

Ulisses Braga-Neto, Ph.D.

Curriculum Vitae

Biographical Data

Born: Recife, Brazil (February 12, 1971)
Nationality: Brazilian (U.S. Permanent Resident)
Marital Status: Married, two children
Address: 214 Zachry Engineering Bldg, 3128 TAMU College Station, TX 77843-3128 USA
E-mail address: ulisses@ece.tamu.edu
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Education

Ph.D. in Electrical and Computer Engineering The Johns Hopkins University, Baltimore, MD, 2002
M.S.E. in Electrical and Computer Engineering, The Johns Hopkins University, Baltimore, MD, 1998
M.S.E. in Mathematical Sciences, The Johns Hopkins University, Baltimore, MD, 1998
M.S. in Electrical Engineering, State University of Campinas, Brazil, 1994
B.S in Electrical Engineering, Federal University of Pernambuco, Brazil, 1992

Employment

2007- Assistant Professor, Department of Electrical Computer Engineering, Texas A&M University, College Station, TX
2004-2006 Assistant Researcher, Oswaldo Cruz Foundation (FIOCRUZ), Recife, Brazil
2002-2004 Post-Doctoral Fellow, Section of Clinical Cancer Genetics, University of Texas M.D. Anderson Cancer Center, Houston, TX

Awards and Honors

- Elevated to IEEE Senior Member, 2011.
- NSF CAREER Award, National Science Foundation, 2009.
- International Travel Research Grant (IRTAG), awarded by the Office of International Outreach, Texas A&M University, Summer 2008.
- Fast-Breaking Paper in the field of Computer Science, appointed by the ISI Web of Knowledge, February 2006.
- Abel Wolman Fellowship, awarded by the ECE Department of Johns Hopkins University to the most promising entering graduate student, Spring 1996.
- *Laurea Universitaria*, awarded by the Federal University of Pernambuco, Brazil, for ranking first in the Electrical Engineering Class of 1992.
- First place among 21,794 candidates at the major yearly selection examination for entering undergraduate students in the state of Pernambuco, Brazil, in 1988.
- Several scholarships awarded by the Brazilian Government for undergraduate, masters, and doctorate studies, since 1989.

Research

- Genomic and Proteomic Signal Processing
- Statistical Pattern Recognition
- Statistical Signal Processing
- Digital Image Processing

Peer-Reviewed Journal Publications

1. C.C. Allen, B.R.C. Alves, X. Li, L.O. Tedeschi, H. Zhou, J.A. Paschal, P. Riggs, U.M. **Braga-Neto**, D.H. Keisler, G.L. Williams and M. Amstalden, "Gene expression in the arcuate nucleus of heifers is affected by controlled intake of high- and low-concentrate diets," in press, *Journal of Animal Sciences*, 2012.
2. Y. Sun, J. Zhang, U.M. **Braga-Neto** and E.R. Dougherty, "BPDA2d -- A 2D global optimization based Bayesian peptide detection algorithm for LC-MS," *Bioinformatics*, 2011 Dec 6 (Epub ahead of print). [[PubMed](#)]
3. A. Zollanvari, U.M. **Braga-Neto** and E.R. Dougherty, "Exact representation of the second-order moments for resubstitution and leave-one-out error estimation for linear discriminant analysis in the univariate heteroskedastic Gaussian model," *Pattern Recognition*, Vol. 45, No. 2, February 2012, pp. 908-917. [[Preprint](#)]
4. C. Sima, T.T. Vu, U.M. **Braga-Neto**, and E.R. Dougherty, "High-Dimensional Bolstered Error Estimation," *Bioinformatics*, Vol. 27, No. 21, September 2011, pp. 3056-3064. [[PubMed](#)]
5. Y. Wang, N. Ghaffari, C.D. Johnson, U.M. **Braga-Neto**, H. Wang, R. Chen and H. Zhou, "Evaluation of coverage and depth of transcriptome by RNA-Seq in chickens," *BMC Bioinformatics*, MCBIOS'2011 Special Issue, Vol. 12, Suppl. 10, October 2011, p. S5, doi:10.1186/1471-2105-12-S10-S5 [[BMC Open Access](#)]
6. A.B. Melo, M. Silva, C. Magalhaes, L.H.V.G. Gil, E.M.F. Carvalho, G.R. Bertani, U.M. **Braga-Neto**, E.T.A. Marques and M.T. Cordeiro, "Description of a Prospective 17DD Yellow Fever Vaccinee Cohort in Recife, Brazil," *The American Journal of Tropical Medicine and Hygiene*, Vol. 85, No. 4, October 2011, pp. 739-747. [[PubMed](#)]
7. A. Zollanvari, U.M. **Braga-Neto** and E.R. Dougherty, "Analytic Study of Performance of Error Estimators for Linear Discriminant Analysis," *IEEE Transactions on Signal Processing*, Vol. 59, No. 9, September 2011, pp. 4238-4255. [[IEEE Explore](#)] [[Preprint](#)]
8. E.R. Dougherty, A. Zollanvari and U.M. **Braga-Neto**, "The Illusion of Distribution-Free Small-Sample Classification in Genomics," *Current Genomics*, Vol. 12, No. 5, August 2011, pp. 333-341. [[Preprint](#)]
9. T. Chen and U.M. **Braga-Neto**, "Exact Performance of CoD Estimators in Discrete Prediction," *EURASIP Journal on Advances in Signal Processing (JASP)*, Special Issue on Genomic Signal Processing, Volume 2010, Article ID 487893, 13 pages, 2010. doi:10.1155/2010/487893 [[Hindawi Open Access](#)]
10. T.T. Vu and U.M. **Braga-Neto**, "Small-Sample Error Estimation for Bagged Classification Rules," *EURASIP Journal on Advances in Signal Processing (JASP)*, Special Issue on Genomic Signal Processing. Volume 2010, Article ID 548906, 12 pages, 2010. doi:10.1155/2010/548906 [[Hindawi Open Access](#)]
11. Y. Sun, J. Zhang, U.M. **Braga-Neto** and E.R. Dougherty, "BPDA - a Bayesian peptide detection algorithm for mass spectrometry," *BMC Bioinformatics*, Vol. 11, September 2010, p. 490, doi:10.1186/1471-2105-11-490 [[PubMed](#)] [[BMC Open Access](#)]
12. A. Zollanvari, U.M. **Braga-Neto** and E.R. Dougherty, "Joint Sampling Distribution Between Actual and Estimated Classification Errors for Linear Discriminant Analysis," *IEEE Transactions on Information Theory*, Vol. 56, No. 2, February 2010, pp. 784-804. [[IEEE Explore](#)] [[Preprint](#)]
13. U.M. **Braga-Neto** and E.R. Dougherty, Exact Correlation between Actual and Estimated Errors in Discrete Classification, *Pattern Recognition Letters*, Vol. 31, No. 5, April 2010, pp. 407-412. [[Preprint](#)]
14. E.R. Dougherty, C. Sima, J. Hua, B. Hanczar and U.M. **Braga-Neto**, Performance of Error Estimators for Classification, *Current Bioinformatics*, Vol. 5, No. 1, March 2010, pp. 53-67. [[Preprint](#)]
15. Y. Sun, U.M. **Braga-Neto** and E.R. Dougherty, Impact of Missing Value Imputation on Classification for DNA Microarray Gene Expression Data - A Model-Based Study, *EURASIP Journal on Bioinformatics and Systems Biology*, Volume 2009, Article ID 504069, November 2009, 17 pages, doi:10.1155/2009/504069 [[PubMed](#)] [[Hindawi Open Access](#)]

