

# Pablo Rivas Perea

Assistant Professor of Computer Science  
Department of Computer Science  
School of Computer Science & Mathematics  
Marist College

Hancock Center, Room 3003  
Office Phone: +1 (845) 575-3605  
Email: [Pablo.Rivas@Marist.edu](mailto:Pablo.Rivas@Marist.edu)  
Web: <http://www.reev.us>

## Education

Post-Doctoral Fellow, Baylor University (BU), 2015.

*Research:* Machine Learning Methods over MATRR data. *Mentor:* Erich Baker. 2015.

*Research:* Large Scale SVMs and Deep Learning. *Mentor:* Greg Hamerly. 2012-2014.

Ph.D. Electrical and Computer Eng., The University of Texas El Paso (UTEP), 2011.

*Dissertation:* Algorithms for training large-scale linear programming SV-regression and classification.

*Advisor:* Gerardo Rosiles.

**Honors Society (HKN)**

M.S. Electrical Engineering, Chihuahua Institute of Technology (ITCH), 2006.

*Thesis:* Face Recognition under Non-Cooperative Environments.

*Concentration:* Digital Signal Processing.

B.S. Computer Science, Nogales Institute of Technology (ITN), 2004.

*Concentration:* Database Theory.

*Independent study:* Neural Networks, Spring 2003.

## Research Interests

Deep learning, machine learning, and large-scale data mining in big data analytics, large-scale multidimensional multispectral signal analysis, statistical pattern recognition methods, image restoration, image analysis, intelligent software systems, and health-care imaging.

I am very excited about the recent advances in deep learning with applications in computer vision. This is a great time to be a machine learning expert. For that reason I consider myself a *deep learning evangelist*, spreading the good news about all we are now able to do in this area.

Other areas that have my attention include applied mathematics, numerical optimization, swarm intelligence optimization, evolutionary algorithms, soft computing, fuzzy logic, neural networks, and neurofuzzy systems.

## Skills

I consider myself fluent in the following programming languages: Java, Python, MATLAB, Octave, C++, VB, and SQL.

I have been conducting experiments in the following programming libraries for machine learning purposes and image processing: OpenCV, Numpy, Matplotlib, Sklearn, Tensorflow, Theano, Keras, Lasagne, Torch, Caffe, Hadoop, and Spark.

## Employment History

### MARIST COLLEGE

*Assistant Professor of Computer Science*

Aug-2015 – to-date

Currently I am teaching courses in software development (in Java) where students are introduced to programming as an art and as a science. Artificial intelligence (in Python), covering basic machine learning methodologies such as the most popular unsupervised and supervised learning algorithms using sklearn and Tensorflow for deep learning. I also teach computer ethics, where students learn the historical development of technology and how ethical issues have challenged society. I also teach capping courses for graduating seniors who develop real-life projects under deadlines simulating industry's software development life-cycle. My faculty mentor is Dr. Eitel Lauria who is a tenured professor and was recently awarded a prestigious teaching award.

*Machine Learning Scientist @ New York State Cloud Computing and Analytics Center*

Dec-2016 – to-date

We do projects for the industry employing students from Marist College. I am the mentor and supervisor for students and responsible for the project. These projects vary from client to client but all involve software development of some kind.

*International Internship Coordinator*

Jul-2016 – to-date

I am the coordinator of internships for international students of the computer science department. We connect the students with the industry through internships either under CPT or OPT.

### BAYLOR UNIVERSITY

*Adjunct Professor*

Aug-2013 – Aug-2015

While at Baylor I taught Data Structures, CSI 3334. The course covers fundamental data structures such as arrays, lists, queues, stacks, heaps, trees, and graphs; analysis of algorithms for time and space complexity; and data abstraction. The course is implemented on C++ and is being taught in coordination with Dr. Greg Hamerly.

*Post-Doctoral Research Scientist*

Mar-2012 – Aug-2015

Also at Baylor, I did research on large-scale machine learning algorithms in collaboration with other researchers in the computer science department. Particularly, we applied support vector-based approaches to the treatment of multi-dimensional and multi-spectral signal and image processing for pattern recognition, including face recognition, satellite data recognition, texture segmentation, electricity-load forecasting, and image processing for health care applications. I used Hadoop, MapReduce, Spark, Mahout, and CUDA. Dr. Greg Hamerly was my post-doc supervisor.

*Electronic Library | Student Technologies Support*

Jan-2012 – May-2015

The Electronic Library Services at Baylor University provide students and faculty members with top-level software and research tools; in the Student Technology Services branch we focused on the administration and management of such technology for students only. Our responsibility included technology research, management, programming, automation of services, and rapid response to technology-related issues. This work was carried under the administration of David Burns. Involved programming in Pearl.

#### THE UNIVERSITY OF TEXAS EL PASO

*Teaching Assistant*

Aug-2008 – Aug-2010

I taught the “Electric Circuits Laboratory” course (EE 2151) mentored by Dr. R. von Borries, Dr. J. Starks, and Dr. R. Pallares. My primary role was to teach students to use basic and advanced electronic equipment for the design of electric circuits. Also to grade and teach how to perform basic electric experiments safely such as the construction of the following circuits: Series/Parallel, Voltage/Current Divider, Mesh-Current Node-Voltage, First-Order RC, First-Order RL, Second-Order RLC, and Sinusoidal Steady-State Analysis (involves the usage of the LM741 Op-Amp).

#### NASA GODDARD SPACE FLIGHT CENTER (GSFC)

*NASA Graduate Student Summer Internship Program (Mentored by Dr. James C. Tilton)*

Jun-2009 – Aug-2009

My proposal to NASA was to analyze satellite multispectral data to predict dust aerosols. This is applicable to research in the Dust Storm Detection problem, which is particular to the southwestern U.S. and northwestern Mexico, specifically in the Chihuahuan desert. The study was performed using bands 31 and 32 of instrument MODIS (10.78 $\mu\text{m}$  - 11.28 $\mu\text{m}$ , and 11.77 $\mu\text{m}$  - 12.27 $\mu\text{m}$  respectively) corresponding to surface, cloud, and temperature. This project was mentored by Dr. James Tilton. To-date Dr. Tilton and I are open to collaborate in research and technology as needed and as permitted.

