

**Dr. Miguel Velez-Reyes, P.E.**  
Professor and Chair  
Electrical and Computer Engineering Department  
University of Texas at El Paso  
Engineering Building, Rm, A-327  
500W University Avenue  
El Paso, TX 79968  
Phone (915) 747-5534

e-mail: MVElezReyes@utep.edu  
M.Velez@ieee.org

**Research Interests:**

Information extraction using minimally intrusive or remote sensing techniques. Signal and image processing technique applied to imaging spectroscopy or hyperspectral remote sensing. Physics-based signal processing.

**Current Position:**

**Professor and Chair Electrical and Computer Engineering**, University of Texas at El Paso, (August 2012-present).

**Adjunct Professor of Electrical and Computer Engineering**, University of Puerto Rico at Mayagüez, (August 2012-present).

**Education:**

**Ph.D. in Electrical Engineering, Massachusetts Institute of Technology**, September 1992.

Thesis under Prof. George C. Verghese on *Decomposed Algorithms for Parameter Estimation*. Thesis committee members: Prof. Jeffrey H. Lang, Prof. Munther Daleh, and Prof. John Tsitsiklis. Minor: Management of Information Systems.

**Electrical Engineer, Massachusetts Institute of Technology**, May 1988.

**MS in Electrical Engineering, Massachusetts Institute of Technology**, May 1988.

Thesis under the supervision of Prof. George C. Verghese on *Decomposed Algorithms for Speed and Parameter Estimation in Induction Motors*.

**BS in Electrical Engineering University of Puerto Rico Mayagüez Campus**, June 1985.

Graduated magna cum laude and received Georg Simon Ohm award for best Electrical Engineering Student Class of 1985.

**Honors and Awards:**

**Elected Fellow of SPIE**, for contributions to the area of Hyperspectral Image Processing, January 2010.

**Inducted to the Academy of Arts and Sciences of Puerto Rico**, for leadership and contributions to Science and Engineering in Puerto Rico. November 2005.

**Presidential Early Career Award for Scientists and Engineers (PECASE)** for “Contributions to engineering education and research on power systems applicable to large systems that transfer power among multiple suppliers in the electric power industry.” The presidential honor is the highest bestowed by the U.S. government on outstanding young scientists and engineers who are in the early stages of their independent research careers. Given in November 3, 1997.

**UPR Distinguished Researcher in Science and Technology**, UPR Office of the President, December 2000.

**Senior Member of the Institute of Electrical and Electronics Engineers**, May 2000.

**2009-10 Distinguished Professor**, Department of Electrical and Computer Engineering, UPR Mayagüez.

**1999 Walter Fee Outstanding Young Engineer Award**, IEEE Power Engineering Society.

**1997-98 Distinguished Professor**, Department of Electrical and Computer Engineering, UPR Mayagüez.

**1998 Distinguished Professor**, Puerto Rico Professional Engineers and Land Surveyors Association Mayagüez Chapter.

**Grass Instruments Fellowship**, January to May 1992.

**Fellow of the AT&T Cooperative Research Fellowship Program**, June 1985 to December 1991.

**Georg Simon Ohm Award**. Best student of the 1985 UPRM Electrical Engineering Graduating Class.

**Sigma Xi**, Research Honor Society, elected in 1992

**Tau Beta Pi**, Engineering Honor Society, elected in 1984

**Phi Kappa Phi**, Scientific Honor Society, elected in 1984

#### **Leadership Positions:**

**Founding Director, Institute of Research in Integrative Systems and Engineering**. University of Puerto Rico Mayagüez Campus. July 2007-June 2012.

**Director, Laboratory for Applied Remote Sensing and Image Processing**. University of Puerto Rico Mayagüez Campus. July 2003-June 2012.

**Associate Director, Center for Subsurface Sensing and Imaging Systems**. A National Science Foundation Engineering Research Center lead by Northeastern University in partnership with the University of Puerto Rico at Mayaguez, RPI, and Boston University. July 2003-June 2012.

**Campus Director, Center for Power Electronic Systems**. A National Science Foundation Engineering Research Center led by Virginia Tech in partnership with RPI, University of Wisconsin—Madison, NCA&T and University of Puerto Rico at Mayaguez. 1998-2009.

**Director, Tropical Center for Earth and Space Studies**. A NASA University Research Center at the University of Puerto Rico Mayagüez Campus. August 2003-2008.

**Engineering Advisor for NEONEON-PR**. An interdisciplinary, multi-institutional effort to help coordinate National Ecological Observation Network (NEON) activities in Puerto Rico. NEON is an NSF funded, ~\$300M dollar nationwide ecology experiment. The Guanica Forest in Southern Puerto Rico is the core site for the Atlantic Neotropical Domain. PR-PIs Dr. Skip Van Bloem, and Dr. Ariel E. Lugo USFS.

#### **Other Work Experience:**

**Professor of Electrical and Computer Engineering**, University of Puerto Rico at Mayagüez, (July 2000-June 2012). Teaching and research in Electrical Engineering. Currently involved in research and teaching graduate and undergraduate courses in signal processing, remote sensing, and control systems.

**Faculty of the PhD Program in Computing and Information Sciences and Engineering Program**, University of Puerto Rico at Mayagüez, (July 2004-present). Supervision of Ph.D. students. Member of the Computer Sciences and Engineering Area.

**Associate Professor of Electrical and Computer Engineering**, University of Puerto Rico at Mayagüez, (July 1995-June 2000).

**Assistant Professor of Electrical and Computer Engineering**, University of Puerto Rico at Mayagüez, (July 1992-June 1995).

**Summer Faculty Fellowship Program, United States Air Force Laboratories**, Hanscom Air Force Base, Boston, MA (Summer 2003). Research in Algorithms for Unmixing of Hyperspectral Imagery.

**Summer Faculty Fellowship Program, NASA Goddard Space Flight Center**, Greenbelt, MD (Summer 1997). Research in remote sensing data assimilation and information content in high spectral resolution sounders. Sponsored by NASA-ASEE Summer Faculty Fellowship Program.

**Summer Faculty Fellowship Program, United States Air Force Phillips Laboratory**, Hanscom Air Force Base (Summer 1996). Research in algorithms for atmospheric retrieval problems from microwave radiometry using regularization methods.

### **Consulting Experience:**

Telecom Solutions, Puerto Rico, Inc., (Dr. Agustin Rullan, lead), Redesign of the Timing Output T1 Assembly: Conversion to Surface Mount Technology, April-December 1997.

Preparation of the Puerto Rico Professional Engineer Exam in Electrical Engineering for the Examination Board for Engineers, Architects and Land Surveyors of the Puerto Rico State Department, March 1997.

PRIME Fomento, (Dr. Agustin Rullan lead), Redesign of the MICRO-400 Line Driver: Transition from Through-Hole to SMT, July-December 1995.

Curriculum and Facilities Assessment of the Informatics, and the Technology and Engineering Schools at Universidad Accion Pro Educación y Cultura (UNAPEC), Santo Domingo, Dominican Republic, October 12-16, 1994.

### **Journal Submitted:**

M.C. Torres-Maldronero, M. Velez-Reyes, and J.A. Goodman, "Subsurface Hyperspectral Unmixing for Benthic Habitat Mapping." Submitted to **SPIE Journal of Applied Remote Sensing**.

M. Marin-McGee and M. Velez-Reyes, "Weighted Structure Tensor for Hyperspectral Imagery based on the Heat Operator." Submitted to **IEEE Transactions on Image Processing**.

### **Journal Publications:**

M.A. Goenaga, M.C. Torres-Maldronero, M. Velez-Reyes, S.J. Van Bloem, and J.D. Chinaea, "Multi-temporal unmixing analysis of Hyperion images over the Guanica dry forest." Accepted for publication in the **IEEE Journal in Special Topics on Applied Remote Sensing**.

L.P. Dorado, M. Velez-Reyes, A. Mukerjee, and B. Roysam, "Vector SIFT Detector for Interest Point Detection in Hyperspectral Imagery." To appear in **IEEE Transactions on Geosciences and Remote Sensing**, November 2012.

B. Trigueros-Espinosa, M. Velez-Reyes, N.G. Santiago and S. Rosario-Torres, "Evaluation of the graphics processing unit architecture for the implementation of target detection algorithms for hyperspectral imagery", **Journal of Applied Remote Sensing** 6, 061506 (Jun 21, 2012); <http://dx.doi.org/10.1117/1.JRS.6.061506>

A. Mukerjee, M. Velez-Reyes, and B. Roysam, "Interest Points for Hyperspectral Image Data". In **IEEE Transactions on Geosciences and Remote Sensing**, Vol. 47, No. 3, March 2009, pp. 748 - 760.

V. Manian and M. Velez-Reyes, "Support vector classification of land cover and benthic habitat from hyperspectral images," In J. Theriault and J. Jensen, editors, **Spectral Sensing Research for Surface and Air Monitoring in Chemical, Biological, and Radiological Defense and Security Applications (Selected Topics in Electronics and Systems – Vol. 49)**, World Scientific Publishing Company, August 11, 2009, pp. 109-120.

