Cody Buntain	CS	Completed	committee member
David Kelley	CS	Completed Postdoc, Broad Institute	committee member
Guillaume Marcais	CS	Completed Research Scientist, University of Maryland	committee member
Bhargav Kanagal	CS	Completed	committee member
Yuan Li	CBMG	Completed	committee member
Mohammadreza Ghodsi	CS	Completed Software Engineer, Facebook	
Ginger Houston-Ludlam	CBMG	Completed	committee member
Louis Licamele	CS	Completed	committee member

Name	Department	Stage	Role
Benjamin Langmead	CS	Completed Assistant Professor, Johns Hopkins University	committee member
Rob Partro	CS	Completed Postdoc, Carnegie Mellon University	committee member
Bo Liu	CS	Completed Software Engineer, Google	committee member
Daehwan Kim	CS	Completed Postdoc, Johns Hopkins University	committee member
Laura Dillon	CBMG	Completed	committee member
Shane Squires	Physics	Completed	committee member
Srutii Sarda	CBMG	Completed	committee member
Kun Wang	CBMG	Candidacy	committee member
Vahid Liaghat	CS	Completed	committee member
Adam Bazinet	CS	Completed Research Scientist, University of Maryland	committee member
Sameh Khamis	CS	Completed	committee member
Snighda Chaturvedi	CS	Completed	committee member
Alex Malozemoff	CS	Completed	committee member
Chris Hill	CS	Completed Postdoc, University of Washington	committee member
Jose Carrillo	ANSC	Completed	committee member
Stephen Xi Chen	CS	Completed	committee member
Yang Shen	Chemical Physics	Candidacy	committee member
Jay Pujara	CS	Completed	committee member
Jayanta Mondal	CS	Completed	committee member
Mossaab Bagdouri	CS	Completed	committee member
Avinash Sahu	CS	Completed	committee member
Mohamed Rastegari	CS	Completed	committee member
Sana Malek	CS	Completed	committee member
Fan Yang	CS	Completed	committee member
Bahadir Ozdemir	CS	Completed	committee member
Prachi Kulkarni	School of Public Health	Completed	committee member

Name	Department	Stage	Role
Deok Gun Park	CS	Candidacy	committee member
Fan Du	CS	Completed	committee member
Zhenpeng Zhao	CS	Candidacy	committee member
Sriram Karthik Badam	CS	Candidacy	committee member
Hua He	CS	Candidacy	committee member

VI. Publications (last five years)

VI.A. Peer-reviwed journal articles

VI.B. Abstracts and other professional papers presented

1. M.K. Gunady^[#], S. Cornwell[#], S.M. Mount, **H. Corrada Bravo*** (2017). Yanagi: transcript segment library construction for RNA-seq quantification. *17th Workshop for Algorithms in Bioinformatics (WABI) 2017*.
2. F. Dorri^[#], L. Mendelowitz, **H. Corrada Bravo*** (2015). methylFlow: cell-specific methylation pattern reconstruction from high-throughput bisulfite-converted DNA sequencing. *HitSEQ 2015; Bioinformatics 32(11):1618-24*.
3. F. Chelaru^[*#], **H. Corrada Bravo*** (2015). Epiviz: a view inside the design of an integrated visual analysis software for genomics. *BioVis 2015; BMC Bioinformatics 16(Supl 11):S4*.
4. **H. Corrada Bravo^**, K. Eng, S. Keles, G. Wahba, S. Wright (2009). Estimating tree-structured covariance matrices via mixed integer programming. *Twelfth International Conference on Artificial Intelligence and Statistics (AISTATS '09); Journal of Machine Learning Research Workshop and Conference Proceedings, 5*33:40.
5. **H. Corrada Bravo^**, R. Ramakrishnan (2007). Optimizing MPF queries: decision support and probabilistic inference. *26th ACM SIGMOD Intl. Conf. on Management of Data*701:712.
6. **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. *15th ILP Conf.*69:86.
7. Visualization and computation over hierarchically organized features for metagenomics and epigenomics. *Joint Statistical Meetings,* Chicago, IL. August 2016.
8. Differential abundance analysis of metagenomic whole-genome sequencing. *Joint Statistical Meetings,* Seattle, WA. August 2015.
9. Addressing reproducibility in genomic signatures by characterizing variance and estimation stability. *Joint Statistical Meetings,* Seattle, WA. August 2015.
10. methylFlow: cell-specific methylation pattern reconstruction from high-throughput bisulfite-converted DNA sequencing. *HiTSeq,* Dublin, Ireland. July 2015.
11. Interactive and exploratory visual analytics of epigenome-wide data. *ISMB,* Dublin, Ireland. July 2015.

12. Epiviz: a view inside the design of an integrated visual analysis software for genomics. *BioVis,* Dublin, Ireland. July 2015.

13. Interactive and exploratory visualization of epigenome-wide data. *Joint Statistical Meetings,* Boston, MA. July 2014.

14. Interactive, Exploratory Visualization and Statistical Analysis of Genome-Scale Data. *International Biomteric Society ENAR Meeting,* Baltimore, MD. March 2014.

15. Gene expression anti-profiles as a basis for accurate universal cancer signatures. *ISMB '13,* Berlin, Germany. July 2013.

16. Srfim2: using basecalling model parameter estimates to understand sequencing bias. *2012 Joint Statistical Meetings,* San Diego, CA. August 2012.

17. Increased methylation variation in epigenetic domains across cancer types. *16th Annual International Conference on Research in Computational Molecular Biology (RECOMB),* Barcelona, Spain. April 2012.

18. Statistical and computational methods for the analysis of pooled, targeted, second-generation re-sequencing data. *2011 Joint Statistical Meetings,* Miami Beach, FL.. August 2011.

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

20. Tuning regularized kernel estimation parameters for prediction. *SIAM Conference on Optimization,* Boston, MA. May 2008.

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

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