#### TRW AUTOMOTIVE

*Systems Integrator Engineer*

Jan-2007 – Aug-2008

As part of the software development team, I was in charge of software analysis, design, maintenance, and upgrade, mainly at (but not limited to) the supply chain department. Part of my role involved ASP web development with AJAX, VB, and C# programming, database analysis and design, creation of tables, indexes and the most common activity was the development of SQL stored procedures. I used UML for software specification and documentation. Most of the projects were six-sigma oriented and produced savings up to \$750k. During my employment I covered up to 4 different facilities (three factories and one logistics center) in TRW Automotive at Chihuahua.

#### SOFI CHIHUAHUA (ESSILOR) | CHIHUAHUA INSTITUTE OF TECHNOLOGY

*Software/Product Engineer*

Jan-2005 - Jan-2007

As part of a four people team including scientists and engineers, we developed a complete system for automatic visual quality inspection of ophthalmic lenses. The system uses computer vision techniques as well as image processing algorithms in order to assess the coating quality of the lens. My primary

responsibility was to develop the software algorithms for such system in C++ and VB with MS Access databases. Other minor activities included product engineering and electrical engineering. The project was successfully completed and delivered in January 9th 2007.

#### OTIS ELEVATORS A UTC COMPANY | COMPUPARTES

*Analyst Programmer Jr.*

Mar-2003 - Aug-2004

As part of the software development team, I was in charge of the analysis, development, and maintenance of applications in the Manufacturing Engineering Department related to elevator materials and specifications. These kinds of applications were designed using UML and were interconnected with MAXCIM (an ancient MRP system), MS Access, VB, MS Visio, Reflection, and MS Excel. Such systems were commonly called “Configurators.” And they were designed or updated according to customer and engineering specifications.

#### CHAMBERLAIN GROUP INC. | COMPUPARTES

*Analyst Programmer Jr.*

Mar-2002 - May-2002

In a joint responsibility with the department of customs and information technology, I was in charge of three Windows servers. Also in charge of 10 dedicated digital data links with speeds varying from 64kbps to T1s over cisco routers. This equipment was part of a US-Mexico customs pre-validation system for import/export requisitions, which was interconnected to Mexican government servers. Secondary roles involved technical support via telephone; software analysis, design and maintenance; and database system migration from MS Access, to SQL Server. During this time I also designed a software system in C++ to detect communication downlinks within the networking infrastructure.

#### T.O.M. | ENVIRO MFG

*Manager of Information Technologies*

Jan-2000 - Nov-2001

I founded the company’s IT department in the US and Mexico. I was lucky to be the first and only IT employee. Started in charge of telephone communications infrastructure, and also designing and developing inventory systems in MS Excel, MS Access, VB for both the US and Mexico. After a few months, the company kept growing very fast, and new responsibilities came up, such as the implementation of new technologies to make the company cost-efficient. After a year, I received the official position of “Manager of Information Technologies” being responsible for 3 facilities in the US and Mexico.

## Teaching Experience

Deep Learning with TensorFlow (Graduate) (MSCS 692 / CS-Marist) ↔ Fall 2017

Parallel Processing (Graduate) (MSCS 679 / CS-Marist) ↔ Fall 2017

Emerging Technologies (Graduate) (MSIS 620 / CS-Marist) ↔ Fall 2017

Information Technology and Systems Project 2 (Undergraduate) (CMPT 477 / CS-Marist) ↔ Fall 2015, Fall 2016, Fall 2017

Information Technology and Systems Project 1 (Undergraduate) (CMPT 477 / CS-Marist)  $\mapsto$  Fall 2015, Fall 2016, Fall 2017

Computer Science Project 2 (Undergraduate) (CMPT 476 / CS-Marist)  $\mapsto$  Fall 2015, Fall 2016, Summer 2017, Fall 2017

Computer Science Project 1 (Undergraduate) (CMPT 475 / CS-Marist)  $\mapsto$  Fall 2015, Fall 2016, Summer 2017, Fall 2017

Deep Learning with TensorFlow (Undergraduate) (CMPT 469 / CS-Marist)  $\mapsto$  Fall 2017

Computer Organization and Architecture (Undergraduate) (CMPT 422 / CS-Marist)  $\mapsto$  Fall 2017

Technology, Society, and Ethics (Undergraduate) (CMPT 305 / CS-Marist)  $\mapsto$  Fall 2015, Fall 2016, Fall 2017

Natural Language Processing (Graduate) (MSCS 688 / CS-Marist)  $\mapsto$  Summer 2017

Security Algorithms and Protocols (Graduate) (MSCS 630 / CS-Marist)  $\mapsto$  Spring 2016, Spring 2017

Formal Languages and Computability (Undergraduate) (CMPT 440 / CS-Marist)  $\mapsto$  Spring 2016, Spring 2017

Software Development 1 (Undergraduate) (CMPT 220 / CS-Marist)  $\mapsto$  Fall 2015, Fall 2016, Spring 2017

Artificial Intelligence (Graduate) (MSCS 550 / CS-Marist)  $\mapsto$  Fall 2016

Competitive Programming (Undergraduate) (CMPT 192 / CS-Marist)  $\mapsto$  Fall 2016

Artificial Intelligence (Undergraduate) (CMPT 404 / CS-Marist)  $\mapsto$  Fall 2016

Database Management (Undergraduate) (CMPT 308 / CS-Marist)  $\mapsto$  Spring 2016

Data Structures (Undergraduate) (CSI3334 / CS-Baylor)  $\mapsto$  Spring 2015, Fall 2014, Spring 2014, Fall 2013

Electric Circuits (Undergraduate) (EE2151 / ECE-UTEP)  $\mapsto$  Summer 2011, Spring 2011, Fall 2010, Spring 2010, Fall 2009, Spring 2009, Fall 2008

Digital Signal Processing (Graduate) (EE-ITCH)  $\mapsto$  Fall 2006

## Grants and Projects

FUNDED (*where I am the principal investigator*)

New York State Cloud Computing and Analytics Center:

Collective Strategies, Inc. MIP Connector Phase 2, **\$18,000**, 7/2017 – to date

Multispectral signature detection with large-scale machine learning methods, Consejo Nacional de Ciencia y Tecnología (mexican NSF), **\$15,000**, 8/2013

Accelerating training of a large-scale SVM, Consejo Nacional de Ciencia y Tecnología (mexican NSF), **\$10,000**, 8/2013