16. E.J.M. Nascimento, U.M. **Braga-Neto**, C. Calvazara, A.L. Gomes, F. Abath, B. Acioli, C.A.A. Brito, M.T. Cordeiro, A.M. Silva, C. Magalhaes, R. Andrade, L.H.V.G. Gil and E.T.A. Marques, Jr., Gene Expression Profiling During Acute Stage of Dengue Infection *PLoS ONE*, Vol. 4, No. 11, November 2009, p. e7892, doi:10.1371/journal.pone.0007892 [[PubMed](#)] [[PLoS Open Access](#)]
17. U.M. **Braga-Neto**, Classification and Error Estimation for Discrete Data, *Current Genomics*, Vol. 10, No. 7, November 2009, pp. 446-462. [[PubMed](#)] [[Preprint](#)]
18. A. Zollanvari, M.J. Cunningham, U.M. **Braga-Neto** and E.R. Dougherty, Analysis and Modeling of Time-Course Gene-Expression Profiles from Nanomaterial-Exposed Primary Human Epidermal Keratinocytes, *BMC Bioinformatics*, MCBIOS'2009 Special Issue, Vol. 10, Suppl 11, October 2009, p. S10. [[PubMed](#)] [[BMC Open Access](#)]
19. E.J.M. Nascimento, A.M. Silva, M.T. Cordeiro, C.A.A. Brito, L.H.V.G. Gil, Ulisses **Braga-Neto** and E.T.A. Marques, Jr., Alternative Complement Pathway Deregulation Is Correlated with Dengue Severity, *PLoS ONE*, Vol. 4, No. 8, August 2009, p. e6782. [[PubMed](#)] [[PLoS Open Access](#)]
20. A. Zollanvari, U.M. **Braga-Neto** and E.R. Dougherty, On the Sampling Distribution of Resubstitution and Leave-One-Out Error Estimators for Linear Classifiers, *Pattern Recognition*, Vol. 42, No. 11, November 2009, pp. 2705-2723. [[Preprint](#)]
21. T.T. Vu and U.M. **Braga-Neto**, Is Bagging Effective in the Classification of Small-Sample Genomic and Proteomic Data? *EURASIP Journal on Bioinformatics and Systems Biology*, Special Issue on Applications of Signal Processing Techniques to Bioinformatics, Genomics, and Proteomics, Volume 2009, Article ID 158368, 2009. [[PubMed](#)] [[Hindawi Open Access](#)]
22. M.T. Cordeiro, U.M. **Braga-Neto**, R.M.R. Nogueira and E.T.A. Marques, Jr., Reliable classifier to differentiate primary and secondary acute dengue infection based on IgG ELISA, *PLoS ONE*, Vol. 4, No. 4, April 2009, p. e4945. [[PubMed](#)] [[PLoS Open Access](#)]
23. D.C. Martins, Jr., U.M. **Braga-Neto**, R.F. Hashimoto, M.L. Bittner and E.R. Dougherty, Intrinsically Multivariate Predictive Genes. *IEEE Journal of Selected Topics in Signal Processing*, Vol. 2, No. 3, June 2008, pp. 424-439. [[IEEE Explore](#)] [[Preprint](#)]
24. B. Acioli-Santos, L. Segat, R. Dhalia, C.A.A. Brito, U.M. **Braga-Neto**, E.T.A. Marques and S. Crovella, MBL2 Gene Polymorphisms Protect Against Development of Thrombocytopenia Associated with Severe Dengue Phenotype. *Human Immunology*, Vol. 69, No. 2, February 2008, pp. 122-128. [[PubMed](#)]
25. U.M. **Braga-Neto**, Fads and Fallacies in the Name of Small-Sample Microarray Classification. *IEEE Signal Processing Magazine*, Special Issue on Signal Processing Methods in Genomics and Proteomics, Vol. 24, No. 1, January 2007, pp. 91-99. [[IEEE Explore](#)] [[Preprint](#)]
26. Q. Xu, J. Hua, U.M. **Braga-Neto**, Z. Xiong, E. Suh and E.R. Dougherty, Confidence Intervals for the True Classification Error Conditioned on the Estimated Error. *Technology in Cancer Research and Treatment*, Vol. 5, No. 6, December 2006, pp. 579-590. [[PubMed](#)]
27. U.M. **Braga-Neto** and E.A.T. Marques, Jr., From Functional Genomics to Functional Immunomics: New Challenges, Old Problems, Big Rewards. *PLoS Computational Biology*, Vol. 2, No. 7, July 2006, p. e81 [[PubMed](#)] [[PLoS Open Access](#)]
28. E. Dougherty and U.M. **Braga-Neto**, Epistemology of Computational Biology: Mathematical Models and Experimental Prediction as the Basis of Their Validity. *Journal of Biological Systems*, Vol. 14, No. 1, March 2006, pp. 65-90.
29. C. Sima, S. Attoor, U.M. **Braga-Neto**, J. Lowey, E. Suh and E. Dougherty, Impact of Error Estimation on Feature-Selection Algorithms. *Pattern Recognition*, Vol. 38, No. 12, December 2005, pp. 2472-2482.
30. U.M. **Braga-Neto** and E. Dougherty, Exact Performance of Error Estimators for Discrete Classifiers. *Pattern Recognition*, Vol. 38, No. 11, November 2005, pp. 1799-1814.
31. U.M. **Braga-Neto** and J. Goutsias, Constructing Multiscale Connectivities. *Computer Vision and Image Understanding*, Vol. 99, No. 1, July 2005, pp. 126-150.
32. U.M. **Braga-Neto** and J. Goutsias, Object-Based Image Analysis Using Multiscale Connectivity. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 27, No. 6, June 2005, pp. 892-907.