J.M. Duarte-Carvajalino, G. Sapiro, M. Velez-Reyes, and P.E. Castillo, "Multiscale Representation and Segmentation of Hyperspectral Imagery using Geometric Partial Differential Equations and Algebraic

Multigrid Methods.” In **IEEE Transactions on Geosciences and Remote Sensing**, Vol. 46, No. 8, August 2008, pp. 2418-2434.

V. Manian and M. Velez-Reyes, “Support vector classification of land cover and benthic habitat from hyperspectral images,” In **International Journal of High Speed Electronics and Systems**, Vol. 18, No. 2, June 2008, pp. 337-348.

J.M. Duarte-Carvajalino, P. Castillo, and M. Velez-Reyes, “Comparative Study of Semi-implicit Schemes for Nonlinear Diffusion in Hyperspectral Imagery.” In **IEEE Transactions on Image Processing**, Vol. 16, No.5, May 2007, pages: 1303 – 1314.

L.O. Jiménez-Rodríguez, E. Arzuaga-Cruz, and M. Velez-Reyes, "Unsupervised Feature Extraction Techniques for Hyperspectral Data and its Effects on Supervised and Unsupervised Classification." In **IEEE Transactions on Geosciences and Remote Sensing**., Vol. 45, no. 2, February 2007, pages:469 – 483.

A.A. Irizarry-Rivera, M. Rodríguez-Martínez, B. Velez, M. Velez-Reyes, A.R. Ramirez-Orquin, E. O’Neill-Carrillo, J.R. Cedeño, “Intelligent power routers: A distributed coordination approach for electric energy processing networks.” In **International Journal of Critical Infrastructures**, Vol. 3, Nos. 1/2, 2007, pages: 20-57.

N. Dukhan, P.D. Quiñones-Ramos, E. Cruz-Ruiz, M. Velez-Reyes, E.P. Scott, “One-dimensional heat transfer analysis in open-cell 10-ppi metal foam.” In **International Journal of Heat and Mass Transfer**, Vol. 48, December 2005, pages: 5112–5120.

M. Hernández-Mora, J.E. González, M. Velez-Reyes, J.M. Ortiz, Y.P. Pang, and E. Scott, “Dynamic reduced electrothermal model for integrated power electronic modules (IPEM)”. **Journal of Electronic Packaging**, Volume 126, Issue 4, December 2004, pages: 477-490.

E. O’Neill-Carrillo, M. Velez-Reyes, and A. Irizarry, “Undergraduate Research Experiences in Power Engineering.” In **IEEE Electric Power and Energy Magazine**. Special Issue on Education, Vol. 1, Iss. 4, Jul-Aug 2003 Page(s):29 - 36.

M. Burth, G.C. Verghese, and M. Velez-Reyes, “Subset Selection for Improved Parameter Estimation in On-Line Identification of a Synchronous Generator.” In **IEEE Transactions on Power Systems**, Vol. 14, No. 1, February 1999, pages: 218 - 225.

B. Argüello-Serrano and M. Velez-Reyes, “Nonlinear Control of a Heating, Ventilating, and Air Conditioning System with Thermal Load Estimation.” In **IEEE Transactions on Control Technology**, Vol. 7, No. 1, January 1999, pages: 56 - 63.

M. Velez-Reyes and G.C. Verghese, “Parameter Estimation using Decomposed Algorithms with Fast Convergence Rates.” In **Computers and Industrial Engineering**, Vol. 33, Nos 1-2, 1997, pages: 67-70.

### Book Chapters:

M.Velez-Reyes, J. A. Goodman, and B.E. Saleh, “Spectral Subsurface Imaging.” In B.E. Saleh, ed., **Introduction to Subsurface Imaging**, Cambridge University Press, 2011.

A.A. Irizarry-Rivera, M. Rodríguez-Martínez, B. Velez, M. Velez-Reyes, A.R. Ramirez-Orquin, E. O’Neill-Carrillo, and J.R. Cedeño, “Intelligent Power Routers: Distributed Coordination for Electric Energy Processing Networks.” In J. Momoh and L. Mili. eds., **Operation and Control of Electric Energy Processing Systems**, Wiley-IEEE Press, 2010.

M. Velez-Reyes, W. Rivera-Gallego, and L.O. Jiménez-Rodríguez, “A Solutionware for Hyperspectral Image Processing and Analysis.” In A.J. Plaza and C.I. Chang, editors, **High-Performance Computing in Remote Sensing**, Chapman & Hall/CRC Press, October 2007.

**Conference Publications:**

M.C. Torres-Maldronero and M. Velez-Reyes, "Unmixing analysis based on multiscale segmentation." In **Proceedings of the 4th IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS)**, June 2012.

M.C. Torres-Maldronero and M. Velez-Reyes, "Unsupervised unmixing analysis based on multiscale representation." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVIII**, Vol. 8390, April 2012.

M.A. Goenaga-Jimenez and M. Velez-Reyes, "Incorporating Local Information in Unsupervised Hyperspectral Unmixing." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVIII**, Vol. 8390, April 2012.

G.J. Pérez-Irizarry, F. De La Cruz-Sanchez, B.A. Landrón-Rivera, N.G. Santiago and M. Velez-Reyes, "Developing a portable GPU library for hyperspectral image processing", In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVIII**, Vol. 8390, April 2012.

M. Marin-McGee and M. Velez-Reyes, "A Structure Tensor for Hyperspectral Images." In **Proceedings of the 3<sup>rd</sup> IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS)**, June 2011.

M.C. Torres-Maldronero, M. Velez-Reyes, S.L. Van Bloem, and J.D. Chinaea, "Multi-temporal unmixing analysis of Hyperion images over the Guanica Dry Forest." In **Proceedings of the 3<sup>rd</sup> IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS)**, June 2011.

B.E. Trigueros, M.Velez-Reyes, S. Rosario-Torres, N. Santiago, "Evaluation of the GPU architecture for the implementation of target detection algorithms for hyperspectral imagery." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVII**, Vol. 8048, April 2011.

M. Marin-McGee and M. Velez-Reyes, "Enhancement of flow-like structures in hyperspectral imagery using anisotropic diffusion." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVII**, Vol. 8048, April 2011.

L.P. Dorado-Muñoz and M. Velez-Reyes, "Ship detection in MODIS imagery." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVII**, Vol. 8048, April 2011.

D.W. Messinger, J. van Aardt, D. McKeown, M. Casterline, J. Faulring, N. Raqueño, B. Basener, and M. Velez-Reyes, "High-resolution and LIDAR imaging support to the Haiti earthquake relief effort." In **Proceedings of SPIE: Imaging Spectrometry XV**, Vol. 7812, August 2010.

L.P. Dorado, and M. Velez-Reyes, "A Vector SIFT Operator for Interest Point Detection in Hyperspectral Imagery." In **Proceedings of the Second IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS)**, 14-16 June 2010.

A. Santos-García and M. Velez-Reyes, "Identifiability of Geometric Models for Linear Unmixing at Different Spatial Resolutions in Hyperspectral Unmixing. ." In **Proceedings of the Second IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS)**, 14-16 June 2010.

M. Marin-McGee and M. Velez-Reyes, "Denoising of hyperspectral images by best multilinear rank approximation of a sensor." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVI**, Vol. 7695, April 2010.