Statistical and Neural Pattern Recognition Methods for Dust Aerosol Detection, Consejo Nacional de Ciencia y Tecnología (mexican NSF), **\$18,000**, 3/2012

Forecasting The Demand of Short-Term Electric Power Load with Large-Scale LP-SVR, Consejo Nacional de Ciencia y Tecnología (mexican NSF), **\$6,000**, 3/2012

Numerical optimization strategies for LP-SVR hyper-parameters selection, Consejo Nacional de Ciencia y Tecnología (mexican NSF), **\$2,000**, 3/2012

Decomposition Methods for Linear Programming Support Vector Regression in Large Scale Problems

-Texas Instruments, TIF-UTEP, **\$2,800**, 8/2010

-Consejo Nacional de Ciencia y Tecnología (mexican NSF), Conacyt-UTEP, **\$33,992**, 8/2008

Applications of Accurate Singular Value Decomposition vs Traditional SVD, SEP-DGRI, **\$1,260**, 9/2010

Image Analysis in Multichannel Images: Colocalization Through Fluorescent Microscopy, IEEE (IJCNN travel grant), **\$500**, 6/2009

Southwestern U.S. and Northwestern Mexico Dust Storm Analysis Through Remote Sensing Imagery, NASA Goddard Space Flight Center – University of Maryland Baltimore County, NASA-GEST-UTEP, **\$9,600**, 5/2009

Face Recognition Under Non-Cooperative Environments Using Real Time Hough-KLT, ITCH-DGIT, **\$17,485.20**, 9/2006

Mobile Face Recognition System for Non-Cooperative Environments, IEEE (student enterprise award), **\$1,500**, 1/2007

Watch-Bot Mobile Surveillance System for Biometric Identification, ITCH-DGIT, **\$300**, 9/2006

Development and Implementation of Digital Image Processing Algorithms for a Simulation and Code Generation Toolbox, **\$400**, ITCH-DGIT, 5/2005

Fast Development of Real Time Digital Image Processing Applications, ITCH-DGIT, **\$400**, 10/2005

In Motion Face Recognition Through Multilayer Perceptrons, ITN-DGIT, **\$1,100**, 5/2004

Slimmer, a Security Mobile Agent for User Authentication on 802.11 WLAN Environments, ITN-DGIT, **\$300**, 6/2003

Syntactic Semantic Prevalidator System for Customs Declaration, ITN-DGIT, **\$200**, 5/2002

#### FUNDED (*where I am a co – principal investigator*)

NSF Scholarships in Science, Technology, Engineering, and Mathematics Program (S-STEM); for bringing students underprivileged to our college; PI: Ron Coleman, 8/2015 – to date.

Ethical behaviour of people under pressure, PI: Pamela Harper, 1/2017 – to date.

Dust Storm Detection Using a Neural Networks with Uncertainty and Ambiguity Output Analysis, Consejo Nacional de Ciencia y Tecnología (mexican NSF), Chihuahua Institute of Technology, PI: Mario Chacon, **\$17,485.20**, 1/2010.

Distributed localization algorithms for wireless sensor networks, Consejo Nacional de Ciencia y Tecnología (mexican NSF), Autonomous University of Cd. Juarez, PI: Juan Cota-Ruiz, **\$67,000**, 1/2007

Water Polo Mini-robot, PIs: Omar Velarde and Rafael E., ITCH-IEEE, **\$17,970.40**, 5/2006

Racing Mini-robot, PI: Omar Velarde, Chihuahua Institute of Technology – IEEE, **\$17,000**, 5/2006

Automatic Coating Detection System, Chihuahua Institute of Technology – SOFI Essilor, PI: Mario Chacon, **\$12,000**, 1/2006

## NOT (YET) FUNDED

Study of deep learning algorithms on a high performance cluster of GPUs, *to be submitted to Silicon Mechanics in collaboration with Cenk Erdil*

NSF MRI grant for the purchase of an IBM LinuxONE cluster for our research on machine learning; *submitted to NSF along with three other faculty members* in 2015 and 2016.

Study of leukocoria for the early diagnosis of retinoblastoma in infants, *originally planned to submit to NIH in collaboration with Erich Baker, Greg Hamerly, and Bryan F. Shaw as the lead PI* in 2015

Computerized Analysis Based on Colocalization Study for Breast Cancer Early Diagnosis, *submitted to NIH under the BCP program: not funded in 2/2010*, but plan to resubmit.

## Publications

## JOURNAL PUBLICATIONS

1. Erich J. Baker, Nicole A.R. Walter, Alex Salo, **Pablo Rivas Perea**, Sharon Moore, Steven Gonzales, Kathleen A. Grant, “Identifying Future Drinkers: Behavioral Analysis of Monkeys Initiating Drinking to Intoxication is Predictive of Future Drinking Classification,” in *Alcoholism Clinical and Experimental Research*, 2/2017. IF: 2.829
2. Juan Cota-Ruiz, **Pablo Rivas Perea**, Ernesto Sifuentes, and Rafael Gonzalez-Landaeta “A Recursive Shortest Path Routing Algorithm with application for Wireless Sensor Network Localization,” in *IEEE Sensors Journal*, vol. 16, no. 11, pp. 4631-4637, 6/2016.
3. **Pablo Rivas Perea**, Erich Baker, Greg Hamerly, and Bryan Shaw, “Detection of Leukocoria using a Soft Fusion of Expert Classifiers under Non-clinical Settings”, vol. 14, no. 110, in *BMC Ophthalmology*, 9/2014.
4. **Pablo Rivas-Perea**, Juan Cota-Ruiz, and Jose-Gerardo Rosiles, “Statistical and Neural Pattern Recognition Methods for Dust Aerosol Detection,” in *International Journal of Remote Sensing*, vol. 34, no. 21, 4/2013
5. Juan Cota-Ruiz, Jose-Gerardo Rosiles, **Pablo Rivas-Perea**, y Ernesto Sifuentes, “A distributed localization algorithm for wireless sensor networks based on the solutions of spatially-constrained local problems”, in *Sensors Journal, IEEE*, vol. 13, no. 6, 4/2013
6. **Pablo Rivas-Perea**, Juan Cota-Ruiz, David Garcia Chaparro, Abel Quezada Carreon, and Jose-Gerardo Rosiles, “Forecasting The Demand of Short-Term Electric Power Load with Large-Scale LP-SVR”, in *Smart Grid and Renewable Energy*, vol. 4, no. 2, 4/2013
7. **Pablo Rivas-Perea**, Juan Cota-Ruiz, and Jose-Gerardo Rosiles, “An algorithm for training a large scale support vector machine for regression based on linear programming and decomposition methods”, in *Pattern Recognition Letters*, vol. 34, no. 4, pp. 439-451, 3/2013
8. **Pablo Rivas-Perea**, Juan Cota-Ruiz, and Jose-Gerardo Rosiles, “A nonlinear least squares quasi-Newton strategy for LP-SVR hyper-parameters selection”, in *International Journal of Machine Learning and Cybernetics*, vol. 5, no. 4, 2/2013
9. **Pablo Rivas-Perea**, Juan Cota-Ruiz, J. A. Perez Venzor, David Garcia Chaparro, and Jose-Gerardo Rosiles, “LP-SVR Model Selection Using an Inexact Globalized Quasi-Newton Strategy”, in *Journal of Intelligent Learning Systems and Applications*, vol. 5, pp. 19-28, 2/2013.