33. U.M. **Braga-Neto**, Multiscale Connected Operators. *Journal of Mathematical Imaging and Vision* (Special Issue on Mathematical Morphology After 40 Years), Vol. 22, No. 2-3, May 2005, pp. 199-216.
34. C. Sima, U.M. **Braga-Neto** and E. Dougherty, Superior Feature-Set Ranking for Small Samples Using Bolstered Error Estimation. *Bioinformatics*, Vol. 21, No. 7, April 2005, pp. 1046-1054.
35. U.M. **Braga-Neto** and J. Goutsias, Grayscale Level Connectivity: Theory and Applications. *IEEE Transactions on Image Processing*, Vol. 13, No. 12, December 2004, pp. 1567-1580.
36. U.M. **Braga-Neto** and E. Dougherty, Bolstered Error Estimation. *Pattern Recognition*, Vol. 37, No. 6, June 2004, pp. 1267-1281.
37. U.M. **Braga-Neto** and E. Dougherty, Is Cross-Validation Valid for Small-Sample Microarray Classification? *Bioinformatics*, Vol. 20, No. 3, February 2004, pp. 374-380.
38. U.M. **Braga-Neto**, R. Hashimoto, E. Dougherty, D. Nguyen and R. Carroll, Is Cross-Validation Better Than Resubstitution for Ranking Genes? *Bioinformatics*, Vol. 20, No. 2, January 2004, pp. 253-258.
39. U.M. **Braga-Neto**, M. Choudhary and J. Goutsias, Automatic target detection and tracking on forward-looking infrared image sequences using morphological connected operators. *Journal of Electronic Imaging*, Vol. 13, No. 4, 2004, pp. 802-813.
40. U.M. **Braga-Neto** and J. Goutsias, Supremal Multiscale Signal Analysis. *SIAM Journal of Mathematical Analysis*, Vol. 36, No. 1, 2004, pp. 94-120.
41. U.M. **Braga-Neto** and J. Goutsias, A Theoretical Tour of Connectivity in Image Processing and Analysis. *Journal of Mathematical Imaging and Vision*, Vol. 19, No. 1, 2003, pp. 5-31.
42. U.M. **Braga-Neto** and J. Goutsias, A Multiscale Approach to Connectivity. *Computer Vision and Image Understanding*, Vol. 89, No. 1, 2003, pp. 70-107.
43. U.M. **Braga-Neto** and J. Goutsias, Connectivity on Complete Lattices: New Results. *Computer Vision and Image Understanding*, Vol. 85, No. 1, 2002, pp. 22-53.
44. X. Han, C. Xu, U.M. **Braga-Neto** and J.L. Prince, Topology Correction in Brain Cortex Segmentation Using a Multiscale, Graph-Based Algorithm. *IEEE Transactions on Medical Imaging*, Vol. 21, No. 2, 2002, pp. 109-121.
45. A.J. Candéas, U.M. **Braga-Neto** and E.C.B. Carvalho Filho, A Mathematical Morphology Approach to the Star/Galaxy Characterization Problem. *Journal of the Brazilian Computer Society*, Special Issue on Computer Graphics and Image Processing, Vol. 3, No. 3, 1997, pp. 14-29. [[HTML](#)]