- C. Peña-Ortega and M. Velez-Reyes, "Evaluation of different structural models for target detection in hyperspectral imagery." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVI**, Vol. 7695, April 2010.
- N. Rey-Villamizar and M. Velez-Reyes " Using k-MST, k-EC and k-VC neighbor graphs construction methods with spatial coherent distance for manifold learning in hyperspectral image processing." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVI**, Vol. 7695, April 2010.
- A. Santos-García and M. Velez-Reyes, "Understanding the impact of spatial resolution in unmixing of hyperspectral images." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVI**, Vol. 7695, April 2010.
- M.C. Torres-Madronero, M. Velez-Reyes, and J.A. Goodman, "Fusion of hyperspectral imagery and bathymetry information for inversion of bioptical models." In **Proceedings of SPIE: Remote Sensing of the Ocean, Sea Ice, and Large Water Regions 2009**, Vol. 7473, September 2009.
- C. Peña-Ortega and M. Velez-Reyes, "Comparison of basis-vector selection methods for structural modeling of hyperspectral imagery." In **Proceedings of SPIE: Imaging Spectrometry XIV**, Vol. 7457, August 2009.
- M.C. Torres-Madronero, M. Velez-Reyes, and J.A. Goodman, "Underwater unmixing and water optical properties retrieval using HyCIAT." In **Proceedings of SPIE: Imaging Spectrometry XIV**, Vol. 7457, August 2009.
- S. Rosario-Torres and M.Velez-Reyes, "Speeding up the MATLAB™ Hyperspectral Image Analysis Toolbox using GPUs and the Jacket Toolbox." In **Proceedings of First IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS)**, 26-28 Aug. 2009 Page(s):1 – 4.
- J. Certuche, M. Velez-Reyes, "A Reconfiguration Algorithm for a DC Zonal Electric Distribution System Based on Graph-Theory Methods". In **Proceedings of the IEEE Electric Ship Technologies Symposium (ESTS 2009)**, Baltimore, MD, 20-22 April 2009.
- L.P. Dorado-Muñoz, M. Velez-Reyes, B. Roysam, and A. Mukherjee, "Interest Point Detection for Hyperspectral Imagery." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XV**, Vol.7334, April 2009, (9 pages).
- E. Veronica Morales and M.Velez-Reyes, "Effects of image restoration in classification and visual analysis of LANDSAT imagery over Puerto Rico." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XV**, Vol.7334, April 2009, (10 pages).
- A. Santos-García, M. Velez-Reyes, S. Rosario-Torres, and J.D. China, "A comparison of unmixing algorithms for hyperspectral imagery." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XV**, Vol.7334, April 2009, (12 Pages).
- J. Goodman, M. Velez-Reyes, and S. Rosario-Torres, "An Update on SeaBED: A TesBED for Validating Subsurface Aquatic Hyperspectral Remote Sensing Algorithms." In **Proceedings of SPIE: Remote Sensing of the Ocean, Sea Ice, and Large Water Regions 2008**, Vol. 7105, October 2008.
- M.E. Torres-Hernández, and M. Velez-Reyes, "Hierarchical Control of Hybrid Power Systems." In **Proceedings of the 2008 IEEE International Conference on Power Electronics (CIEP '08)**, Cuernavaca, Mexico, August 24-27, 2008.
- C. Gerardino-Neira, J. Goodman, M. Velez-Reyes, W. Rivera-Gallego, "Sensitivity analysis of hyperspectral inversion model for remote sensing of coastal ecosystems." In **Proceedings IEEE International Geosciences and Remote Sensing Symposium**, Boston, July 2008.

J. Goodman, M. Velez-Reyes, S. Rosario-Torres, S. Hunt, F. Gilbes, “Development of a field test environment for the validation of coastal remote sensing algorithms: Enrique Reef, Puerto Rico.” In **Proceedings of the 11<sup>th</sup> International Coral Reef Symposium**, Fort Lauderdale, FL, July 7-11, 2008.

Y.M. Masalmah, and M. Velez-Reyes, “A full algorithm to compute the constrained positive matrix factorization and its application in unsupervised unmixing of hyperspectral imagery.” In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XIV**, Vol. 6966, April 2008.

D. González, C. Sánchez, R. Veguilla, N.G. Santiago, S. Rosario-Torres, M. Velez-Reyes, “Abundance Estimation Algorithms using NVIDIA® CUDA™ Technology.” In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XIV**, Vol. 6966, April 2008.

J.M. Duarte-Carvajalino, G. Sapiro, and M. Velez-Reyes, “Unsupervised Spectral-Spatial Classification of Hyperspectral Imagery using Real and Complex Features and Generalized Histograms.” In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XIV**, Vol. 6966, April 2008.

M. Velez-Reyes, J. Goodman, S. Rosario-Torres, and A. Castrodad-Carrau, “Subsurface unmixing with application to underwater classification.” In **Proceedings of SPIE: Remote Sensing of the Ocean, Sea Ice, and Large Water Regions 2007**, Vol. 6743, October 2007.

R.A. Rosado and M. Velez-Reyes, “The Space Information Laboratory at the University of Puerto Rico Mayaguez Campus”. In **Proceedings of the 32nd International Symposium on Remote Sensing of Environment**, San Jose, Costa Rica, June 25 – 29, 2007, 4 pages.

J.G. Gómez-Gualdrón, M.Velez-Reyes and L.J. Collazo, “Self-Reconfigurable Electric Power Distribution System using Multi-Agent Systems.” In **Proceedings of the IEEE Electric Ship Technologies Symposium (ESTS 2007)**, Arlington, VA, May 21 to 23, 2007.

J.M. Duarte-Carvajalino, G. Sapiro, M. Velez-Reyes, and P. Castillo, “Fast Multi-Scale Regularization and Segmentation of Hyperspectral Imagery via Anisotropic Diffusion and Algebraic Multigrid Solvers.” In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XIII**, Vol. 6565, May 2007.

Y.M. Masalmah, and M. Velez-Reyes, “The Impact of Initialization Procedures on Unsupervised Unmixing of Hyperspectral Imagery using the Constrained Positive Matrix Factorization.” In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XIII**, Vol. 6565, May 2007.

S. Rosario-Torres, M. Velez-Reyes, S.D. Hunt and L.O. Jiménez, “New Developments and Application of the UPRM MATLAB Hyperspectral Image Analysis Toolbox.” In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XIII**, Vol. 6565, May 2007.

M. Velez-Reyes, S. Rosario-Torres, J. Goodman, E. M. Alvira-Concepción, and A. Castrodad-Carrau, “Hyperspectral image unmixing over Benthic habitats.” In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XIII**, Vol. 6565, May 2007.

C.E. Niño and M. Velez-Reyes, “Dealing with Ill Conditioning in Recursive Parameter Estimation for a Synchronous Generator.” In **Proceedings of the IEEE Industrial Electronics Conference**, Paris, France, November 2006.

A. Aquino-Lugo and M. Velez-Reyes, “Gray-Box Modeling of Electric Drives using Recursive Identification and Radial Basis Functions.” In **Proceedings of the IEEE Industrial Electronics Conference**, Paris, France, November 2006.

- J.A. Goodman, M. Velez-Reyes, S. Hunt, and R. Armstrong, "Development of a field test environment for the validation of coastal remote sensing algorithms: Enrique Reef, Puerto Rico." **Proceedings of SPIE: Remote Sensing of the Ocean, Sea Ice, and Large Water Regions 2006**, Vol. 6360, Oct. 6, 2006.
- M. Velez-Reyes, J.A. Goodman, A. Castrodad-Carrau, L.O. Jiménez-Rodríguez, S.D. Hunt, and R. Armstrong. "Benthic habitat mapping using hyperspectral remote sensing." **Proceedings of SPIE: Remote Sensing of the Ocean, Sea Ice, and Large Water Regions 2006**, Vol. 6360, Oct. 6, 2006.
- Y.M. Masalmah and M. Velez-Reyes, "Unsupervised Unmixing of Hyperspectral Imagery." In **Proceedings of the IEEE Midwest Symposium on Circuits and Systems**, San Juan, Puerto Rico, 2006.
- A. Aquino-Lugo and M. Velez-Reyes, "Recursive Identification of Electric Drives using Gray-Box Models." In **Proceedings of the IEEE Midwest Symposium on Circuits and Systems**, San Juan, Puerto Rico, 2006.
- J.G. Gómez-Gualdrón and M.Velez-Reyes, "Simulating a Multi-Agent based Self-Reconfigurable Electronic Power Distribution System." In **Proceedings of the IEEE Workshop on Computers in Power Electronics**, July 2006, pages: 1-7.
- Y.M. Masalmah and M. Velez-Reyes, "Unsupervised unmixing of hyperspectral imagery using the constrained positive matrix factorization." In **Proceedings of SPIE: Independent Component Analyses, Wavelets, Unsupervised Smart Sensors, and Neural Networks IV**, Vol. 6247, April 2006.
- J.M. Duarte-Carvajalino, M. Velez-Reyes, and P. Castillo, "Scale-space in hyperspectral image analysis." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XII**, Vol. 6233, May 2006.
- A. Umaña-Díaz and M. Velez-Reyes, "Restoration of hyperspectral imagery." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XII**, Vol. 6233, May 2006.
- V. Ortiz-Rivera, M. Velez-Reyes, B. Roysam, "Change Detection in Hyperspectral Imagery using Temporal Principal Components." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XII**, Vol. 6233, May 2006.
- Y.M. Masalmah and M. Velez-Reyes, "A comparison of algorithms to compute the positive matrix factorization and their application to unsupervised unmixing." In **Proceedings of SPIE: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XII**, Vol. 6233, May 2006.
- J.G. Gómez-Gualdrón and M.Velez-Reyes. "A multi-agent approach for a self-reconfigurable electric power distribution system." In **Proceedings of SPIE: Intelligent Computing: Theory and Applications IV**, Vol. 6229, May 2006.
- A. Castrodad-Carrau, M. Velez-Reyes, and J.A. Goodman, "An algorithm to retrieve coastal water optical properties, bathymetry, and bottom albedo from hyperspectral imagery." In **Proceedings of SPIE: Photonics for Port and Harbor Security II**, Vol. 6204, May 2006.
- V. Manian, L.O. Jimenez and M. Velez-Reyes, "A comparison of statistical and multiresolution texture features for improving hyperspectral image classification." In **Proceedings SPIE: Image and Signal Processing for Remote Sensing XI**, Vol. 5982, September 2005.
- J.M. Ortiz and M. Velez-Reyes, "The Use of Edge-Enhancing Smoothing Pre-Filters to Aid in the Detection of Oceanic Features." In **Proceeding 4<sup>th</sup> WSEAS International Conference in Electronics, Signal Processing, and Control**, Rio de Janeiro, Brazil, April 2005. pp. 146-150.