10. **Pablo Rivas-Perea**, Juan Cota-Ruiz, David Garcia Chaparro, J. A. Perez Venzor, Abel Quezada Carreon, and Jose-Gerardo Rosiles, "Support Vector Machines for Regression: A Succinct Review of Large-Scale and Linear Programming Formulations", in *International Journal of Intelligence Science*, vol. 3, pp. 5-14, 1/2013.
11. Juan Cota-Ruiz, Jose-Gerardo Rosiles, Ernesto Sifuentes, **Pablo Rivas-Perea**, "A Low-Complexity Geometric Bilateralization Method for Localization in Wireless Sensor Networks and Its Comparison with Least-Squares Methods", in *Sensors*, vol. 12, pp. 839-862, 1/2012
12. Mario Ignacio Chacon Murguía, Yearim Quezada-Holguin, **Pablo Rivas-Perea**, and Sergio Cabrera, "Dust Storm Detection Using a Neural Network with Uncertainty and Ambiguity Output Analysis", in *Pattern Recognition*, ed. Jose Francisco Martinez-Trinidad *et al.*, vol. 6718, Lecture Notes in Computer Science, Springer Berlin Heidelberg, pp. 305-313. 6/2011.
13. **Pablo Rivas-Perea**, Jose G. Rosiles and Wei Qian, "Subjective Colocalization Analysis with Fuzzy Predicates," in *Soft Computing for Intelligent Control and Mobile Robotics*, Oscar Castillo, Witold Pedrycz, Janusz Kacprzyk Eds. Computational Intelligence Series of Springer-Verlag. 1/2011.
14. **Pablo Rivas-Perea**, Jose G. Rosiles, Mario I. Chacon Murguía and James J. Tilton, "Automatic Dust Storm Detection Based on Supervised Classification of Multispectral Data," in *Soft Computing for Recognition based on Biometrics*, Patricia Melin, Janusz Kacprzyk, Witold Pedrycz Eds. Computational Intelligence Series of Springer-Verlag. 9/2010.
15. M. I. Chacon M., and **P. Rivas P.**, "Fusion of Fuzzy FFL-KLT and PCNN Features on the Face Recognition Problem," in *Dynamics of Continuous, Discrete & Impulsive Systems Journal*, Series A: Mathematical Analysis, a Special Issue on Advances in Neural Networks-Theory and Applications, 8/2007
16. Mario I. Chacon M., **Pablo Rivas P.**, and Graciela Ramírez A., "A Fuzzy Clustering Approach for Face Recognition Based on Face Feature Lines and Eigenvectors," in *Engineering Letters Journal*, 8/2007
17. Mario I. Chacon M., Alejandro Zimmerman S., and **Pablo Rivas P.**, "Image Processing Applications with a PCNN," in *Advances in Neural Networks*, Springer LNCS, pp 884-893. 6/2007

#### BOOK CHAPTERS

18. Mario I. Chacon M., and **Pablo Rivas P.**, "Face Recognition Based on Human Visual Perception Theories and Unsupervised ANN," Book: "State of The Art in Face Recognition." Publisher: INTECH, 436 pages. 2009

#### CONFERENCE PUBLICATIONS

19. **Pablo Rivas**, Ezequiel Rivas, Deep Dand, and Raul Aragon, "Unsupervised Deep Learning with Stacked Autoencoders on Chameleon", Experiments in Computer Science 2017, Argonne National Laboratory, 9/2017.
20. John Cary and **Pablo Rivas**, "Ethics under Pressure?" Proceedings of the 2017 Susilo Symposium, Boston University, 6/2017.
21. Akshara Boppidi, Pooja Jadhav Eshwarlal, and **Pablo Rivas** "Random Forests and Support Vector Machines for Handwritten Digits Recognition", Presented at the ACM-W New York Celebration of Women in Computing conference, Rochester Institute of Technology, NY, 4/2017.