Book Chapters

1. R. Dhalia, L. Gil, E. Nascimento, U.M. **Braga-Neto** and E.T.A. Marques Jr., Epitope Mapping: Rational Search for the Development of vaccines Against Chronic Diseases (in Portuguese). In *Epidemiology, Policy, and Determining Factors of Chronic Diseases in Brazil* (in Portuguese). Edited by Eduardo Freese. Editora Universitária UFPE, Recife, Brazil, 2006, pp. 321-340.
2. U.M. **Braga-Neto** and E. Dougherty, Classification. In *Genomic Signal Processing and Statistics*, Edited by E. Dougherty, I. Shmulevich, J. Chen and Z. J. Wang, EURASIP Book Series on Signal Processing and Communication, Hindawi Publishing Corporation, 2005.

Selected Conference Papers, Posters, and Abstracts

1. T. Chen and U.M. **Braga-Neto**, "Sample-Based Estimators for the Intrinsically Multivariate Prediction Score," Proceedings of IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS'2011), San Antonio, TX, December 2011.
2. S. Afra and U.M. **Braga-Neto**, "Peaking Phenomenon and Error Estimation for Support Vector Machines," Proceedings of IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS'2011), San Antonio, TX, December 2011.

3. Y. Sun, U.M. **Braga-Neto** and E.R. Dougherty, "Modeling and systematic analysis of LC-MS proteomics pipeline," Proceedings of IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS'2011), San Antonio, TX, December 2011.
4. E. Atashpaz-Gargari, U.M. **Braga-Neto** and E.R. Dougherty, "Multiple Reaction Monitoring: Modeling and Systematic Analysis." Proceedings of IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS'2011), San Antonio, TX, December 2011.
5. Z. Zhang, Y. Sun, U.M. **Braga-Neto**, E.R. Dougherty and J. Zhang, "A parallel programming framework with Markovian messaging for LCMS peptide peak detection." Proceedings of IEEE International Conference on Bioinformatics and Biomedicine (BIBM'2011), Atlanta, GA, November 2011.
6. U.M. **Braga-Neto**, "Optimal State Estimation for Boolean Dynamical Systems," Proceedings of the 45th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, November 2011.
7. T. Chen and U.M. **Braga-Neto**, "Maximum Likelihood Estimation of the Binary Coefficient of Determination," Proceedings of the 45th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, November 2011.
8. Y. Sun, J. Zhang, U.M. **Braga-Neto** and E.R. Dougherty, "BPDA2D - An improved Bayesian peptide detection algorithm for Mass Spectrometry," 59th ASMS Conference on Mass Spectrometry and Allied Topics, Denver, Colorado, June 2011.
9. T. Chen and Ulisses **Braga-Neto**, "Maximum Likelihood Estimation of the Binary Coefficient of Determination," Eighth Annual Conference of the MidSouth Computational Biology and Bioinformatics Society (MCBIOS'2011), College Station, TX, April 2011.
10. Y. Sun, J. Zhang, U.M. **Braga-Neto** and E.R. Dougherty, "BPDA+ - An improved Bayesian peptide detection algorithm for Mass Spectrometry," Eighth Annual Conference of the MidSouth Computational Biology and Bioinformatics Society (MCBIOS'2011), College Station, TX, April 2011.
11. E. Atashpaz-Gargari, C. Sima, U.M. **Braga-Neto** and E.R. Dougherty, "Relationship Between the Accuracy of Classifier Error Estimation and Distribution Complexity," Eighth Annual Conference of the MidSouth Computational Biology and Bioinformatics Society (MCBIOS'2011), College Station, TX, April 2011.
12. Y. Wang, N. Ghaffari, C.D. Johnson, U.M. **Braga-Neto**, H. Wang, R. Chen and H. Zhou, "Evaluation of Coverage and Depth of Transcriptome by RNA-SEQ In Chickens," Eighth Annual Conference of the MidSouth Computational Biology and Bioinformatics Society (MCBIOS'2011), College Station, TX, April 2011.
13. T. Chen and U.M. **Braga-Neto**, "Approximate expressions for the variances of non-randomized error estimators and CoD estimators for the discrete histogram rule." Proceedings of IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS'2010), Cold Spring Harbor, NY, November 2010.
14. A. Zollanvari, U.M. **Braga-Neto**, and E.R. Dougherty, "RMS bounds and sample size considerations for error estimation in linear discriminant analysis." Proceedings of IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS'2010), Cold Spring Harbor, NY, November 2010.
15. C.C. Allen, X. Li, L.O. Tedeschi, H. Zhou, J.A. Paschal, T.E. Spencer, U.M. **Braga-Neto**, D.H. Keisler, M. Amstalden, and G.L. Williams, "Dietary Treatments that Facilitate Early Onset of Puberty in Heifers Alter Gene Expression in the Arcuate Nucleus." Proceedings of the 42nd SSR Annual Meeting, Pittsburgh, PA, July 2009.
16. C. Sima, T.T. Vu, U.M. **Braga-Neto**, and E.R. Dougherty, "Bolstered Error Estimation with Feature Selection." Proceedings of IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS'2009), Minneapolis, MN, May 2009.
17. A. Zollanvari, U.M. **Braga-Neto**, and E.R. Dougherty, "Sample Size Calculation from Specified RMS of the Resubstitution Error for Linear Classifiers." Proceedings of IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS'2009), Minneapolis, MN, May 2009.