- M. Velez-Reyes and R. Rivera-Sampayo, "Gray-Box Modeling of Mechanical Loads for Electric Drive Systems using Neural Networks." In **Proceeding 4<sup>th</sup> WSEAS International Conference in Electronics, Signal Processing, and Control**, Rio de Janeiro, Brazil, April 2005. pp 151-156.
- S. Morillo-Contreras, M. Velez-Reyes, and S.D. Hunt, "A comparison of noise reduction methods for image enhancement in classification of Hyperspectral imagery." In **Proceedings of SPIE Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XI**, Vol. 5806, pp. 384-392, April 2005.
- S. Rosario-Torres and M. Velez-Reyes, "An algorithm for fully constrained abundance estimation in hyperspectral unmixing." In **Proceedings of SPIE Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XI**, Vol. 5806, pp. 711-719, April 2005.
- S. Rosario-Torres, E. Arzuaga-Cruz, M. Velez-Reyes and L.O. Jiménez-Rodríguez, "An Update on the MATLAB Hyperspectral Image Analysis Toolbox." In **Proceedings of SPIE Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XI**, Vol. 5806, pp. 743-752, April 2005.
- Y.M. Masalmah, M. Velez-Reyes, and S. Rosario-Torres, "An Algorithm for Unsupervised Unmixing of Hyperspectral Imagery using Positive Matrix Factorization." In **Proceedings of SPIE Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XI**, Proceedings of SPIE Vol. 5806, pp. 703-710, April 2005.
- V. Manian and M. Velez-Reyes, "A boosting algorithm for texture classification and object detection.", In **Proceedings SPIE: Image Understanding, Restoration and Enhancement I**, 9 pages, Vol. 5817, May 2005.
- M. Velez-Reyes and S. Rosario, "Solving Abundance Estimation in Hyperspectral Unmixing as a Least Distance Problem." In **Proceedings IEEE International Geosciences and Remote Sensing Symposium**, Alaska, September 2004. Vol. 5, pp. 3276 – 3278.
- E. Arzuaga-Cruz, L.O. Jimenez-Rodriguez, M. Velez-Reyes, D. Kaeli, E. Rodriguez-Diaz, H.T. Velazquez-Santana, A. Castrodad-Carrau, L.E. Santos-Campis, and C. Santiago. "A MATLAB Toolbox for Hyperspectral Image Analysis." In **Proceedings IEEE International Geosciences and Remote Sensing Symposium**, Alaska, September 2004. Vol. 7, pp. 4839-4842
- J.M. Ortiz-Rodríguez, A.R. Hefner, M. Velez-Reyes, M. Hernández-Mora, J. González, J.Z. Chen, Y.F. Pang, D. Boroyevich, "Lumped-Parameter Thermal Modeling of an IPEM using Thermal Component Models." In **Proceedings IEEE Workshop on Computer Applications in Power Electronics**, 15-18 August 2004, pages: 43-48.
- S. Morillo-Contreras, M. Velez-Reyes, S.D. Hunt, "Effects of Resolution Enhancement and Atmospheric Correction Pre-Processing in Classification of Hyperspectral Imager." In **Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery X**, Proceedings of SPIE Vol. 5425, April 2004.
- M. Hernández-Mora, J.E. González, and M. Velez-Reyes, "Dynamic reduced electrothermal model for integrated power electronic modules (IPEM): Part I-Thermal analysis". In **Proceedings of the ASME International Mechanical Engineering Congress**, Washington, DC, November 16 - 21, 2003.
- M. Velez-Reyes, M. Mijalkovic, A.M. Stankovic, S. Hiti, J.Nagashima, "Output Selection for Tuning of Field Oriented Controllers: Steady State Analysis." In **Proceedings of the IEEE/IAS Annual Meeting**, 12-16 October 2003, Vol. 3, pages:2012 – 2017.
- Y. Báez and M. Velez-Reyes, "Two-Stage Identification of Motor Drives using Gray Box Models." In **Proceedings of the North American Power Symposium**, Rolla, MO, October 21-22, 2003.

- 
- B. Rodríguez-Medina, L. Orama, and M. Velez-Reyes, "Arc Model Parameter Extraction Techniques using Nonlinear Least Squares." In **Proceedings of the North American Power Symposium**, Rolla, MO, October 21-22, 2003.
- J. Duarte, M. Velez-Reyes, Stefano Tarantola, Fernando Gilbes, and Roy Armstrong, "A probabilistic sensitivity analysis of water-leaving radiance to water constituents in coastal shallow waters." In **Ocean Remote Sensing and Imaging**, Proceedings of SPIE Vol. 5155, August 2003.
- Y.M. Masalmah and M. Velez-Reyes, "Clutter Modeling Modeling for Subsurface Detection in Hyperspectral Imagery using Markov Random Fields". In **Imaging Spectrometry X**, Proceedings of SPIE Vol. 5159, August 2003.
- A. Umaña and M. Velez-Reyes, "Determining the dimensionality of hyperspectral imagery for unsupervised band selection." In **Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery IX**, Proceedings of SPIE Vol. 5093, April 2003.
- M. Velez-Reyes, A. Puetz, R.B. Lockwood, S. Rosario, "Iterative algorithms for unmixing of hyperspectral imagery." In **Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery IX**, Proceedings of SPIE Vol. 5093, April 2003.
- E. Arzuaga-Cruz, L.O. Jimenez-Rodriguez, M. Velez-Reyes, "Feature extraction and band subset selection techniques based on relative entropy criteria for hyperspectral data analysis." In **Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery IX**, Proceedings of SPIE Vol. 5093, April 2003.
- E. Rodriguez-Diaz, L.O. Jimenez-Rodriguez, M. Velez-Reyes, "Subsurface detection of coral reefs in shallow waters using hyperspectral data." In **Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery IX**, Proceedings of SPIE Vol. 5093, April 2003.
- M. Velez-Reyes, R. Rivera, and Y. Báez, "Gray-Box Modeling of Mechanical Loads for Electric Drive Systems using Neural Networks." In **Proceedings Latin-American Congress on Automatic Control (CLCA 2002)**, Guadalajara, Mexico, December 2002.
- E. O'Neill-Carrillo, T. Martinez-Navedo, J. Ramos, M. Velez-Reyes, E. Marrero, "Undergraduate research and new laboratory practices in power engineering." In **Proceedings of 32<sup>nd</sup> Frontiers in Education Conference**, 6-9 Nov. 2002, Vol. 1, pages:T1D-1 - T1D-6.
- J. Rodríguez, Z. Parrilla, M. Veléz-Reyes, University of Puerto Rico at Mayagüez, PR; A. Hefner, D. Berning, National Institute of Standards and Technology, USA; J. Reichl, J. Lai, Virginia Polytechnic Institute and State University, "Thermal Component Models for Electro Thermal Analysis of Multichip Power Modules." In **Proceedings of the 37<sup>th</sup> IEEE Industry Applications Society Annual Meeting**, 13-18 October 2002, Vol. 1, pages:234 – 241.
- L. Jáurregui and M. Velez-Reyes, "Conditioning Analysis of Parameter Estimation in a Synchronous Generator." In **Proceedings of the 34th Annual North American Power Symposium**, October 14-15, 2002.
- L. O. Jiménez-Rodriguez, E. Rodriguez-Diaz, M. Velez-Reyes, C. A. DiMarzio, "Automatic coral reef detection by the application of Tikhonov regularization to inverse modeling in hyperspectral images." In **Ocean Remote Sensing and Applications**, Proceedings of SPIE Vol. 4892, May 2003, pages: 398-407.
- L. O. Jimenez-Rodriguez, M. Velez-Reyes, E. Arzuaga, "Unsupervised feature extraction techniques for hyperspectral data and its effects on unsupervised classification." In **Image and Signal Processing for Remote Sensing VIII**, Proceedings of SPIE Vol. 4885, September 2002.
- M. Velez-Reyes and J.C. Tafur, "An Adaptive Feedback Linearizing Controller for a Shunt DC Motor." In **Proceedings IEEE Workshop on Computer Applications in Power Electronics**, June 2002, pages: 144 - 151.