22. **Pablo Rivas-Perea**, and Juan Cota-Ruiz, “Near Real-Time Dust Aerosol Detection with Support Vector Machines for Regression”, 2015 AGU Fall Meeting, Long-Range Transport of Dust and Pollution in the Past, Present, and Future, 12/2015.
23. **Pablo Rivas-Perea**, and Juan Cota-Ruiz, “NERT DADS: A Near-Real-Time Dust Aerosol Detection System”, Proceedings of the 2015 Data for Good Exchange (D4GX) Conference, Climate Paper Presentations, 9/2015.
24. Alejandro Nava, Francisco Enríquez, Juan Cota-Ruiz, Ernesto Sifuentes, **Pablo Rivas-Perea**, “Circle Detection Based on Edge Orientation and Triangulation”, SENIE Pistas Educativas, pp. 1251-1266, 10/2014.
25. **Pablo Rivas-Perea**, Ryan Henning, Bryan Shaw, and Greg Hamerly, “Finding the Smallest Circle Containing the Iris in the Denoised Wavelet Domain”, Proceedings of the Image Analysis and Interpretation (SSIAI), 2014 IEEE Southwest Symposium on, pp. 13-16, 4/2014.
26. Ryan Henning, **Pablo Rivas-Perea**, Bryan Shaw, and Greg Hamerly, “A Convolutional Neural Network Approach for Classifying Leukocoria” Proceedings of the Image Analysis and Interpretation (SSIAI), 2014 IEEE Southwest Symposium on, pp. 9-12. 4/2014.
27. Mario Ignacio Chacon Murguía, Yearim Quezada-Holguin, **Pablo Rivas-Perea**, and Sergio Cabrera, “Dust Storm Detection Using a Neural Network with Uncertainty and Ambiguity Output Analysis” Proceedings of MCPR 2011, pp. 305-313. 5/2011.
28. **Pablo Rivas Perea**, and Gerardo Rosiles, “Short Term Electric Power Consumption Forecasting using Linear Programming Support Vector Regression,” 1st Southwest Energy Science and Engineering Symposium. 4/2011.
29. **Pablo Rivas Perea**, and Gerardo Rosiles, “Large-Scale Sonar Target Detection with  $\ell_1$ -Norm SV Regression based on Unfeasible Interior Point Methods,” Proceedings of the 2011 ITEA Live-Virtual-Constructive Conference. 1/2011
30. **Pablo Rivas Perea**, Omar Velarde Anaya, and Juan De Dios Cota Ruiz, “Performance Evaluation of Classic and Accurate SVD Computation in a Multispectral Image Segmentation Problem,” 2010 IEEE CIINDET, 11/2010.
31. **Rivas-Perea, P.**; Rosiles, J. G.; and Chacon, M. I.; “Traditional and Neural Probabilistic Multispectral Image Processing for The Dust Aerosol Detection Problem,” Image Analysis & Interpretation (SSIAI), 2010 IEEE Southwest Symposium on, pp.169-172, 5/2010.
32. **P. Rivas-Perea** and J. G. Rosiles, “A Probabilistic Model for Stratospheric Soil-Independent Dust Aerosol Detection,” in Digital Image Processing and Analysis, Optical Society of America, paper DMD4. 5/2010.
33. **Pablo Rivas-Perea**, Jose G. Rosiles, and Mario I. Chacon, M. “A Classic and Neural Probabilistic Approach to Remote Sensing: The Dust Storm Detection Problem,” Proceedings of the International Seminar on Computational Intelligence, 1/2010.
34. **P. Rivas-Perea**, M. I. Chacon M., and J. G. Rosiles, “A Classic and Neural Probabilistic Approach to the Dust Storm Detection Problem,” Proceedings of the 2010 ITEA Live-Virtual-Constructive Conference, 1/2010.
35. **P. Rivas-Perea**, J. C. Tilton, and J. G. Rosiles, “Dust Storm Detection Through Moderate Resolution Imaging Spectroradiometer: A Machine Learning Problem,” Proceedings of the 2010 ITEA Live-Virtual-Constructive Conference, 1/2010.

36. **Pablo Rivas-Perea**, Gerardo Rosiles, and Wei Qian, "Fuzzy Predicates from Linguistic Variables for Subjective Quantitative Colocalization Analysis," Proc. 10th U.S. National Congress for Computational Mechanics, 7/2009.
37. **Pablo Rivas-Perea**, Omar Velarde Anaya, Leonardo Valencia Olvera, Luis Humberto Uribe Chavira, Mario I. Chacon M., and Gerardo Rosiles, "Mobile Robot for Face Recognition: A Collaborative Environment," Proc. 2009 High Performance Computing & Simulation Conference, IEEE/ACM/IFIP, 6/2009.
38. **Pablo Rivas-Perea**, Gerardo Rosiles, and Wei Qian, "Self Organizing Maps for Class Discovery in the Quantitative Colocalization Analysis Feature Space," Proc. 2009 IEEE International Joint Conference on Neural Networks, 6/2009.
39. **P. Rivas Perea**, J.G. Rosiles, and W. Qian, "Image Restoration for Quantitative Colocalization: Performance Analysis and Response of Colocalization Coefficients," Proc. 3rd Annual Texas Tech University Health Sciences Center (TTUHSC) Paul L. Foster School of Medicine Research Colloquium, 5/2009.
40. **P. Rivas Perea**, J.G. Rosiles, and W. Qian, "Automatic Quantitative Colocalization Analysis: An Image Restoration and Machine Learning Approach," Proc. 2009 UTEP SACNAS Research Expo, 4/2009.
41. M. I. Chacon M., and **P. Rivas-Perea**, "Performance Analysis of the Feedforward and SOM Neural Networks in the Face Recognition Problem," Proceedings of the 2007 IEEE Symposium on Computational Intelligence in Image and Signal Processing (CIISP 2007). pp. 313-318. Honolulu, Hawaii. 7/2007.
42. Mario I. Chacon M., **Pablo Rivas P.**, and Graciela Ramírez A. "A Fuzzy Logic Clustering Approach For Face Recognition Based on Face Feature Lines and Eigenvectors," IEEE International Seminar on Computational Intelligence ISCI 2006. 10/2006.
43. **P. Rivas Perea**, M. I. Chacón Murguía, "Face Recognition Using Hough-KLT and a Feed-Forward Backpropagation Neural Network," Proc. XXVIII International Congress on Electronics Engineering, 10/2006.
44. **Pablo Rivas**, and Mario I. Chacón, "Real Time Motion Detection for Fast Human Identification Based on Face Recognition," Proceedings of the XVI Inter-University Congress on Electronics Computation and Electrical - II Congress of Technological Innovation in Electrical and Electronics, pp. 172-177, 4/2006.
45. **P. Rivas**, and M. Chacón, "Evaluation of Motion Detection Methods for Person Identification based on Face Recognition," Proc. XXVII International Congress on Electronics Engineering, 10/2005.
46. **Pablo Rivas Perea**, "In Motion Face Recognition Through Multilayer Perceptrons," IEEE / ANaCC / cenidet, Proc. of the 11th International Congress on Computer Science Research. 11/2004.
47. **Pablo Rivas Perea**, "In Motion Face Recognition Through Multilayer Perceptrons," Proceedings of the National Congress and International Congress on Informatics and Computer Science, 11/2004.
48. **Pablo Rivas Perea**, "In Motion Face Recognition Through Multilayer Perceptrons," 3rd National Symposium on Information Technology, 5/2004.
49. **P. Rivas Perea**, "Slimmer, a Security Mobile Agent for User Authentication on 802.11 WLAN Environments," IEEE International Conference on Informatics, Cybernetics, and Systems, 11/2003.

