Andres Mendez-Vazquez

Associate Research Professor
Cinvestav Guadalajara
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Education

May 2009 Postdoctoral in Ambiance Intelligence, University of Florida

May 2008 Ph.D in Computer Engineering, University of Florida

December 2002 M.S. of Computer Sciences, University of Florida

January 1999 Bachelor of Mathematics, University of Yucatan, Mexico

Positions Held

Research Associate Professor, Cinvestav Guadalajara — August 2009-Present

Lecturer, Instituto Tecnologico y de Estudios Superiores de Monterrey (ITESM) — Fall 2014 - Present

Postdoctoral scholar, Computer and Information Science and Engineering (CISE), University of Florida — May 2008-May 2009

Graduate Research Assistant, Computer and Information Science and Engineering (CISE), University of Florida — August 2002-May 2008

Graduate Research Assistant, Computer and Information Science and Engineering (CISE), University of Florida — May 2002-August 2002

Teaching Assistant, Computer and Information Science and Engineering (CISE), University of Florida — August 2001-May 2002

Contents

Publications

Refereed Journal Articles

1. C. E. Boyain y Goytia Luna, A. Mendez-Vazquez, M. A. Ramos-Corchado: Autonomous Motion Planning for Avatars Limbs. Computacion y Sistemas 19(3) (2015)

2. R. Chavez-Alvarez, A. Chavoya and A. Mendez-Vazquez "Discovery of Possible Gene Relationships through the Application of Self-Organizing Maps to DNA Microarray Databases," *Plos One*, April 03, 2014.

3. R. Rodriguez-Avila, G. Nuez-Vega, R. Parra-Michel and A. Mendez-Vazquez, "Frequency-Selective Joint Tx/Rx I/Q Imbalance Estimation Using Golay Complementary Sequences," *IEEE Transactions on Wireless Communications* , vol.PP, no.99, pp.1,9, May 2013.

4. H. Frigui, L. Zhang, P. D. Gader, J. N. Wilson, K.C. Ho, A. Mendez-Vazquez, "An evaluation of several fusion algorithms for anti-tank landmine detection and discrimination," *Information Fusion*, Volume 13, Issue 2, April 2012, Pages 161-174.

5. J. Guadalupe Olascuaga-Cabrera, E. Lopez-Mellado, A. Mendez-Vazquez, and F. Ramos-Corchado, "A Self-Organization Algorithm for Robust Networking of Wireless Devices," *IEEE Sensor Journal*, VOL. 11, NO. 3, march 2011.

6. A. Mendez-Vazquez, P. D. Gader, J. M. Keller, and K. Chamberlin, "Minimum classification error training for Choquet integrals with applications to landmine detection," *IEEE Transactions on Fuzzy Systems*, pp 225-238, February 2008 vol. 16, num 1.

Refereed Conference Articles

1. J. Salazar-Vazquez, A. Mendez-Vazquez, "SMV: Simplex of maximal volume based upon the Gram-Schmidt process", Proceedings of SPIE Vol. 9643, 96430U (2015)

2. J. Salazar, A. Mndez-Vazquez, "FuzzyVD: An algorithm that uses Fuzzy Logic and Fuzzy Systems to estimate the number of endmembers present in a hyperspectral image," NAFIPS 2015, Redmond, Washington, August 17-19

3. F. Santos-Sanchez, A. Mendez-Vazquez, "Sentiment Analysis for e-Services," IIAI 3rd International Conference on Advanced Applied Informatics (IIAIAAI), Kitakyushu, Japan, Aug. 31 2014-Sept. 4 2014

4. A. Garcia-Garcia, A. Mendez-Vazquez, "Learning Fuzzy Rules through Ant Optimization, LASSO and Dirichlet Mixture" *IEEE World Congress on Computational Intelligence 2014* (IEEE WCCI 2014), July 6-11, Beijing International Convention Center, Beijing, China.

5. R. Orozco-Lopez, A. Mendez-Vazquez, "Fast and Robust Object Recognition Based on Reduced Shock-Graphs and Pruned-SIFT," *Mexican International Conference on Artificial Intelligence* (MICAI 2013), Pages 376-387

6. A. Sancen-Plaza "Influence Maximization for Big Data through Entropy Ranking and Min-Cut," *9th IEEE International Conference on Collaborative Computing: Networking, Applications and Worksharing* (CollaborateCom 2013), October 20-23, 2013 Austin, Texas, United States.