- E. Tranter and M. Velez-Reyes, "Distance Learning Programs at the Center for Power Electronics Systems." In **Proceedings IEEE Workshop on Computer Applications in Power Electronics**, June 2002, pages: 122 - 124.
- Z. Parrilla, J.J. Rodríguez, A. Hefner and M. Velez-Reyes, "A Computer-Based Testbed for Validation of Electrothermal Models for Power Electronic Modules." In **Proceedings IEEE Workshop on Computer Applications in Power Electronics**, June 2002, pages: 42 - 46.
- M. Velez-Reyes, D.M. Linares, L.O. Jimenez-Rodriguez, "Two-stage band selection algorithm for hyperspectral imagery." In **Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery VIII**, Proceedings of SPIE Vol. 4725, April 2002.
- M. Velez-Reyes , W.L. Fung, and J.E. Ramos-Torres, "Developing Robust Algorithms for Speed and Parameter Estimation in Induction Machines." In **Proceedings of the IEEE Conference on Decision and Control**, 3-7 December 2001, Orlando, Florida, Vol. 3, pages:2223-2228.
- V. Petrovic, A. M. Stankovic, and M. Velez-Reyes, "Sensitivity analysis of injection--based position estimation in PM synchronous motors." In **Proceedings of the 4th IEEE International Conference on Power Electronics and Drive Systems**, Vol. 2, 22-25 Oct. 2001, Bali, Page(s):738 - 742
- E. O'Neill-Carrillo, A. Irizarry-Rivera, M. Velez-Reyes "Curriculum Improvements in Power Engineering." In **Proceedings of 31<sup>st</sup> Frontiers in Education Conference**, 10-12 Oct, Reno Nevada, 2001, Vol. 1, pages:T4A - 15-20.
- M. Velez-Reyes and D.M. Linares, "Comparison of Principal-Component-Based Band Selection Methods for Hyperspectral Imagery." In **Image and Signal Processing for Remote Sensing VII**, Proceedings of SPIE, Vol. 4541, September 2001.
- L.O. Jiménez-Rodríguez, M. Velez-Reyes, J. Rivera-Medina, and H. Velásquez, "Unsupervised Decision Fusion for Hyperspectral Data." In **Image and Signal Processing for Remote Sensing VII**, Proceedings of SPIE, Vol. 4541, September 2001.
- R. Rivera and M. Velez-Reyes, "Gray-Box Modeling of Electric Drive Systems using Neural Networks." In **Proceedings of the IEEE Conference on Control Applications**, September 5-7, 2001, Mexico, pages: 146 - 151.
- C. Rentel-Gómez and M. Velez-Reyes, "Decoupled Control of Temperature and Relative Humidity using a Variable-Air-Volume HVAC System and Non-interacting Control." In **Proceedings of the IEEE Conference on Control Applications**, September 5-7, 2001, Mexico, pages: 1147 - 1151.
- L. Jáurregui and M. Velez-Reyes, "Conditioning Analysis of Parameter Estimation in a Synchronous Generator." In **Proceedings of the IEEE International Electric Machines and Drives Conference**, Cambridge, MA, June 2001, pages: 285 - 291.
- J. Ramos and M. Velez-Reyes, "Comparison of Parameter Conditioning in Output Error and Equation Error Approaches for Speed and Parameter Estimation in Induction Machines". In **Proceedings of the IEEE International Electric Machines and Drives Conference**, Cambridge, MA, June 2001, pages: 108-113.
- S. D. Hunt and M. Velez-Reyes, "Band selection for lossless image compression." In S.S. Shen and M.R. Descour, editors, **Algorithms for Multispectral, Hyperspectral, and Ultraspectral Imagery VII**, Proceedings of SPIE Vol. 4381, April 2001.
- M. Velez-Reyes and E. Tranter, "Center for Power Electronic Systems: Education and Outreach Programs." In Proceedings of **E=TeM2 – International Conference of the use of Information Technology in Power Engineering Education**. Sponsored by EPE, Brussels, Belgium, March 2001.

- E. Rodriguez-Diaz, M. Velez-Reyes, Univ. of Puerto Rico/Mayaguez, R. K. Chin, C. A. DiMarzio, Northeastern Univ., "Wavelength selection for imaging hemoglobin in skin." In **Subsurface Sensing Technologies and Applications II**, Proceedings of SPIE, Vol. 4129, San Diego California, July 2000.
- M. Velez-Reyes, L.O. Jiménez, D.M. Linares, and H.T. Velazquez, "Comparison of matrix factorization algorithms for band selection in hyperspectral imagery." In **Algorithms for Multispectral, Hyperspectral and Ultraspectral Imagery VI**, Proceedings of SPIE, Vol. 4049, Orlando Florida, April 2000.
- M. Velez-Reyes, M. Pérez-Quñones, and J.L. Cruz-Rivera, "The Industrial Affiliates Program at the University of Puerto Rico Mayagüez." In **Proceedings of Frontier in Education Conference**, in San Juan, P.R, November 10-13, 1999, Vol. 3, pages:13C5/13 - 13C5/18.
- L. O. Jiménez, M. Velez-Reyes, Y. Chaar, F. Fontan, and C. Santiago, "Partially Supervised Detection Using Band Subset Selection in Hyperspectral Data." In **Algorithms for Multispectral and Hyperspectral Imagery V**, Proceedings of SPIE, Vol. 3717, Orlando Florida, April 1999.
- F. González and M.Velez-Reyes, "Algorithms for Nonlinear Retrieval Problems in Atmospheric Remote Sensing using Regularization Methods." In **Proceedings of the Conference on Remote Sensing of Clouds and Atmosphere II**, EUROPTO Series Vol. 3495, 1998.
- M. Velez-Reyes and R. Castro Anaya, "Sensitivity and Conditioning Issues in Speed Sensorless Control of Induction Motors." In **Proceedings of the IEEE Industry Applications Society Annual Meeting**, St. Louis. MO., October 12-16, 1998, Vol. 1, pages: 640 - 647.
- W. Johnson, L. Morell, R. Vásquez, R. Fernández, M. Velez-Reyes, J.L. Zayas-Castro, and J. Bujosa, "Industry-Academia Partnership: A Success Story of the University of Puerto Rico at Mayagüez and Raytheon Corporation." In **Proceedings of the International Conference on Engineering Education**, Rio de Janeiro, Brazil, August 1998.
- M. Velez-Reyes, "Atmospheric Retrievals using Regularization Methods." In **Proceedings IEEE International Geosciences and Remote Sensing Symposium**, July 6-10, Seattle, WA, 1998, Vol. 3, pages: 1403 - 1407.
- M. Velez-Reyes and L. O. Jiménez, "Subset Selection Analysis for the Reduction of Hyperspectral Imagery." In **Proceedings IEEE International Geosciences and Remote Sensing Symposium**, July 6-10, Seattle, WA, 1998, Vol. 3, pages: 1577 - 1581.
- M. Velez-Reyes and J. Joiner, "Analysis of Information Content in High Resolution Sounders using Subset Selection Methods." In **Proceedings of the 1998 NASA URC Technical Conference on Aeronautics, Space Science and Technology, Earth System Sciences, Global Hydrology, and Education**. Held in Huntsville AL during February 22-26, 1998.
- F. Pagán, G. Fernández, M. Velez-Reyes, and L. O. Jiménez, "Dimension Reduction in AVIRIS and LANDSAT Images using Subset Selection Methods." In **Proceedings of the 1998 NASA URC Technical Conference on Aeronautics, Space Science and Technology, Earth System Sciences, Global Hydrology, and Education**. Held in Huntsville AL during February 22-26, 1998.
- M. Velez-Reyes, L. O. Jiménez, F. Pagán, and G. Fernández, "Subset Selection for the Analysis of Hyperspectral Data." In **Proceedings of the 1997 International Symposium on Spectral Sensing**. Held in San Diego CA during December 13 to 19, 1997.
- M. Velez-Reyes and R. Galarza-Galarza, "Regularization of Atmospheric Temperature Retrieval Problems." In M. Jamshidi, et.al. editors, **NASA University Research Centers Technical Advances in Education, Aeronautics, Space, Autonomy, Earth and Environment**, NASA ACE Center Series, Vol. 1, 1997.
- F.O. Gonzalez and M.Velez-Reyes, "Atmospheric Correction of Satellite Imagery using Modtran 3.5 Code." In M. Jamshidi, et.al. editors, **NASA University Research Centers Technical Advances in**

**Education, Aeronautics, Space, Autonomy, Earth and Environment**, NASA ACE Center Series, Vol. 1, 1997.

M. Velez-Reyes, "Decomposed Algorithms for Parameter Estimation." In **Zeitschrift für Angewandte Mathematik und Mechanik**. ICIAM/GAMM'95 Issue 3: Applied Stochastics and Optimization, O. Mahrenholtz, K. Marti, and R. Mennicken, eds., Akademie-Verlag, Berlin, 1996, pages: 577-578.

M. Velez-Reyes, "A Nonlinear Subset Selection Method for Dynamic System Identification." In **Zeitschrift für Angewandte Mathematik und Mechanik**. ICIAM/GAMM'95 Issue 3: Applied Stochastics and Optimization, O. Mahrenholtz, K. Marti, and R. Mennicken, eds., Akademie-Verlag, Berlin, 1996, pages: 575-576.

M. Velez-Reyes and G.C. Verghese, "Subset Selection in Identification, and Application to Speed and Parameter Estimation for Induction Machines", In **Proceedings of the 4th IEEE Conference on Control Applications**, Albany NY, September 28-29, 1995, pages: 991 - 997.

B. Argüello and M. Velez-Reyes, "Nonlinear Control of a HVAC System with Thermal Load Estimation." In **Proceedings of the 4th IEEE Conference on Control Applications**, Albany NY, September 28-29, 1995, pages: 33 - 39.