18. E. Nascimento, U.M. **Braga-Neto**, C. Calzavara-Silva, A. Gomes F. Abath, C Brito, M. Cordeiro, A. Silva, C. Magalhaes, R. Andrade, L. Gil and E.T.A. Marques, Jr., "Gene expression profiling during acute stage of dengue infection can predict patient outcome." Proceedings of First Pan American Dengue Research Network Meeting, Recife, Brazil, July 2008.
19. E. Nascimento, A. Silva, B. Acioli-Silva, C. Calzavara-Silva, U.M. **Braga-Neto**, M. Cordeiro, C. Brito, M. Magalhaes, L. Gil and E.T.A. Marques, Jr., "Analysis of Complement System Reveals That Increased Alternative Pathway Activation Is correlated With Dengue Severity." Proceedings of First Pan American Dengue Research Network Meeting, Recife, Brazil, July 2008.
20. B. Acioli-Silva, E. Nascimento, F. Pastor, C. Calzavara-Silva, A. Gomes, A. Silva, M. Cordeiro, U.M. **Braga-Neto**, S. Crovella and E.T.A. Marques, Jr., "Complement Factor H (CFH) Promoter Polymorphism C-257T is Correlated with High Levels of CFH mRNA and Protein Expression and Resistance to Dengue Hemorrhagic Fever." Proceedings of First Pan American Dengue Research Network Meeting, Recife, Brazil, July 2008.
21. E. Nascimento, U.M. **Braga-Neto**, M. Magalhaes, C. Brito, M. Cordeiro, A. Silva and E.T.A. Marques, Jr., "HLA-C alleles are associated with resistance to sequential dengue infection and clinical outcomes." Proceedings of First Pan American Dengue Research Network Meeting, Recife, Brazil, July 2008.
22. U.M. **Braga-Neto**, "An Asymptotically-Exact Expression for the Variance of Classification Error for the Discrete Histogram Rule." Proceedings of IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS'2008), Phoenix, AZ, June 2008.
23. D.C. Martins, Jr., U.M. **Braga-Neto**, M.L. Bittner and E.R. Dougherty, "Network Properties of Intrinsically Multivariate Predictive Genes." Proceedings of IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS'2008), Phoenix, AZ, June 2008.
24. T.T. Vu, U.M. **Braga-Neto** and E.R. Dougherty, "Preliminary Study on Bolstered Error Estimation in High-Dimensional Spaces." Proceedings of IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS'2008), Phoenix, AZ, June 2008.
25. U.M. **Braga-Neto**, Error Estimation Critically Impacts "Feature Selection in Genomics and Proteomics Applications." Presented at The Fifth Annual Conference of the MidSouth Computational Biology and Bioinformatics Society (MCBIOS 2008), Oklahoma City, OK, February 2008.
26. M. Pereira, A. Pastor, B. Acioli-Santos, L. Segat, R. Dhalia, U.M. **Braga-Neto**, E.T.A. Marques, Jr. and S. Crovella, "MBL2 gene polymorphisms protect against severe dengue manifestation associated with thrombocytopenia phenotype development." Proceedings of XVIII Brazilian Virology Meeting, Buzios, Brazil, 2007.
27. L. Alencar, A. Barbosa, K. Barbosa, M. Tenorio, C. Brito, P. Chiklinkar, E. Nascimento, R. Dhalia, U.M. **Braga-Neto**, E.T.A. Marques, Jr., "Analysis of epitope mapping of the dengue-3 envelope protein on dengue patients: comparison between the enzyme-linked immunospot (elispot) and the multipred epitope predictive computational program." Proceedings of XVII Brazilian Virology Meeting, Campos do Jordao, Brazil, 2006.
28. U.M. **Braga-Neto**, "Why Error Estimation is Fundamental to the Estimation of Regulatory Networks." Presented at the Models for Genetic Regulatory Network Workshop, College Station, TX, November 2005.
29. U.M. **Braga-Neto**, Small-Sample Error Estimation: Mythology Versus Mathematics. Proceedings of SPIE Vol. 5916: Mathematical Methods in Pattern and Image Analysis. Edited by J.T. Astola, I. Tabus and J. Barrera, San Diego, CA, August 2005.
30. U.M. **Braga-Neto**, Grayscale Level Multiconnectivity. Proceedings of the 7th International Symposium on Mathematical Morphology: 40 Years On - ISMM'05. Edited by C. Ronse, L. Najman and E. Decencière, pp. 129-138, Paris, France, April 2005.
31. U.M. **Braga-Neto** and John Goutsias, On a General Theory of Connectivity in Image Analysis. Proceedings of the IEEE-EURASIP Workshop on Nonlinear Signal and Image Processing - NSIP'01. Edited by K. Barner, G. Arce, and C. Bonchelet (CD-ROM), Baltimore, MD, June 2001.