7. D. E. Caro-Contreras, A. Mendez-Vazquez, "Computing the Concept Lattice using Morphological Neural Networks" submitted to The Tenth International Conference on Concept Lattices and Their Applications, La Rochelle, France October 15-18, 2013

8. V. Fernandez, A. Mendez-Vazquez, R. Marco-Antonio and G. Monica, "Fuzzy model based on RGBD images to Identify Biometrical Facial Geometry," *2013 IEEE International Conference on Fuzzy Systems* (FUZZ-IEEE 2013), Hydrebad, India July 7-10, 2013.

9. M. Carlos-Mancilla, J.G. Olascuaga-Cabrera, E. Lopez-Mellado, A. Mendez-Vazquez, "Design and Implementation of a Robust Wireless Sensor Network," *International Conference on Electronics, Communications and Computers* CONIELECOMP 2013, 11-13 March 2013.

10. Olascuaga-Cabrera, J.G.; Mendez-Vazquez, A.; Lopez-Mellado, E.; "A Novel Distributed Energy-Efficient Self-Organized Algorithm for Wireless Ad Hoc Networks," *2012 8th International Conference on Intelligent Environments (IE)*, , vol., no., pp.19-26, 26-29 June 2012 doi: 10.1109/IE.2012.37

11. J. Guadalupe Olascuaga-Cabrera, E. Lopez-Mellado and A. Mendez-Vazquez, "A Multi-objective PSO Strategy for Energy-efficient Ad-Hoc Networking," *The 2011 IEEE International Conference on Systems, Man, and Cybernetics* (IEEE SMC 2011) October 9-12, 2011 Anchorage, Alaska.

12. J. G. Olascuaga-Cabrera, A. Mendez-Vazquez and E. Lopez-Mellado, "Wireless Network Formation and Maintaining for Mobile Devices Based on Self-organization Strategies," *Proceedings of the The Fifth International Multi-Conference on Computing in the Global Information Technology*, September 20-25, 2010, Valencia, Spain

13. A. Mendez-Vazquez, A. Helal and D. J. Cook, "Synthesizing Datasets for Pervasive Spaces," (Short Version) *Proceedings of the 5th International Conference on Intelligent Environments* , 20-21 July, 2009, Technical University of Catalonia, Barcelona, Spain.

14. A. Helal, M, Schmalz and A. Mendez-Vazquez, "Algorithms for the detection of chewing behavior in dietary monitoring applications," *Procedings of Mathematics for Signal and Information Processing SPIE*, 2009, San Diego, CA, USA .

15. A. Helal, A. Mendez-Vazquez, S. Hossain, "Specification and Synthesis of Sensory Datasets in Pervasive Spaces," submitted to the *IEEE Symposium on Computers and Communications* (ISCC'09) to be held July 5-8, 2009, Sousse, Tunisia.

16. A. Mendez-Vazquez, A. Helal and D. Cook, "Simulating Events to Generate Synthetic Data for Pervasive Spaces," *Workshop on Developing Shared Home Behavior Datasets to Advance HCI and Ubiquitous Computing Research*, in conjunction with the ACM HCI Conference to be held April 2009, MIT, Massachusetts, USA

17. A. Mendez-Vazquez and P. D. Gader, "Learning Fuzzy Measure Parameters by Logistic LASSO," *in Proceedings of the North American Fuzzy Information Processing Society*, New York, May 2008.

18. A. Mendez-Vazquez and P. D. Gader, "Maximum a Posteriori EM MCE Logistic LASSO for Learning Fuzzy Measures," *in Proceedings of the IEEE World Congress in Computational intelligence*, Hong Kong, China, June 2008.

19. A. Mendez-Vazquez and P. D. Gader, "Sparsity promotion models for the Choquet integral," *in Proceeding of the IEEE Symposium on Foundations of Computational Intelligence*, Honolulu, Hawaii, April 2007.

20. P. Gader, A. Mendez-Vazquez, K. Chamberlin, J. Bolton, and A. Zare, "Multi-sensor and algorithm fusion with the Choquet integral: applications to landmine detection," *in Proceedings of the IEEE International Geoscience and Remote Sensing Symposium*, September 2004, pp. 1605-1608, vol 3.