G. Beauchamp and M. Velez-Reyes, "A Process Instrumentation and Control Laboratory", In **Proceedings of the 1995 ASEE Annual Conference**, Vol. 1, pp. 675-679, Anaheim, CA, June 1995.

M. Velez-Reyes and G.C. Verghese, "Robust Decomposed Algorithms for Speed and Parameter Estimation for Induction Machines". In **Proceedings of the IMACS-TC1 4th International Conference on Computational Aspects of Electromechanical Energy Converters**, Montreal, Canada, July 1993.

M. Velez-Reyes and G.C. Verghese, "Decomposed Algorithms for Speed and Parameter Estimation for Induction Machines". In **Nonlinear Control Systems Design 1992: Selected papers from the 2nd IFAC Symposium**, Bordeaux, France, 24-26 June 1992, Edited by M. Fliess, IFAC Symposium Series No. 7, Pergamon Press, 1993.

K. Minami, M. Velez-Reyes, D. Elten, G.C. Verghese, and D. Filbert. "Multi-stage Speed and Parameter Estimation for Induction Machines". In **Proceedings of the IEEE Power Electronics Specialist Conference**, Boston, MA, June 1991, pages: 596 - 604.

M. Velez-Reyes, K. Minami, and G.C. Verghese, "Recursive Speed and Parameter Estimation for Induction Machines". In **Proceedings of the IEEE Industry Applications Society Annual Meeting**, San Diego, CA, October 1989, Vol. 1, pages: 607 - 611.

M. Velez-Reyes and G.C. Verghese, "Developing Reduced Order Electrical Machine Models Using Participation Factors". In R. Vichnevetsky, editor, **IMACS Annals of Computing and Applied Mathematics**, Vol. 3, J.C. Baltzer AG Scientific Publishing Company, 1989, pages: 797-802.

#### **Other Publications:**

Hernández-Rivera, S.P. Castro-Suarez, J.R., Pacheco-Londoño, L.C., Rey-Villamizar, N., Vélez-Reyes, M. and Diem, M., MID-Infrared Vibrational Spectroscopy Standoff Detection of Highly Energetic Materials: New Developments. In **Spectroscopy Magazine Defense and Security Supplement**, April, 2011.

C.R. Bostater, Jr., X. Neyt, S.P. Mertikas, M. Velez-Reyes, Editors, **Proceedings of SPIE: Remote Sensing of the Ocean, Sea Ice, and Large Water Regions 2006-2010**, Vols. 6360, 6743, 7105, 7825.

A. Irizarry-Rivera, M. Velez-Reyes, E. O'Neill-Carrillo, "Mantenimiento de Generadores Sincrónicos," **Tecnomundo**. (In Spanish.) Official publication of the Puerto Rican Professional Engineers Association, July 2004.

M. Velez-Reyes, Editor, **Proceedings IEEE Workshop on Computer Applications in Power Electronics**, June 2002.

S. Cruz-Pol, Velez-Reyes, M., Hunt, S., Parsiani, H., Colom-Ustaris, J., Jimenez, L.O., and Vasquez, R., "The Laboratory for Applied Remote Sensing and Image Processing at University of Puerto Rico at Mayagüez", **IEEE Geoscience and Remote Sensing Newsletter**, January 2002.

#### **Invited Talks and Presentations:**

M. Velez-Reyes (Invited), "Benthic Habitat Mapping using Hyperspectral Remote Sensing." University of Florida Department of Computer and Information Sciences and Engineering **Faculty Seminar Series**, February 8, 2011.

M. Velez-Reyes (Invited), "Benthic Habitat Mapping using Hyperspectral Remote Sensing." **Ocean and Resources Engineering Seminar**, University of Hawaii, Manoa, January 12, 2011.

M. Velez-Reyes (Invited), "Hyperspectral Image Exploitation for Ship Detection", At the **Maritime Domain Awareness: Ports and Offshore Colloquium**, Colegio de Ingeniero y Agrimensores de Puerto Rico, San Juan, PR, Jan. 20, 2010.

M. Velez-Reyes (Invited), "Experiences in Working with Process and Product Oriented NSF Engineering Research Centers." **2009 NSF ERC Annual Meeting**, Bethesda, MD, Dec. 2-4, 2009.

M. Velez-Reyes, (Invited), "Hyperspectral Image Exploitation for Ship Detection." **2008 Asia-Pacific Homeland Security Summit & Exposition**, Honolulu, HI, Oct. 8-10, 2008.

M. Velez-Reyes (Invited), "Advanced Algorithms for Unmixing of Hyperspectral Imagery." **2008 International Symposium on Spectral Sensing Research**, Hoboken, New Jersey, June 23, 2008.

M. Velez-Reyes (Invited), "Advances in Hyperspectral Image Processing," **First European School on Hyperspectral Imaging. Sponsored by the Hyperspectral Imaging Network (HYPER-I-NET) of the European Union**, Caceres, Spain, October 29-31, 2007.

M. Velez-Reyes (Invited), "PECASE at a Non-PhD Granting Institution." **NSF CAREER Mentoring and Networking Workshop**, National Science Foundation, Arlington, VA, January 21-23, 2004.

M. Velez-Reyes and A. Stankovic (Invited), "Challenges in Modeling and Identification of Power Systems: Dealing with Ill Conditioning, High Dimensionality, and other Challenges." **NSF Workshop on Applied Mathematics for Deregulated Electric Power Systems: Optimization, Control, and Computational Intelligence**, Alexandria, VA, November 3-4, 2003

M. Velez-Reyes and D. Borojevic (Invited). "Integrated Modeling for Power Electronics Packaging." Presented at **Modern Trends in Electronic Packaging**, University of Puerto Rico Mayagüez Campus, Jan. 31-Feb. 1, 2001.

M. Velez-Reyes (Invited). "Parameter Estimation for Ill-Conditioned Systems." Presented at **United Technologies Research Center**, in Hartford, Connecticut, on February 18, 2000.

M. Velez-Reyes (Invited). "Parameter Estimation for Ill-Conditioned Systems." Presented at **Otis Elevators Drives Research Center**, in Fairmont, Connecticut, on February 17, 2000.

M. Velez-Reyes (Invited). "Center for Power Electronic Systems." Presented at **Eaton Corporation Innovation Center**, in Milwaukee, Wisconsin, on November, 1999.

M. Velez-Reyes (Invited), "Industry Affiliates Program & Raytheon Partnership." Presented during the panel **A Decade of Partnership: University of Puerto Rico Mayagüez and Raytheon** at the **Society of Hispanic and Professional Engineers 20<sup>th</sup> Annual National Technical and Career Conference**, February 4-7, Orlando FL, 1998.

#### **Research Grants:**

PI in **Hyperspectral detection limits of skin signatures over natural vegetation backgrounds**, ARMY Engineering Research and Development Center, \$50k, Oct. 1, 2011 to May 31, 2012.

Investigator in **NOAA Cooperative Remote Sensing Science and Technology Center**. Lead institution CCNY. UPRM Component \$1.25M. Sept. 1, 2011 to June 30, 2012.

Investigator (former PI), **PR NASA EPSCoR: Hyperspectral Imaging for Biodiversity Assessment of Coastal and Terrestrial Ecosystems**, 2009 NASA Experimental Program to Stimulate Competitive Research, \$1.5M, (\$750k-NASA, \$750k UPRM), September 1, 2009-August 31, 2012.

Co-I, **Awareness and Localization of Explosives-Related Threats**, DHS Centers of Excellence Program. A consortium between Northeastern University (lead institution), Boston University, Rensselaer Polytechnic Institute, Texas Tech, and the University of Puerto Rico Mayagüez Campus. \$800k (UPRM Component), July 1, 2008 to June 30, 2012.

Co-I, **National Center for Maritime, Island, and Extreme Environment Security (CIMES)**, DHS Centers of Excellence Program, \$1M (UPRM Component), July 1, 2008 to June 30, 2012.

Investigator in **A Biomedical Imaging Acceleration Testbed** (PI David Kaeli, Northeastern University, Co-PI Nayda Santiago UPRM), NSF EEC Innovation Awards. \$90k (UPRM Component), December 15, 2009 to November 20, 2012.

Collaborator in **Intelligent Diagnostic for Aging Civil Infrastructure**, NSF IGERT, (PI Sara Wadia-Fascetti NEU, and Co-PI Ingrid Padilla, UPRM)\$ 600,000, September 1, 2007 to August 31, 2012.

PI in **A Geometrical Approach for the Analysis of Hyperspectral Imagery**, National Geospatial Intelligence Agency, \$140,000. August 1, 2006 to December 31, 2008.

PI in **Improving Algorithms for Target Detection in Hyperspectral Infrared Imagery**, 2005 DoD Instrumentation and Research Support Program for Hispanic-Serving Institutions, \$485,057. November 15, 2005 to November 14, 2009.

Co-PI in **Failure Probabilities for Risk-Based Maintenance and Parameter Estimation of Synchronous Machines** (Agustin Irizarry, PI), National Science Foundation, Industry University Cooperative Research Centers, \$99,444.