32. X. Han, C. Xu, U.M. **Braga-Neto**, and J. L. Prince, Graph-Based Topology Correction for Brain Cortex Segmentation. Proceedings of the XVIIth International Conference on Information Processing in Medical Imaging - IPMI'01. Edited by M.F. Insana and R.M. Leahy, pp 395-401, Davis, CA, June 2001.
33. U.M. **Braga-Neto** and John Goutsias, Multiresolution Connectivity: An Axiomatic Approach. Proceedings of the 5th International Symposium on Mathematical Morphology and Its Applications to Image and Signal Processing - ISMM'2000. Edited by J. Goutsias, L. Vincent and D. Bloomberg, pp. 159-168, Palo Alto, CA, June 2000.
34. U.M. **Braga-Neto** and John Goutsias, Automatic Target Detection and Tracking in Forward-Looking Infrared Image Sequences using Morphological Connected Operators. Proceedings of the 33rd Annual Conference on Information Sciences and Systems - CISS'99. Vol. I, pp. 173-178, Baltimore, MD, March 1999.
35. U.M. **Braga-Neto** and John Goutsias, On Detecting Mines and Minelike Objects in Highly Cluttered Multispectral Aerial Images by Means of Mathematical Morphology. In *Detection and Remediation Technologies for Mines and Minelike Targets III*, Proceedings of SPIE 3392, pp. 987-999, Orlando, FL, April 1998.
36. U.M. **Braga-Neto**, "Alternating Sequential Filters by Adaptive-Neighborhood Structuring Functions." Proceedings of the 3rd International Symposium on Mathematical Morphology and Its Applications to Image and Signal Processing - ISMM'96. Edited by P. Maragos, R.W. Schafer and M.A. Butt, pp. 139-146, Atlanta, GA, May 1996.
37. U.M. **Braga-Neto**, W.A. Siqueira Neto and A.F. Dias e Silva, "Mammographic Calcification Detection by Mathematical Morphology Methods." Proceedings of the 3rd International Workshop on Digital Mammography. Edited by K. Doi, M.L. Giger, R.M. Nishikawa and R.A. Schmidt, pp. 263-266, Chicago, IL, June 1996.
38. U.M. **Braga-Neto** and R.A. Lotufo, "Mathematical Morphology tools for 3-D image analysis of porous media." In *Neural, Morphological and Stochastic Methods in Image and Signal Processing*, Proceedings of SPIE 2568. Edited by E.R. Dougherty, F. Prêteux and S.S. Shen, pp. 139-150, San Diego, CA, July 1995.

Graduated Ph.D. Students

1. Amin Zollanvari, Spring 2007 - Fall 2010
 Graduated: December 2010
 Committee Co-Chairs: Ulisses M. Braga-Neto and Edward R. Dougherty
 Thesis Title: "Analytical Study of Performance of Error Estimators for Linear Discriminant Analysis with Applications in Genomics."
 Current Employment: Brigham and Women's Hospital, Harvard Medical School, Boston, MA
2. Thang Vu, Spring 2007 - Spring 2011
 Graduated: May 2011
 Committee Chair: Ulisses M. Braga-Neto
 Thesis Title: "The Bootstrap in Supervised Learning and Its Applications in Genomics/Proteomics."
 Current Affiliation: Senior Engineer, Life Technologies Co., Foster City, CA.