21. M. A. Schatten, P. D. Gader, J. Bolton, A. Zare, and A. Mendez-Vazquez, "Sensor fusion for airborne landmine detection," *in Proceedings of SPIE*, Vol. 6217, May 2006, CID 62172F.

22. P. Gader, L. Wen-Hsiung, and A. Mendez-Vazquez, "Continuous Choquet integrals with respect to random sets with applications to landmine detection," *in Proceedings of the IEEE International Conference on Fuzzy Systems*, Budapest, Hungary, July 2004, pp. 523-528 vol. 1.

Book Chapters

1. Book "Embedded and Networking Systems: Design, Software, and Implementation," Chapter "Cluster-based Networking for MANETs Using Selg-Organization," Series: Devices, Circuits, and Systems, Published: September 24, 2013 by Chapman and Hall/CRC

Technical Reports

1. M. Schmalz, A. Mendez-Vazquez, and A. Helal, "Dietary Monitoring for Diabetes and Obesity: Early Algorithm for Detection and Quantification of Chewing Behavior," Technical Report MPCL-08-08, May 2008. `http://www.icta.ufl.edu/projects/publications/schmalz08a.pdf`

Projects

Principal Investigator Cinvestav Guadalajara

- **Modutram Vision System, May 2015 - May 2016**
  - Title: Autonomous Navigation
  - Sponsor: Oracle MDC Mexico/ Prosoft Mexico
  - Amount: $797,000 Pesos M.N.
- **Parallel MIC, May 2015 - May 2016**
  - Title: Innovation for developing algorithm for correlation of variables and strengthening of abilities in MDC I.
  - Sponsor: Oracle MDC Mexico/Prosoft Mexico
  - Amount: $1,900,000 Pesos M.N.
- **Parallel Indexing in Memory, December 2013 - December 2014**
  - Title: Algorithms for Efficient Indexing on Databases in Memory
  - Sponsor: Oracle MDC Mexico/ PEI Conacyt
  - Amount: $1,450,000 Pesos M.N.
- **Search Engine Folgom, June 2014 - December 2014**
  - Title: Consolidation of Transactional Platform and integration for a Business Social Network
  - Sponsor: Alcom Business/PEI Conacyt
  - Amount: $650,000.00 Pesos M.N.
- **Wisemex, June 2013 - Febraury 2014** :
  - Title: Development of a system of energy administration using Data Mining
  - Sponsor: Wisemex/PEI Conacyt
  - Amount: $480,000.00 Pesos M.N.
- **Master for Industry, May 2011 - Present**
  - Title: Professional Master for Oracle MDC
  - Sponsor: Oracle MDC Mexico/Prosoft Mexico
  - Amount: $3,750,000 Pesos M.N.
- **IBM course in batch programming, May 2011 - December 2011**
  - Title: Batch Programming Course
  - Sponsor: IBM Guadalajara
  - Amount: $351,191.25 Pesos M.N.

Co-Investigator Cinvestav Guadalajara

- **Internet of Things Laboratory, June 2016 - June 2018**
  - Title: Internet of Things Laboratory
  - Consortium: ITESM, Tecnologico de Zapopan and Cinvestav Guadalajara
  - Sponsor: Coecytjal/Sate of Jalisco, Mexico
  - Amount: $11,000,000.00 Pesos M.N.
- **Mexican Air Force Simulator Design, June 2014 - March 2016**
  - Title: Mexican Air Force Simulator Design
  - Sponsor: Mexican Air Force
  - Amount: $5,700,000.00 Pesos M.N.
- **Modutram Simulator, 2014 - 2015**:
  - Title: LINT Simulator to Design Load Balancing Algorithms
  - Sponsor: Modutram/PEI Conacyt
  - Amount: $1,200,000.00 Pesos M.N.
- **Modutram Software Control System, 2010 - 2011**:
  - Title: Modutram Software Control System
  - Sponsor: Modutram / PEI Conacyt
  - Amount: $3,000,000.00 Pesos M.N.