50. **P. Rivas Perea**, “Slimmer, a Security Mobile Agent for User Authentication on 802.11 WLAN Environments,” Proceedings of the IEEE V Fall Meeting on Power, Electric and Computer Science, 11/2003.
51. **P. Rivas Perea**, “Slimmer, a Security Mobile Agent for User Authentication on 802.11 WLAN Environments,” Proceedings of the 2003 National Congress on Electrical Eng of the Gulf, 11/2003.
52. **P. Rivas Perea**, “Slimmer, a Security Mobile Agent for User Authentication on 802.11 WLAN Environments,” IEEE / ANaCC / cenidet, Proc. of the 10th International Congress on Computer Science Research, 10/2003.

## PAPERS IN PROGRESS

**Pablo Rivas Perea** and Ezequiel Rivas Perea, “A Deep Learning Approach to Sign Language Recognition Using Stacked Autoencoders with Sparse Weights and Activation Functions”, *Draft*, submitted to the International Conference on Machine Learning (ICML), 1/2017.

**Pablo Rivas Perea**, J.G. Rosiles, and W. Qian, “Automatic Quantitative Colocalization Analysis: An Image Restoration and Soft Computing Approach”, *Draft*, to the journal IEEE Transactions on Medical Imaging.

## MEDIA

“How your phone’s camera could help detect a rare cancer in kids”. *Upworthy*. By Morgan Shoaff, on-line: <http://www.upworthy.com/how-your-phones-camera-could-help-detect-a-rare-cancer-in-kids> 6/2016.

“White-Eye Photos May Indicate Rare Cancer In Children”. *CBS 11 News North Texas*. Video available on-line: <http://cbsloc.al/11XfEGV> 5/2014.

“Chemist Turns Software Developer After Son’s Cancer Diagnosis” *NPR News* section of health. Available on-line: <http://n.pr/1kBMM6E> 5/2014.

“From engineer to evangelist” *The Cord* magazine, feature article, pp. 6-9. 2012.

“A sonoran works project for NASA” *El Imparcial-General*, Front Page. Trans: “Crea sonoreense proyecto para NASA.” September 15th 2009

“Young sonoran designs project for NASA” *El Imparcial-General*, Page 17. Trans: “Diseña joven sonoreense proyecto para la NASA.” September 15 2009

“Young sonoran gets to work at NASA” *El Imparcial-Nogales, Sonora*, Front Page. Trans: “Llega joven sonoreense a trabajar en la NASA.” September 15 2009

“Pablo has been a fighter” *El Imparcial-Nogales, Sonora*. Front Page. Trans: “Ha sido Pablo muy luchón.” September 16 2009

“Come back to his home town to compete,” *El Imparcial-Nogales, Sonora*. First Page. Trans: “Regresa a su tierra a competir.” Thursday, November 23rd 2006

“Following up outstanding students”, *El Imparcial-Nogales, Sonora*. Section 2/N. Trans: “Brindan seguimiento a alumnos destacados.” Wednesday, November 15th 2006

“They inspire creative skills,” *El Imparcial-Nogales, Sonora*. Section 6/A. Trans: “Inspiran capacidad creativa.” Thursday, March 10th 2005

“Geniuses receive award,” *El Imparcial*, Sonora. First Page. Trans: “Premian a genios,” Thursday, June 24th 2004

“Nogales Institute of Technology wins 3 prizes,” *Diario Nuevo Día*, Section 5A. Trans: “3 premios de creatividad logra Tecnológico de Nogales,” Thursday, June 24th 2004

“Students from ITN win 3 national competitions,” *El Imparcial*, Sonora. Section 2/N. Trans: “Ganan alumnos de ITN 3 concursos nacionales,” Monday, June 21st 2004

“Outstanding Student Skills,” *El Imparcial-Nogales Academia*, Sonora. First Page. Trans: “Derrochan Ingenio Estudiantil.” Wednesday, July 9th 2003

## Invited Talks

“Unsupervised Deep Learning with Stacked Autoencoders on Chameleon”, Argonne National Laboratory, Chicago, IL, 9/2017.

“The Multilayer Perceptron: An Introduction to Machine Learning”, Computer Society, Marist College. New York, 11/2016

“Support Vector Machines in Computer Vision”, Computer Society, Marist College. New York, 11/2015

“Applications of Mathematics: 4 pillars for success in life”, Instituto Tecnológico de Parral, Tecnoforum 2014, Parral, Chihuahua. 10/2014

“Large-scale linear programming support vector regression and its applications”, Baylor University, CSI5010: Graduate Seminar, Waco, TX. 9/2013

“Forging Partnerships between Numerical Optimization and Large-Scale Machine Learning”, Baylor University, CSI5010: Graduate Seminar, Waco, TX. 9/2012

“Successful science, technology, engineering, and mathematics education: curing the future Mexican scientist since the seventh grade”, Symposium for Secondary Education Teachers, Chihuahua, Mex., 9/2012.

“Cyber-Physical Hyper-Spectral Systems: Present and Future”, Academic Conference 2011, Cd. Cuahutemoc Institute of Technology, 11/2011.

“NASA & the Philosophy of the Tec Student: Failure is Not an Option”, Academic Conference 2011, Cd. Cuahutemoc Institute of Technology, 11/2011.

“Sustainable Development Analysis with Multispectral Data and Support Vector Regression”, Nogales Institute of Technology Research Forum, 9/2010.

“From college to NASA: Do I have what it takes?”, Computer Science Colloquium, Parral Institute of Technology, 5/2010.

“A classic and neural probabilistic approach to remote sensing: the dust storm detection problem,” International Seminar on Computational Intelligence, 1/2010.

“Image Restoration for Quantitative Colocalization: Performance Analysis and Response of Colocalization Coefficients,” 3rd Annual Texas Tech University Health Sciences Center (TTUHSC) Paul L. Foster School of Medicine Research Colloquium, 5/2009.

“Southwestern US and Northwestern Mexico Dust Storms: A multispectral approach”, Nogales Institute of Technology Research Forum, 5/2009.

