

CV MILTON GARCÍA BORROTO, JUNE 3, 2016

Degrees: PhD. in Computer Sciences, MSc. in Computer Sciences

Birth date: Diciembre 2nd, 1976

Languages: Spanish (native) and English

Nationality: Cuban

email: mgarciab@ceis.cujae.edu.cu, milton.garcia@gmail.com

ORCID: <http://orcid.org/0000-0002-3154-177X>

ResearcherID: D-8301-2015

Education

- 2011 **Auxiliar Professor** Universidad de Ciego de Ávila (UNICA), Ciego de Ávila, Cuba
- 2010 **PhD in Computer Sciences.** Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE), Puebla, México
Senior Researcher. Centro de Bioplantas. Ciego de Ávila, Cuba.
- 2007 **MsC in Computer Sciences.** Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE), Puebla, México
- 2000 **Bachelor in Computer Sciences.** Universidad Central de Las Villas (UCLV), Santa Clara, Cuba

Jobs

- 2012- Auxiliar Professor at Instituto Superior Politécnico José Antonio Echeverría, Habana, Cuba
- 2003-2012 Profesor at Universidad de Ciego de Ávila, Cuba
- 2000-2013 Senior Researcher at Centro de Bioplantas de Ciego de Ávila, Cuba. Head of the Applied Computing Laboratory

Interests

Researching Pattern Recognition, Artificial Intelligence, Data Mining, Classification based on Contrast Patterns, Biometry

Programming System and framework development based on modern languages and technologies: .Net, C#, SqlServer, NHibernate, NUnit, Sqlite, Caliburn.Micro

Software Engineering Agile methodologies, TDD, BDD, Scrum, Design Patterns

Research Results

Patents

- 2015 System and methods for comparing fingerprint and palmprint matching based on multiple deformable clusters. In Mexico MX/a/2015/002939. Pendant. In Spain P201500514. Pendant

Publications

Journals

- 2015 Octavio Loyola-González, J.Fco. Martínez-Trinidad, J.A. Carrasco-Ochoa, **Milton García-Borrito**. Study of the impact of resampling methods for contrast pattern based classifiers in imbalanced databases. Neurocomputing.
DOI: 10.1016/j.neucom.2015.04.120. ISSN:0925-2312
- Miguel A. Medina-Pérez, Aythami Morales, Miguel A. Ferrer, **Milton García-Borrito**, Octavio Loyola-González, Leopoldo Altamirano Robles. Latent Fingerprint Identification using Deformable Minutiae Clustering. Neurocomputing.
DOI: 10.1016/j.neucom.2015.05.130. ISSN:0925-2312
- Milton García-Borrito**, José Fco. Martínez-Trinidad, Jesús A. Carrasco-Ochoa. Finding the best diversity generation procedures for mining contrast patterns. Expert Systems with Applications, 42(11), pp 4859-4866.
DOI 10.1016/j.eswa.2015.02.028. ISSN:0957-4174
- Octavio Loyola-González, Miguel Angel Medina-Pérez, **Milton García-Borrito**. Inducing Decision Trees based on a Cluster Quality Index. IEEE América Latina, 13(4), pp:1141-1147.
doi:10.1109/TLA.2015.7106368. ISSN:1548-0992

A.E. Gutierrez-Rodríguez, J.Fco. Martínez-Trinidad, **M. García-Borroto** and J.A. Carrasco-Ochoa. Mining Patterns for Clustering on Numerical Datasets using Unsupervised Decision Trees. Knowledge-Based Systems. DOI 10.1016/j.knosys.2015.02.019. ISSN:0950-7051

A.E. Gutierrez-Rodríguez, J.Fco. Martínez-Trinidad, **M. García-Borroto** and J.A. Carrasco-Ochoa. Mining Patterns for Clustering using Unsupervised Decision Trees. Intelligent Data Analysis 19(6), 1297-1310, 2015. ISSN:1088-467X

2014 Octavio Loyola-González, **Milton García-Borroto**, José Francisco Martínez Trinidad, Jesús Ariel Carrasco-Ochoa. An empirical comparison among quality measures for pattern based classifiers. Intelligent Data Analysis 18(6S), S5-S17, 2014. DOI 10.3233/IDA-140705. ISSN:1088-467X

Milton García-Borroto, José Francisco Martínez Trinidad, Jesús Ariel Carrasco-Ochoa. A survey of emerging patterns for supervised classification, Artificial Intelligence Review 42(4), pp: 705–721, 2014. doi:10.1007/s10462-012-9355-x. ISSN:0269-2821

2013 R. Yera Toledo, Y. Caballero Mota, **M. García-Borroto**. A Regularity-Based Preprocessing Method for Collaborative Recommender Systems. Journal of Information Processing Systems, vol. 9, no. 3, pp. 435-460, 2013. (indexed in Scopus, Compendex, DBLP). doi 10.3745/JIPS.2013.9.3.435. ISSN:1976-913X

2012 MA Medina-Pérez, **M. García-Borroto**, AE Gutierrez, L Altamirano-Robles. Improving fingerprint verification using minutiae triplets, Sensors 12(3), pp:3418-37, 2012. doi:10.3390/s120303418. ISSN:1424-8220

2011 **Milton García-Borroto**, José Francisco Martínez Trinidad, Jesús Ariel Carrasco-Ochoa: Fuzzy emerging patterns for classifying hard domains. Knowl. Inf. Syst. 28(2): 473-489 (2011). DOI 10.1007/s10115-010-0324-x. ISSN:0219-1377.

