Dr. Miguel Vélez-Reyes, P.E.
Professor
Electrical and Computer Engineering Department
University of Puerto Rico at Mayagüez
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Professional Preparation

Ph.D.	Massachusetts Institute of Technology, September 1992
Electrical Engineer	Massachusetts Institute of Technology, June 1988
S.M.E.E.	Massachusetts Institute of Technology, June 1988
B.S.E.E.	University of Puerto Rico Mayagüez Campus, June 1985

Appointments

Department of Electrical and Computer Engineering,
University of Puerto Rico Mayagüez Campus,   Mayagüez, P.R.
>   **Professor**   July 2000-Present
>   **Associate Professor**   July 1995-June 2000
>   **Assistant Professor**   July 1992-June 1995

United States Air Force Research Laboratories, Hanscom Air Force Base, Boston, MA, Summer 2002.
NASA Goddard Space Flight Center, Greenbelt, MD. Summer 1997.
United States Air Force Phillips Laboratory, Hanscom Air Force Base, Boston, MA, Summer 1996.

Administrative Experience

Member, Board of Directors, University of Puerto Rico at Mayaguez Research and Development Center, 2002 to 2008.

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

Associate Director and UPRM Campus Coordinator, Center for Subsurface Sensing and Imaging Systems. A National Science Foundation Engineering Research Center lead by Northeastern University. July 2003-present.

Campus Coordinator, Center for Power Electronic Systems (CPES). CPES is a NSF Engineering Research Center lead by Virginia Polytechnic Institute. UPRM's campus coordinator. 1998-2008.

Director, Tropical Center for Earth and Space Studies. A NASA University Research Center. University of Puerto Rico Mayagüez Campus. August 2003-2006.

Publications Associated with Proposed Work

J.M. Duarte-Carvajalino, G. Sapiro, M. Vélez-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.

M. Vélez-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.

J.M. Duarte-Carvajalino, P. Castillo, and M. Vélez-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. Vélez-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.

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 11th International Coral Reef Symposium**, Fort Lauderdale, FL, July 7-11, 2008.

Y. .M. Masalmah, and M. Vélez-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. Vélez-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. Vélez-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. Vélez-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.

Awards
2006 Inducted in the Puerto Rico Academy of Arts and Sciences

1997 NSF Presidential Early Career Award for Scientists and Engineers.

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

1999 IEEE Walter Fee Outstanding Young Engineer Award.

1997-98 Distinguished Professor, UPRM ECE Department.

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

Synergistic Activities
Dr. Miguel Vélez-Reyes in collaboration with Dr. Luis O. Jimenez (UPRM) and Mr. Samuel Rosario have developed the MATLAB Toolbox for Hyperspectral Image Analysis. http://www.censsis.neu.edu

Dr. Miguel Vélez-Reyes in collaboration with Dr. Luis O. Jimenez developed a software system for the ARMY Topographic Engineering Center in Ft. Belvoir, VA based on the algorithms developed as part of their work in hyperspectral image processing. This is currently used by TEC researchers in the analysis of hyperspectral data.

Dr. Vélez-Reyes is a member of the program committee for the SPIE Conference on Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery.

Dr. Vélez-Reyes is Co-Chair of the SPIE Conference on Remote Sensing of the Ocean, Sea Ice, and Large Water Regions and member of the Program Committee of the SPIE European Remote Sensing Symposium.

Program Evaluator for Electrical Engineering, Accreditation Board for Engineering and Technology (ABET), recommended by IEEE, 2003-2008.

List of Collaborators and Co-Editors
Dr. Charles Bostater, Florida Institute of Technolgy

Dr. John Crittenden, Arizona State University

Dr. Dushan Borojevic, Virginia Polythecnic Institute

Dr. Roy A. Armstrong, UPRM Marine Sciences

Dr. Hanu Singh, Woods Hole Oceanographic Institution

Dr. Fred Lee, Virginia Polythecnic Institute

Dr. Marija Ilic, Carnegie Melon University

Dr. Allen Hefner, NIST

Dr. Alexander Stankovic, Northeastern University

Dr. Michael Silevitch, Northeastern University

Dr. Badri Roysam, RPI

Dr. Ronald Lockwood, AFRL, MA.

Number of graduate students supervised in the past 5 years: 27