Co-PI in **Intelligent Power Routers for Distributed Coordination in Electric Energy Processing Networks** (Agustin Irizarry, PI), NSF/ONR Partnership in Electric Power Networks Efficiency and Security (EPNES) Program, October 1, 2002 to August 31, 2006, \$499,849.

Co-PI in **Acquisition of Instrumentation for the Electric Energy Processing Systems Laboratory at UPRM**, (Dr. Efrain O'Neill, PI) National Science Foundation Major Research Instrumentation Program, January 1, 2002 to December 2003, \$180,000.

Co-PI in **Integrating Laboratory Practices and Undergraduate Research to the Power Engineering Curriculum** (Dr. Efrain O'Neill, PI) National Science Foundation CCLI Program, \$160,000, May 1, 2001 to April 2003.

Co-PI in **Output Selection for Tuning of Field Oriented Controllers** (A. Stankovic, NEU, PI). Subcontract to Northeastern University. Sponsor: General Motors Company Advanced Vehicles Division. August 2001 to May 2002, \$11,581.

Co-PI in **A Study of Satellite Monitoring of Gas Emissions for Earthquake Prediction** (M. Silevitch, NEU, PI). Subcontract to Northeastern University. Sponsoring Agency: National Reconnaissance Office, February-December 2001. \$35,000.

PI in **Center for Subsurface Sensing and Imaging Systems** (M. Silevitch, NEU, PI). A consortium between Northeastern University (lead institution), Boston University, Rensselaer Polytechnic Institute, and the University of Puerto Rico Mayagüez Campus. NSF Engineering Research Centers Program. August 2000 to February 2012. UPRM Component \$7.5M

PI in **Iterative Algorithms for Unmixing of Hyperspectral Imagery**, Air Force Research Laboratories, November 1, 2002 – May 31, 2003, \$10,000.

Campus Director in **Center for Power Electronic Systems** (F.C. Lee, VT, PI). A consortium between Virginia Institute of Technology and State University (Lead Institution), University of Wisconsin,

Renselear Politecnic Institute, North Carolina A&T, and the University of Puerto Rico Mayagüez Campus. NSF Engineering Research Centers Program. August 1998 to January 2009. UPRM Component \$2.0M

PI in **PECASE: Parameter Estimation for Ill-Conditioned Systems with Application to Electric Drives and Power Systems**. NSF PECASE Program. 1 June 1997 to 31 May de 2004. Amount: from NSF \$500,000, UPR Matching \$177,500.

Co-PI and Project Director from August 2003-September 2006, **Tropical Center for Earth and Space Studies** and PI for the **Information Processing and Extraction Group**, NASA University Research Centers Program, October 2000 to September 2006. \$6.0M.

Co-PI in **Unsupervised Classification System for Hyperspectral Data Analysis** (Dr. Luis Jiménez, PI). DEPSCoR Program. \$330,000 October 1997 to September 2000.

Co-PI in **Clustering and Subset Selection Research for Hyperspectral Data Analysis** (Dr. Luis Jiménez, PI). ARMY Corp of Engineers Topographic Engineering Center. \$314,862 October 1997 to September 2000.

PI for the **Advanced Automated Image Analysis Project** in the **Tropical Center for Earth and Space Studies**, with Prof. Rafael Fernández-Seín (Project director), NASA University Research Centers Program, \$6.5M, July 1995 to June 2000.

Investigator in **The Manufacturing Engineering Education Partnership**, (Dr. J.L. Zayas PI), ARPA Technology Reinvestment Program, \$659,000, October 1993 to May 1995.

Investigator in **Integrated Flash Flood Forecasting Model**, (Prof. Rafael Fernández Seín PI), MRCE National Science Foundation, Washington, DC, \$186,868, October 1993 to September 1995.

PI. in **Intelligent Energy Management Systems for Industrial and Commercial Buildings in Puerto Rico**, (Dr. David Serrano (Co-PI.) and Dr. Arshad Khan (Co-PI)), INDUNIV Research Center, San Juan, PR, \$32,520.00, July 1993 to June 1994.

PI in **Energy Management Systems for Commercial and Industrial Buildings**, Research Initiation Grant from P.R. EPSCoR Program, \$4,000.00, June-July 1993.

#### **Postdoctoral Fellows**

Dr. James A. Goodman, **Coastal Remote Sensing using Hyperspectral Imaging**.

Dr. Vidya Manian, **Classification and Target Detection for Hyperspectral Imagery using Support Vector Machines**.

#### **PhD Theses in Progress:**

Maria C. Torres-Maldroneo, **Unsupervised Unmixing Analysis based on Multiscale Segmentation**. Ph.D. Thesis in Computing and Information Sciences and Engineering. In progress.

Miguel Goenaga, **Adaptive Unmixing for Hyperspectral Imaging**, Ph.D. Thesis in Computing and Information Sciences and Engineering. In progress.

#### **PhD Theses Supervised:**

Maidor Marin-McGee, **Structure Enhancement In Hyperspectral Imagery Using Hybrid Nonlinear Diffusion**, Ph.D. Thesis in Computing and Information Sciences and Engineering. June 2012.

Julio M. Duarte, **Object-Based Segmentation in Hyperspectral Imagery**, Ph.D. Thesis in Computing and Information Sciences and Engineering. December 2007.

Yahya Masalmah, **Unsupervised Unmixing of Hyperspectral Imagery**, Ph.D. Thesis in Computing and Information Sciences and Engineering. July 2007.



### **Master Theses and Projects Supervised:**

Rejan Karmacharya, **Design of a Web-based Data Management Systems for SeaBED**, Master of Engineering Project in Computer Engineering. November 2011.

Blas Trigueros, **Implementation of Target Detection Algorithms in Hyperspectral Images using GPUs**, Master of Science Thesis in Computer Engineering. July 2011.

Nicolas Rey-Villamizar, **Using k-MST, k-EC and k-VC Neighbor Graph Construction Methods with Spatial Coherent Distance for Manifold Learning in Hyperspectral Image Processing**, Master of Science Thesis in Electrical Engineering. December 2010.

Cristina Cruz, **Study of Equation-Free Multiscale Simulation for Power Electronic Systems**, Master of Engineering Project in Electrical Engineering. December 2010.

Andrea Santos-García, **Understanding the Effect of Spatial Resolution on Unmixing Algorithms for Hyperspectral Imagery**, Master of Science Thesis in Electrical Engineering, August 2010.

Carolina Peña-Ortega, **Evaluation of Different Structured Models for Target Detection in Hyperspectral Imagery**, Master of Science Thesis in Electrical Engineering, June 2010.

Leidy P. Dorado Muñoz, **A Vector Sift Operator for Interest Point Detection in Vector Imagery and its Application to Multispectral and Hyperspectral Imagery**, Master of Science Thesis in Electrical Engineering, December 2009.

Julia P. Certuche Alzate, **A Reconfiguration Algorithm for a DC Zonal Electric Distribution System Based on Graph-Theory Methods**, Master of Science Thesis in Electrical Engineering, May 2009.

Maria C. Torres, **Hyperspectral Coastal Image Analysis Toolbox**, Master of Engineering Project in Electrical Engineering, December 2008.

Wilma E. Pabón, **Soft-Classification of Hyperspectral Imagery**, Master of Science Thesis in Electrical Engineering, September 2008.

Maria E. Torres, **Hierarchical Control of Hybrid Power Systems**, Master of Science Thesis in Electrical Engineering, December 2007.

E. Veronica Morales, **Multispectral Image Restoration**, Master of Engineering Project in Electrical Engineering, December 2007.

Janeth Gomez, **A Multi-Agent System Approach for a Self-Reconfigurable Electric Power Distribution System**, Master of Science Thesis in Computer Engineering, December 2006.

Christian Nieves, **SeaWEB a Portal for the CenSSIS SeaBED Testbed**, Master of Engineering Project in Computer Engineering, July 2006.

Carlos Niño, **Recursive Identification of a Synchronous Generator**, Master of Science Thesis in Electrical Engineering, June 2006.

Angel Aquino, **Gray Box Modeling of Electric Drives using Radial Basis Functions: An Experimental Case**, Master of Science Thesis in Electrical Engineering, May 2006.

Jorge L. Huaman-Qquellon, **A Variable Dimension Gauss-Newton Method for Ill-Conditioned Parameter Estimation with Application to a Synchronous Generator**, Master of Science Thesis in Electrical Engineering, December 2005.

Alexey Castrodad, **Retrieval of Bottom Properties in Shallow Waters from Hyperspectral Imagery**, Master of Science Thesis in Electrical Engineering, December 2005.

Alma Estremera, **Designing a Protection System for a DC Zonal Distribution System Using a Supervisory Event Driven Controller**, Master of Science Thesis in Electrical Engineering, December 2005.