2010 **Milton García-Borroto**, José Francisco Martínez Trinidad, Jesús Ariel Carrasco-Ochoa, Miguel Angel Medina-Pérez, José Ruiz-Shulclopfer: LCMine: An efficient algorithm for mining discriminative regularities and its application in supervised classification. Pattern Recognition 43(9): 3025-3034 (2010). doi:10.1016/j.patcog.2010.04.008. ISSN:0031-3203

2009 Lorenzo, J.C., **García-Borroto, M.** Reply to RE: Use of regression analysis in plant cell, tissue and organ culture experiments 44(3): 229-232. In Vitro Cellular Developmental Biology - Plant: Volume 45, Issue 4 (2009), Page 501. DOI: 10.1007/s11627-009-9206-x. ISSN:1054-5476

2008 Lorenzo, J.C., **García-Borroto, M.** Use of regression analysis in plant cell tissue and organ culture experiments. In Vitro Cell. Dev.Biol.-Plant vol 44(3) (2008) 229–232. DOI 10.1007/s11627-007-9100-3. ISSN:1054-5476

Book Chapters

Lei Duan, **Milton García-Borroto**, Guozhu Dong: More Expressive Contrast Patterns and Their Mining. Contrast Data Mining: Concepts, Algorithms, and Applications. Eds: Guozhu Dong, James Bailey. Chapman & Hall. ISBN 9781439854327. pp. 89-108, 2013.

Conference Proceedings

2016 Octavio Loyola-González, José Fco. Martínez-Trinidad, Jesús Ariel Carrasco-Ochoa, Dayton Hernández-Tamayo and **Milton García-Borroto**. Detecting Pneumatic Failures on Temporary Immersion Bioreactors. MCPR 2016, LNCS 9703, pp. 1–10, 2016. DOI: 10.1007/978-3-319-39393-3 29

2015 Octavio Loyola-González, José Fco. Martínez-Trinidad, Jesús Ariel Carrasco-Ochoa, **Milton García-Borroto**. Correlation of Resampling Methods for Contrast Pattern Based Classifiers. Lecture Notes in Computer Science, vol 9116, pp. 93-102, 2015.

2014 M. A. Medina-Pérez, O. Loyola-González, A. E. Gutierrez-Rodríguez, **M. García-Borroto**, and L. Altamirano-Robles. Introducing an experimental framework in C# for fingerprint recognition, Lecture Notes in Computer Science, vol. 8495, pp. 132–141, 2014.

Aythami Morales, Miguel A. Medina-Pérez, Miguel A. Ferrer, **Milton García-Borroto**, Leopoldo Altamirano Robles, "LPIDB v1.0 - Latent Palmprint Identification Database", Proceedings of International Joint Conference on Biometrics, Clearwater, Florida, USA, pp. 1-6, 2014.

2013 **Milton García-Borroto**, Octavio Loyola-González, José Francisco Martínez Trinidad, Jesús Ariel Carrasco-Ochoa. Comparing Quality Measures for Contrast Pattern Classifiers. In: J. Ruiz-Shulclopfer and G. Sanniti di Baja (Eds.): CIARP 2013, Part I, LNCS 8258, pp. 311-318, 2013.

Octavio Loyola-González, **Milton García-Borroto**, Miguel Angel Medina-Pérez, José Francisco Martínez Trinidad, Jesús Ariel Carrasco-Ochoa, Guillermo De Ita Luna: An Empirical Study of Oversampling and Undersampling Methods for LCMine an Emerging Pattern Based Classifier. MCPR 2013, LNCS 7914, pp. 264-273