“Automatic Quantitative Colocalization Analysis: An Image Restoration and Machine Learning Approach,” 2009 UTEP SACNAS Research Expo, 4/2009.

“Pattern Recognition,” 3rd Annual Engineering Conference Cycle, Mexico. 9/2006.

“Computer Vision,” VII Congress on Applied Electrical and Electronics Engineering, 3/2006.

“A Project Worth of the 1st Place in the National Competition on Creativity,” 2004 Computer Science Academia Forum (ITN), 11/2004.

“In Motion Face Recognition Through Multilayer Perceptrons,” 3rd National Symposium on Information Technology, 5/2004.

“Security Mobile Agent for Wireless Networks,” 2003 Academia Forum (ITN), 10/2003.

## Professional Activities

### TECHNICAL REVIEWER, CONFERENCE PROGRAM COMMITTEE CO-CHAIR, AND OTHERS

Chair of Communications, New York Celebration of Women in Computing, 2017

Technical Reviewer, MDPI ISPRS International Journal of Geo-Information, 2014, 2015, 2016

Technical Reviewer, IEEE International Joint Conference on Neural Networks, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016

Technical Reviewer, MDPI Toxins Journal, 2014

Technical Reviewer, Computer and Geosciences Journal, 2014

Technical Reviewer, International Journal of Remote Sensing, 2013, 2014

Technical Reviewer, IEEE Transactions on Geoscience and Remote Sensing, 1/2010

Technical Reviewer, XVI Inter-University Conference on Electronics Computer Science and Electrical Engineering, 4/2007

General Chair, 1st Workshop in Engineering Theory and Techniques, 12/2006

Keynote Speakers Committee, XXVIII International Congress of Electrical Engineering, 10/2006

Program Development Committee, XXVII International Congress of Electrical Engineering, 10/2005

Past President of the IEEE Chihuahua Student Branch, 2005-2006

### PROFESSIONAL ASSOCIATIONS

Association for Computing Machinery (ACM), 2013–Present

Optical Society of America (OSA), 2010–Present

HKN (Eta Kappa Nu), the electrical and computer engineering honor society of the IEEE, Life-long Member since 2011

The Hispanic-American Fuzzy Systems Association, 2006–Present

The International Association of Engineers (IAENG), 2006–Present

The Society for Industrial and Applied Mathematics (SIAM), 2004–Present

IEEE Computational Intelligence Society, 2003–Present

IEEE Computer Society, 2002–Present

The Institute of Electrical and Electronics Engineers (IEEE), 2001–Present

#### CERTIFICATIONS AND TECHNOLOGY COURSES

Deep Learning with TensorFlow (2017); Certified Online Instructor (2015); Environmental Health and Safety in an Electronics Laboratory, Certification, (2008). Software Quality Assurance, Certification, (2007). Managing Projects, Course, (11/2007). Financial Basics for Non-Financial Managers, Course, (11/2007). Personal Financial Planning, Course, (10/2007). Active Server Pages, Course, (10/2007). Analyzing Capacity Needs for Microsoft SQL Server [3589], Course, (9/2007). ASP.NET Web Application [2913 B], Course, (8/2007). Database Conventions and Standards for Microsoft SQL Server 2005 [3595], Course, (7/2007). Object-Oriented Software Design Techniques, Course, (6/2007). Basic Queries in Microsoft SQL Server [4327], Course, (5/2007). Working with ADO.NET 2.0 Within Microsoft ASP.NET [2915 B], Course, (4/2007). Master Pages and Content Pages in Microsoft ASP.NET [2914 B], Course, (1/2007). Microsoft ASP.NET Web Application [2913 B], Course, (1/2007). Micro-teaching, Course, (10/2006). Digital Design with Verilog, Course, (4/2006). Electromagnetic transient modeling software for power systems [ATP], Course, (11/2003). Instrumentation Fundamentals with Lab View, Course, (11/2003). Digital Image Processing, Course, (10/2003). .NET for IT Professionals, Course, (8/2003). Oracle 8i DBA: SQL and PL/SQL, Course, (7/2003). Oracle 8i DBA: Architecture and Administration, Course, (7/2003). CISCO IP Phone 2.0, Course, (7/2003). CISCO Advanced Wireless, Course, (7/2003). Windows NT Administration, Course, (11/2000). Business Accounting Technician, (7/1998). Software Developer Technician, (1998). Automotive Mechanical Technician, (1995).

#### COMPETITION ACTIVITIES

**ACM** International Collegiate Programming Competition, Regionals. Two of my teams participated and finished in 34th place versus the most prestigious universities in the greater New York area, 11/2016

**NASA** Graduate Summer Research Program; this was an internship at NASA based on the selection of the best six research proposals. Graduate level. Area: multidisciplinary, against all U.S. graduate level applicants, 4/2009

**3rd** Place in the XXI National Competition on Creativity, Graduate level, **National** Final Phase, Area: multidisciplinary, all against all, 5/2007-6/2007

Participation in the First Annual IEEE-Xtreme Programming Competition, 2006

1st Place in the XXI National Competition on Creativity, Graduate level, Regional Phase, Zone V, Area: Computer Science, 11/2006

Participation in the XXI National Competition on Creativity, Graduate level, Regional Phase, Zone I, Area: Electrical Engineering, 11/2006

2nd Place in the XXI National Competition on Creativity, Graduate level, Local Phase, Area: Computer Science, 9/2006

3rd Place in the XXI National Competition on Creativity, Graduate level, Local Phase, Area: Electrical Engineering, 9/2006

Participation in the 11th IEEE/UAQ National Mini-robots Competition, Category: Racing Robots, 5/2006

Participation in the 11th IEEE/UAQ National Mini-robots Competition, Category: Water polo Robots, 5/2006

Participation in the XX National Competition on Creativity, Graduate level, Regional Phase, Zone I, Area: Electrical Engineering, 10/2005

1st Place in the XX National Competition on Creativity, Graduate level, Local Phase, Area: Electrical Engineering, 5/2005

1st Place in the XIX National Competition on Creativity, Undergraduate level, **National** Final Phase, Area: Computer Science, 10/2004

1st Place in the XIX National Competition on Creativity, Undergraduate level, Regional Phase, Zone I, Area: Computer Science, 6/2004