- Vanessa Ortiz, **Hyperspectral Change Detection using Temporal Principal Components Analysis**, Master of Science Thesis in Electrical Engineering, In May 2005.
- Shirley Morrillo, **Effects of Resolution Enhancement in Classification of Hyperspectral Imagery**, Master of Science Thesis in Computer Engineering, In December 2004.
- José J. Rodríguez, **Electrothermal Simulation of Integrated Power Electronic Modules**, Master of Science Thesis in Electrical Engineering, December 2004.
- Michelle Barreto, **Estimation of water inherent optical properties using hyperspectral imagery**, Masters of Engineering Project , July 2004.
- Jose M. Ortiz, **Electrothermal Modeling of Power Electronic Modules**, Master of Science Thesis in Electrical Engineering, May 2004.
- Samuel Rosario, **Iterative Algorithms for Unmixing of Hyperspectral Imagery**, Master of Science Thesis in Computer Engineering, May 2004.
- Yamilka Baez, **Gray Box Modeling of Electric Drives**, Master of Science Thesis in Electrical Engineering, December 2003.
- Julio M. Duarte, **Sensitivity analysis of the effect of the water column on remote sensing reflectance in shallow waters case**, Master of Science Thesis in Electrical Engineering, June 2003.
- Alejandra Umaña, **Determining the dimensionality of hyperspectral images** , Master of Science Thesis in Computer Engineering, June 2003.
- Yahya Masalmah, **Statistical Modeling of Clutter in Hyperspectral Data using Gauss-Markov Random Fields**, Master of Science Thesis in Computer Engineering, June 2002.
- Roberto Rivera Sampayo, **Gray-box Modeling of Electrical Machinery**, Master of Science Thesis in Electrical Engineering, December 2001.
- Wee Liam Fung Ng, **Implementation of a Sensorless Induction Motor Drive**. Master of Science Thesis in Electrical Engineering, December 2001.
- Lida Jauregui, **Overcomming Ill-Conditioning in Parameter Estimation with Application to Synchronous Generator**. Master of Science Thesis in Electrical Engineering, July 2001.
- José Ramos, **Sensitivity Analysis of Speed and Parameter Estimation for Induction Motors**, Master of Science Thesis in Electrical Engineering, May 2001.
- Milagros Linares, **Subset Selection for the Reduction of Hyperspectral Imagery**. Master of Science Thesis in Computer Engineering, May 2001.
- Miguel Lacouture, **Implementation of Algorithms for Subset Selection in Hyperspectral Imagery**. Master of Engineering Project in Computer Engineering , December 2000.
- Edgardo Desardén, **Control of a Centrifuge Machine**, Master of Engineering Project in Electrical Engineering , July 1998.
- Fabian González, **Algorithms for Atmospheric Retrievals using Regularization Methods**, Master of Science Thesis in Electrical Engineering, May 1998.
- Jose M. Ortiz, **Detection of Oceanic Features in Thermal Imagery**, Master of Science Thesis in Electrical Engineering, May 1998.
- José L. Rodríguez-Granell, **Detection of Data Breaks using Nonlinear Smoothing Algorithms**, Master of Engineering Project in Electrical Engineering , May 1998.
- Rogelio Castro, **Adaptive Speed Control of an Induction Motor without a Speed Sensor**, Master of Science Thesis in Electrical Engineering, May 1997.

Carlos Rentel, **Nonlinear Decoupling of Temperature and Relative Humidity for a Heating Ventilating and Air Conditioning System**, Master of Science Thesis in Electrical Engineering, December 1996.

Elvyn Rodríguez, **Decoupled Control of a Separately Excited DC Motor**, Master of Science Thesis in Electrical Engineering, May 1996.

Julio Tafur, **Adaptive Output Feedback Linearizing Speed Control of a Shunt DC Motor**, Master of Science Thesis in Electrical Engineering, December 1995.

Betzaida Argüello, **Nonlinear Control of a HVAC System with Thermal Load Estimation**, Master of Science Thesis in Electrical Engineering, December 1994.

Samuel X. Seguí, **Adaptive Speed Control of a DC Motor without Rotational Transducers**, Master of Science Thesis in Electrical Engineering, May 1994.

### Teaching

INEL 3105 Analysis of Electrical Systems I

INEL 4102 Analysis of Electrical Systems II

INEL 4095 Signals and Systems

INEL 4505 Introduction to Control Systems

INEL 5309 Digital Signal Processing

INEL 5355 Introduction to Subsurface Sensing and Imaging.

INEL 5505 Introduction to Linear Systems

INEL 6000 Introduction to Nonlinear Control

INEL 6001 Feedback Control Systems I

INEL 6007 Introduction to Remote Sensing

INEL 6047 Advanced Linear Systems

INEL 6078 Estimation, Detection and Stochastic Processes

INEL 6076 Adaptive and Optimal Estimation

### University Service:

**Coordinator, Proposal to Establish a PhD program in Electrical Engineering at UPRM.** (2002-2012). Leading efforts to establish a PhD in EE. The proposal is pending approval of the UPR Board of Trustees.

**Coordinator, Graduate Program, Electrical and Computer Engineering Department.** (Aug 1998-June 2012).

**Coordinator, Electrical Engineering Academic Committee,** (September 2010-June 2012). Leading efforts for a curricular revision of the BSEE program.

**Advisor, UPRM Student Chapter of SPIE,** (2009-June 2012).

**Coordinator, Communications and Signal Processing Committee,** (2008-2010).

**Member, Graduate Committee of the PhD Program in Computing and Information Sciences and Engineering,** (2009-2010)

**Member, UPRM Graduate Council,** (2000-2005). As part of my participation, I worked on the committees that developed the drafts of the current policies on graduate studies and assistantships at UPRM.

**Member, Board of Directors, University of Puerto Rico at Mayaguez Research and Development Center,** (2002-2007).

**Member, ECE Personnel Committee** (August 2000 – July 2006).

**Advisor, ECE Graduate Students Association** (1998-2005).

**Member, UPRM ECE Department Chair Search Committee,** 2001.

**Member, UPRM Engineering Dean Search Committee, 2000.**

**Coordinator, ECE Industrial Affiliates Program.** (August 1993- July 2000). Coordination of program activities including company recruiting, promotion, proposal evaluation, and coordination of meetings. During my tenure as director, we increased the number of participating companies from 8 to 11 and the level of funding from \$24,000 to \$55,000 per year. Student participation increased from 20 to 50 students per year.

**Coordinator, Energy Conversion Laboratory** (August 1992-May 2001). Coordination of laboratory courses InEl 4406 and InEl 4086, and development and maintenance efforts of laboratory facilities. Increased number of workstations from 18 to 20 wrote laboratory manual with partial support from the NSF. Obtained over \$400k for laboratory enhancement including a NSF CCLI in October 2000.

**Coordinator, Robotics and Automation Laboratory** (August 1994-May1997). Coordinator for the ECE Department Robotics and Automation Laboratory in S-102. Coordinate use of lab facilities as part of the course InEl 5516. Also work jointly with the Manufacturing Engineering Education Partnership lead by Penn State in getting equipment donations for over \$400,000.

**Professional Service:**

Co-Chair, SPIE Conference on Remote Sensing of the Ocean, Sea Ice, and Large Water Regions, 2006-present.

Organizing Committee Member, SPIE European Remote Sensing Symposium, 2006-present.

Program Committee Member, SPIE Conference on Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery, 2004-present.

Program Committee Member, SPIE Conference in High Performance Computing in Remote Sensing, 2010-present.

Program Evaluator for Electrical Engineering, Accreditation Board for Engineering and Technology (ABET), elected by IEEE, 2002-2008.

Chairman, 2002 IEEE Workshop on Computers in Power Electronics.

Invited Associate Editor, IEEE Transactions on Power Electronics Special Issue on Digital Control.

AdCom Member, IEEE Power Electronics Society Administrative Committee, Region 9 Representative (2000-2003).

PhD Thesis Committee Member at Northeastern University (2000-2001)

President, IEEE Puerto Rico Western Chapter April (1998-2000)

Vice-President, IEEE Puerto Rico Western Chapter from (1995 – 1998)

Reviewer for IEEE Transactions on Geoscience and Remote Sensing, Remote Sensing of the Environment, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, IEEE Transactions on Image Processing, IEEE Transactions on Power Systems, IEEE Transactions on Industry Applications, IEEE Transactions on Power Electronics, IEEE Transactions on Education, IEEE Transactions on Control Technology, International Journal of Critical Infrastructures, Engineering Applications of Artificial Intelligence, Applied Optics, and Elsevier Digital Signal Processing.

Served in several National Science Foundation and NASA Proposal Review Panels

**Current Professional Memberships and Affiliations:**

Licensed Engineer in Puerto Rico since 1996

CIAPR -- Colegio de Ingenieros y Agrimensores de Puerto Rico

IEEE – Institute for Electrical and Electronics Engineers

ASEE – American Society for Engineering Education

SPIE – The International Society for Optical Engineering

SIAM – Society for Industrial and Applied Mathematics

SACNAS – Life Member, Society for the Advancement of Chicanos and Native Americans in Science

RPSoc – Remote Sensing and Photogrammetry Society

AGU – American Geophysical Union

AAAS – American Association for the Advancement of Sciences

**Personal Information:**

U.S. Citizen.

Bilingual in English and Spanish.