Current Funded Ph.D. Students

1. Ting Chen, Fall 2009-
 Research Assistant
 Committee Chair: Ulisses M. Braga-Neto
 Estimated graduation date: Fall 2013

2. Youting Sun, Fall 2008-
Research Assistant
Committee Co-Chairs: Ulisses M. Braga-Neto and Edward R. Dougherty
Estimated graduation date: Summer 2012
3. Esmaeil Atashpazgargari, Fall 2011-
Research Assistant (AgriLife)
Committee Chair: Ulisses M. Braga-Neto and Edward R. Dougherty
Estimated graduation date: Fall 2013
4. Sardar Afra, Summer 2011-
Research Assistant / ECEN 303 Grader
Committee Chair: Ulisses M. Braga-Neto
Estimated graduation date: Spring 2015

Funded Research Projects

1. Title: "CAREER: Theory and Application of Small-Sample Error Estimation in Genomic Signal Processing"
Sponsor: National Science Foundation
Principal Investigator: Ulisses Braga-Neto
Number of Graduate Students Supported/Year: 1.37
Inclusive Dates: Mar 1, 2009 – Feb 28, 2014
Dollar Value: \$400,000
2. Title: "Reproducible Discovery of Molecular Biomarkers Using Proteomic Data"
Sponsor: Translational Genomics (TGen)
Principal Investigator: Ulisses Braga-Neto
Number of Graduate Students Supported/Year: 2
Inclusive Dates: Sep 1, 2008 – Feb 28, 2012 (no cost extension)
Dollar Value: \$232,946
3. Title: "MCBIOS Conference Support"
Sponsor: U.S. Food and Drug Administration (R13)
Principal Investigator: Ulisses Braga-Neto (on behalf of MCBIOS)
Number of Graduate Students Supported/Year: N/A
Inclusive Dates: Jan 1, 2011 – Dec 31, 2015
Dollar Value: \$50,000
4. Title: "Bioinformatics Support".
Sponsor: Texas AgriLife Genomic and Bioinformatics Service Facility
Principal Investigator: Ulisses Braga-Neto
Number of Graduate Students Supported/Year: 1
Inclusive Dates: Annual renewal
Dollar Value: \$34,000

Teaching

1. Courses taught at Texas A&M University:
 - ECEN 303 Random Signals and Systems (Summer 2011, Fall 2011, Spring 2012)
 - ECEN 649 Pattern Recognition (Spring 2007-2012)

- ECEN 447 Digital Image Processing (Fall 2007-2008, 2010)
 - ECEN 689 Special Topics: Statistical Computation in Genomic Signal Processing (Fall 2009)
2. Course taught at Oswaldo Cruz Foundation (FIOCRUZ), Recife, Brazil:
 - Introduction to Computational Biology (Summer 2008-2010)
 3. Teaching Assistant for the courses
 - 520.414 Image Processing and Analysis I
 - 520.415 Image Processing and Analysis II
 at Johns Hopkins University, 1997-2001.
 4. Developed and supervised laboratory exercises based on HTML and Khoros for the course
 - 520.414 Image Processing and Analysis I
 at Johns Hopkins, 1997-1998.
 5. Lecturer, Federal University of Pernambuco, Recife, Brazil, 1995-1996.
 6. Teaching Assistant, State University of Campinas, Campinas, Brazil, 1993.

Service

1. Associate Editor: ISRN Biomathematics, 2011-
2. Proposal Reviewer: NIH - Biobehavioral Mechanisms of Emotion, Stress and Health (MESH) Study Section, June 2011.
3. Program Committee Member: BIOINFORMATICS'2012, part of BIOSTEC'2012 - 5th International Joint Conference on Biomedical Engineering Systems and Technologies, Algarve, Portugal, February 2012.
4. President of the MidSouth Computational Biology and Bioinformatics Society (MCBIOS), 2010-2011 term.
5. General Conference Chair: MCBIOS'2011 - 8th Annual MidSouth Computational Biology and Bioinformatics Society Conference, College Station, TX, April 1-2, 2011.
6. Guest Editor: Supplement Issue of BMC Bioinformatics - 8th
7. Annual MidSouth Computational Biology and Bioinformatics Society Conference, 2011.
8. Program Committee Member: ICARIS'2011 - 10th International Conference on Artificial Immune Systems, Cambridge, UK, July 2011.
9. Oral presentation judge for the Texas Junior Science and Humanities Symposium competition for state high-school students, January 27-29, 2011, Texas A&M University.
10. Proposal Reviewer: NSF Mississippi EPSCoR Project on Bioinformatics, Fall 2010.
11. Lead Guest Editor: EURASIP Journal of Advances in Signal Processing - Special Issue on Genomic Signal Processing, 2010.