1st Place in the XIX National Competition on Creativity, Undergraduate level, Local Phase, Area: Computer Science, 5/2004

Participation in the XVIII National Competition on Creativity, Undergraduate level, Regional Phase, Zone I, Area: Computer Science, 9/2003

1st Place in the XVIII National Competition on Creativity, Undergraduate level, Local Phase, Area: Computer Science, 6/2003

Participation in the XI National Basic Sciences (Mathematics, Physics and Chemistry) Competition, 5/2003

Participation in the X National Basic Sciences (Mathematics, Physics and Chemistry) Competition, 4/2002

Participation in the XLV Pre-National Men's College Basketball Tournament, Zone I, 5/2001

1st Place in the XVII National Competition on Creativity, Undergraduate level, Local Phase, Area: Computer Science, 5/2001

## Honors & Awards

### SCHOLARSHIPS

National Council of Science and Technology, Foreign Post-Doctoral Research Scholarship (second year) #193324 / 303732, Mexico, 8/2013 - 7/2014

National Council of Science and Technology, Foreign Post-Doctoral Research Scholarship (first year) #193324 / 303732, Mexico, 3/2012 - 2/2013

SEP-DGRI Graduate Student Scholarship, 10/2010 - 12/2010

Texas Instrument Foundation Graduate Student Scholarship, Fall/2010.

Cotton Memorial Scholarship, UTEP Graduate School, USA, Fall/2009 - Spring/2010

IEEE Graduate Student Travel Grant: 2009 IEEE International Joint Conference on Neural Networks, 6/2009.

National Council of Science and Technology, Foreign Doctoral Studies Scholarship #193324 / 303732, Mexico, 8/2010

National Council of Science and Technology, National Graduate Studies Scholarship #193324, Mexico, 2/2005-1/2007



## AWARDS

Inducted to the International Honor Society Eta Kappa Nu (HKN), for those individuals in excellent academic standing and outstanding professional achievement, 4/2011.

Recipient of the Research Excellence Award by Texas Tech University. 2009

NASA Graduate Research Program, Awarded a 10-Week Internship through the UMBC an Honors University in Maryland. 2009

IEEE Student Enterprise Award. 2007

3rd Place Award in the National Competition on Creativity against all Ph.D. and MS students winning from all the science and engineering disciplines from all the country. This is one of the highest existing levels for graduate studies competitions in the nation. 2007

1st Place Award in the National Competition on Creativity against undergraduate students winners from the Computer Science area from all the country. This is one of the highest existing levels for undergraduate competitions in the nation. 2004

Youth Citizen Award, Academic area. This economic award is given in a city-wide public convocation every 2 years by the mayor's office. It is given to an outstanding young student of the city. 2004

## Community and Social Activities

## SPORTS

Marist College faculty men's basketball group, 2015 - to-date

Center / Power Forward positions in Graduate School Men's Basketball team (ITCH), 2005 - 2006

Number 2 and 4 positions in Graduate School Men's Volleyball team (ITCH), 2005-2006

Number 4 position in College Men's Volleyball team (ITN), 2002

Power Forward position in College Men's Basketball team (ITN), 2000 - 2001

Member of the Flag Court in College Band (ITN), 1999

## SERVICE

Interim Pastor, First Baptist Church, Poughkeepsie, NY, 2015 - present

Spanish Minister (volunteer), Park-Lake Drive Baptist Church, Waco, TX, 2012 - 2015

Senior Pastor (volunteer), First Baptist Church (Hispanic), Rockdale, TX, 2011 - 2012

Sunday School Teacher, First Baptist Church, El Paso, TX, 2010 - 2011

Sunday School Teacher, Berea Baptist Church, Chihuahua, Mexico, 2006 - 2008

Sunday School Teacher, Sinai Baptist Church, Nogales, Mexico, 2000 - 2003

Social Service at College Library (ITN), 2002 - 2003

Organizer of the 2001 Youth Baptist Regional Association Volleyball Tournament, 2001

Radio Show Host, (Christian non-profit) HCJB World Radio Network, 1995-1998

## References

### PRIMARY REFERENCES

Dr. Anne Mattheus  
Professor of Computer Science  
Marist College  
(845) 575-3000  
[Anne.Mattheus@Marist.edu](mailto:Anne.Mattheus@Marist.edu)

Dr. Greg Hamerly  
Associate Professor of Computer Science  
Baylor University  
(254) 710-6846  
[Greg.Hamerly@baylor.edu](mailto:Greg.Hamerly@baylor.edu)

Dr. Bowu Zhang  
Assistant Professor of Computer Science  
Marist College  
(845) 575-3523  
[Bowu.Zhang@Marist.edu](mailto:Bowu.Zhang@Marist.edu)

Dr. James C. Tilton  
Computer Engineer  
NASA Goddard Space Flight Center  
(301) 286-9510  
[James.C.Tilton@nasa.gov](mailto:James.C.Tilton@nasa.gov)

Dr. Omar U. Florez  
Data Scientist  
Intel Labs  
(435) 757-9354  
[omar.florez@usu.edu](mailto:omar.florez@usu.edu)

Ivan Calzada  
Applications Engineer  
Texas Instruments  
(915) 443-2422  
[icalzada@ti.com](mailto:icalzada@ti.com)

### ADDITIONAL REFERENCES

Dr. Sergio Cabrera  
Associate Professor Electrical and Computer Eng  
The University of Texas El Paso  
(915) 747-6968  
[sergioc@utep.edu](mailto:sergioc@utep.edu)

Dr. Wei Qian  
Professor of Electrical and Computer Eng  
The University of Texas El Paso  
(915) 747-8090  
[wqian@utep.edu](mailto:wqian@utep.edu)

Dr. Cenk Erdil  
Assistant Professor of Computer Science  
Sacred Heart University  
(203) 396-6334  
[erdild@sacredheart.edu](mailto:erdild@sacredheart.edu)

Dr. Mario I. Chacon M.  
Associate Professor of Electrical Eng  
Chihuahua Institute of Technology  
1+52 (614) 201-2078 x24  
[mchacon@itchihuahua.edu.mx](mailto:mchacon@itchihuahua.edu.mx)

Uriel Cano  
Software Development Coordinator  
TRW Automotive  
1+52 (614) 439-5700  
[uriel.cano@trw.com](mailto:uriel.cano@trw.com)