Research Experience

At Cinvestav Guadalajara

Research Associate Professor. Leading research in the following topics at the Machine Learning group: August 2009 - Present

- Kernel Methods in Machine Learning
- Deep Learning Architectures and Methods
- Processing of Large Image Data Sets
- Learning of Fuzzy Systems
- Algorithms for Hyper-spectral Images
- Bio-Signals Classification using Bayesian Networks

At University of Florida

Postdoctoral Research Scholar in Obesity and Diabetes Studies in Intelligent Environments, Computer and Information Science and Engineering (CISE), University of Florida May 2008 - May 2009

Graduate Research Assistant in Fusion Algorithms for Land-mine detection, Computer and Information Science and Engineering (CISE), University of Florida under Professor Paul D. Gader. January 2003 - May 2008

Graduate Research Assistant in 3D reconstruction algorithms, Computer and Information Science and Engineering (CISE), University of Florida under Professor Mark Schmalz. May 2002 - December 2002

Teaching

Ph.D Dissertation Supervised

2014 *Modeling of Genetic Regulatory Networks Through the Use of Computational Intelligence Techniques* by Rocio Chavez-Alvarez

2014 *Multiobjective Optimization for quality of service in IEEE 802.11 Networks* by Arturo Raymundo-Aviles

2014 *Interpretation of Corporal Movement using Fuzzy Pattern Theory* by Victor Fernandez-Cervantes

2013 *Localized Strategies for Wireless Network Formation and Maintenance of Wireless Networks* by J. Guadalupe Olascuaga-Cabrera

M.S. Theses Supervised

2016 *Algorithmic discovery of private attributes from public social networks data for the study of interest groups* by Arturo Calderon Mora

2015 *Automatic endmember extraction algorithms for hyper-spectral image analysis* by Jairo Salazar-Vazquez

2014 *Sentiment and Emotion Recognition for Web Analysis* by Fernando Santos-Sanchez

2013 *Influence Maximization Using Classification by Entropy in Graphs* by Agustin Sancen-Plaza

2013 *Robust Object Recognition using Shock trees and SIFT Descriptors* by Rafael Orozco-Lopez

2013 *Dentritic Neuronal Network applications for Formal Concept Analysis* by David Ernesto Caro-Contreras

2013 *Using Dirichlet Process and Ant Optimization for Fuzzy System Learning* by Arturo Garcia-Garcia

Courses Taught at Cinvestav Guadalajara

Graduate

Mathematics for Intelligent Systems	Every Summer 2016 - Present
Machine Learning for Data Mining	Every Summer 2010 - Present
Introduction to Artificial Intelligence	Every Spring 2010 - Present
Analysis of Algorithms and Complexity.	Every Fall 2009 - Present

Courses Taught at ITESM

Undergraduate

Data Structures	Fall 2014 - Present
Analysis of Algorithms	Fall 2014 - Present

Other Professional Experiences & Skills

Leadership Positions

- Registrar Officer for the conference Ubicomp 2009 Sept 30 - Oct 3, Orlando, Florida USA.
- Treasurer, ASCIE: Association of Graduate Students in Computer and Information Science and Engineering (CISE), University of Florida, Fall 2006 - Spring 2007.
  - Founding officer, participated in the creation and initial organization of the association.
  - Actively participated in planning and running organizational events.
- Benton Engineering Council Representative, Computer and Information Science and Engineering (CISE) Departments representative to the Benton Engineering Council, University of Florida, Fall 2006 - Spring 2007.
- Graduate Student Council Representative, Computer and Information Science and Engineering (CISE) Departments representative to the Graduate Student Council, University of Florida, Fall 2007 - Spring 2008.
- Volunteer in the CISE - ACM - ASCIE career fair Fall 2007 - Spring 2008.

Conference reviewer

- IEEE World Congress on Computational Intelligence.
- 2009 33rd Annual IEEE International Computer Software and Applications Conference.

Affiliations

- IEEE Memeber
- ACM Memeber and volunteer for ACM-ICPC.

Skills

Technical Skills

- **Scientific Environments:** R.
- **Programming Languages:** Java, Python, C and C++.
- **Operating Systems:** Unix, Linux, FreeBSD, OSX, Windows.
- **Document Markup Language:** LaTeX.

Language Skills

- Spanish - Native speaker.
- English - Fluent speaker and read/write with proficiency.

Research interest

Data Structures and Algorithms, Numerical Optimization Algorithms and Statistical Methods for applications in:

- Data Mining and Machine Learning.
- Analysis of Algorithms for Large Scale Data Sets.
- Computer Vision.