12. Guest Editor: EURASIP Journal on Bioinformatics and Systems Biology - Special Issue on Computational Systems Biology, 2010.
13. Guest Editor: EURASIP Journal of Advances in Signal Processing - Special Issue on Applications of Signal Processing Techniques to Bioinformatics, Genomics, and Proteomics, 2009.
14. Guest Editor: Supplement Issue of BMC Bioinformatics - 6th Annual MidSouth Computational Biology and Bioinformatics Society Conference, 2009.
15. Guest Editor: Special Issue of Image and Vision Computing - 8th International Symposium on Mathematical Morphology, 2009.
16. Guest Editor: EURASIP Journal of Advances in Signal Processing - Special Issue on Applications of Signal Processing Techniques to Bioinformatics, Genomics, and Proteomics, 2009.
17. Publications Chair: GENSIPS'2009 - 7th IEEE International Workshop on Genomic Signal Processing and Statistics, Minneapolis, 2009.
18. Program Committee Member: BSB'2009 - First Brazilian Symposium on Bioinformatics, Porto Alegre, Brazil, 2009.
19. Publicity Co-Chair: GENSIPS'2008 - 6th IEEE International Workshop on Genomic Signal Processing and Statistics, Phoenix, June 2008.
20. Program Committee member: BIBE'08 - 8th International Conference on Bioinformatics and BioEngineering, Athens, Greece, October 2008.
21. Organizing Committee member and Program Committee co-Chair: ISMM'2007 - 8th International Symposium on Mathematical Morphology, Rio de Janeiro, Brazil, October 2007.
22. Poster Session Committee member: ISMB'2006 - 14th International Conference on Intelligent Systems for Molecular Biology, Fortaleza, Brazil, August 2006.
23. Reviewer (Selected Journals):
 - Nucleic Acids Research
 - Bioinformatics
 - BMC Bioinformatics
 - Journal of Machine Learning Research
 - PLoS Computational Biology
 - PLoS ONE
 - Expert Opinion on Drug Discovery
 - IEEE Transactions on Pattern Analysis and Machine Intelligence
 - IEEE Transactions on Information Theory
 - IEEE Transactions on Signal Processing
 - IEEE Transactions on Neural Networks
 - IEEE Transactions on Systems, Man and Cybernetics - Part B
 - IEEE Signal Processing Letters
 - EURASIP Journal of Applied Signal Processing
 - Computer Vision and Image Understanding
 - Journal of Image and Vision Computing
 - Journal of Electronic Imaging
 - Journal of Visual Communication and Image Representation

Selected Invited Talks

1. "Pattern Recognition in High-Dimensional Spaces"
Uncertainty Quantification and Multiscale Materials Modeling Workshop
Santa Fe, NM, June 2011.
Host: Francis Alexander and Edward Kober.
2. "Signal Processing Applications in Biomarker Discovery and Inference of Boolean Regulatory Networks"
Los Alamos National Laboratory.
Los Alamos, NM, May 2011.
Host: Francis Alexander.
3. "Pattern Recognition for Biomarker Discovery: Assessing Performance Accurately is Critical for Genuine Scientific Progress"
Center for Imaging Science - The Johns Hopkins University.
Baltimore, MD, October 2008.
Host: John Goutsias.
4. "Genomes, Immunomes, and Microarrays: A Signal Processing Perspective"
Electrical Engineering Department - Texas A&M University.
College Station, TX, April 2006.
Host: Edward Dougherty.
5. "Why Error Estimation is Fundamental to the Estimation of Regulatory Networks"
Workshop on Models for Genetic Regulatory Networks
College Station, TX, November 2005.
Host: Edward Dougherty (workshop chair).
6. "Characterization of the Dengue Virus Immunome"
XVI Brazilian Meeting on Virology
Salvador, Brazil, November 2005.
Host: Herman Schatzmeyer (session chair).
7. "Fads and Fallacies in The Name of Computational Biology"
X-Meeting - First International Conference of the Brazilian Association of Bioinformatics and Computational Biology (AB3C)
Caxambú, Brazil, October 2005.
Host: Junior Barrera (organizing committee).
8. "Predicting the Clinical Outcome of Dengue Fever by Gene Expression Profiling"
First Seminar on Human Immunomics
Recife, Brazil, June 2005.
Host: Ernesto Marques, Jr. (conference chair).
9. "Error Estimation and Inference of Genetic Regulatory Networks"
II International Conference on Bioinformatics and Computational Biology
Angra dos Reis, RJ, Brazil, October 2004.
Host: Junior Barrera (session chair).
10. "Multivariate Discriminant Analysis in Functional Genomics"
Aggeu Magalhães Research Center (CPqAM/FIOCRUZ)

Recife, PE, Brazil, June 2004.
Host: Ernesto Marques, Jr.

11. "Bolstered Error Estimation"
Bioinformatics Seminar Series
Statistics Department - Texas A&M University
College Station, TX, April 2004.
Host: Raymond Carroll.
12. "Flat Grayscale Connectivity"
First SIAM Conference on Imaging Science
Boston, MA, March 2002.
Host: Junior Barrera (session chair).
13. "Connectivity-Based Target Detection and Tracking in FLIR Video"
Electrical Engineering Department - University of Virginia
Charlottesville, VA, August 2002.
Host: Scott Acton.

Computer Skills

C, MPI, R, Pascal, Basic, HTML, Unix Shell Programming, Assembly 8086/Z80, MatLab, Khoros, Emacs, LaTeX.

Other Professional Experience

Engineering intern at Phillips, Inc. (Digital Telephony), Brazil, 1992; Engineering intern at TWR, Inc. (Digital Microterminals), Brazil, 1992.

Languages

Fluent in English and Portuguese. Able to read and write French. Able to read and understand Spanish. Able to read Italian and German.