- 2012 Miguel Angel Medina-Pérez, **Milton García-Borroto**, Andrés Eduardo Gutiérrez-Rodríguez, Leopoldo Altamirano Robles: Improving the Multiple Alignments Strategy for Fingerprint Verification. MCPR 2012, LNCS 7329, pp. 147-154
- Cosme Ernesto Santiesteban Toca, **Milton García-Borroto**, Jesús S. Aguilar-Ruiz: Using Short-Range Interactions and Simulated Genetic Strategy to Improve the Protein Contact Map Prediction. MCPR 2012, LNCS 7329, Huatulco, México: 166-175
- 2011 Miguel Angel Medina-Pérez, **Milton García-Borroto**, Andrés Eduardo Gutiérrez-Rodríguez, Leopoldo Altamirano Robles. Robust Fingerprint verification using m-triplets. International Conference on Hand Based Biometrics ICHB 2011. Hong Kong 2011, 1-5, DOI:10.1109/ICHB.2011.6094348.
- 2010 Andrés Eduardo Gutiérrez-Rodríguez, Miguel Angel Medina-Pérez, José Francisco Martínez Trinidad, Jesús Ariel Carrasco-Ochoa, **Milton García-Borroto**: New Dissimilarity Measures for Ultraviolet Spectra Identification. MCPR 2010, LNCS 6256: 220-229
- Milton García-Borroto**, José Francisco Martínez Trinidad, Jesús Ariel Carrasco-Ochoa. Cascading an Emerging Pattern based classifier. J.A. Carrasco-Ochoa et al. (Eds.): MCPR 2010, LNCS 6256, pp. 240-249, 2010
- Milton García-Borroto**, José Francisco Martínez Trinidad, Jesús Ariel Carrasco-Ochoa: A New Emerging Pattern Mining Algorithm and Its Application in Supervised Classification. M.J. Zaki et al. (Eds.): PAKDD 2010, Part I, LNAI 6118, pp. 150-157, 2010
- 2009 Miguel Angel Medina-Pérez, Andrés Eduardo Gutiérrez-Rodríguez, **Milton García-Borroto**: Improving Fingerprint Matching Using an Orientation-Based Minutia Descriptor. Lecture Notes in Computer Science 5856 (2009) 121-128
- Milton García-Borroto**, Yenny Villuendas-Rey, Jesús Ariel Carrasco-Ochoa, José Francisco Martínez Trinidad: Finding Small Consistent Subset for the Nearest Neighbor Classifier based on Support graphs. Lecture Notes in Computer Science 5856 (2009) 465-472
- Milton García-Borroto**, Yenny Villuendas-Rey, Jesús Ariel Carrasco-Ochoa, José Francisco Martínez Trinidad: Using maximum similarity graphs to edit Nearest Neighbor Classifiers. Lecture Notes in Computer Science 5856 (2009) 489-496
- 2008 Yenny Villuendas-Rey, **Milton García-Borroto**, José Ruiz-Shulcloper: Selecting features and objects for mixed and incomplete data, Lecture Notes in Computer Science 5197 (2008) 381-388.
- 2007 Miguel Angel Medina-Pérez, **Milton García-Borroto**, Villuendas-Rey, José Ruiz-Shulcloper: Object Selection Based on Subclass Error Correcting for ALVOT. Lecture Notes in Computer Science 4756 (2007) 496-505
- 2006 Yenny Villuendas-Rey, **Milton García-Borroto**, Miguel Angel Medina-Pérez, José Ruiz-Shulcloper: Simultaneous features and objects selection for mixed and incomplete data. LNCS 4225 (2006) 597-605
- Miguel Angel Medina-Pérez, **Milton García-Borroto**, Yenny Villuendas-Rey, José Ruiz-Shulcloper: Selecting objects for ALVOT. LNCS 4225 (2006) 606-613
- 2005 **Milton García-Borroto**, José Ruiz-Shulcloper: Selecting Prototypes in Mixed Incomplete Data. LNCS 3773 (2005) 450-459

Events

- 2016 **VIII Mexican Conference on Pattern Recognition, MCPR**, Querétaro, México
- 2015 **VII Mexican Conference on Pattern Recognition, MCPR**, México DF, México
- 2014 **VI Mexican Conference on Pattern Recognition, MCPR**, Cancún, México
- International Joint Conference on Biometrics**, Clearwater, Florida, USA,
- 2013 **V Mexican Conference on Pattern Recognition, MCPR**, Querétaro, México
- XVIII Iberoamerican Congress on Pattern Recognition**, Habana, Cuba
- 2012 **IV Mexican Conference on Pattern Recognition, MCPR**, Huatulco, México
- 2011 **International Conference on Hand-Based Biometrics (ICHB 2011)**, Hong Kong, China.
- VIII International Congress Bioveg 2011**, Ciego de Ávila, Cuba
- 2010 **II Mexican Conference on Pattern Recognition, MCPR**, Puebla, México
- 2009 **XIV Iberoamerican Congress on Pattern Recognition, CIARP**, Guadalajara, México
- 2008 **XIII Iberoamerican Congress on Pattern Recognition, CIARP**, Habana, Cuba

- 2007 **XII Iberoamerican Congress on Pattern Recognition, CIARP**, Viña del Mar, Chile
Sexto Congreso Internacional Bioveg 2007, Ciego de Ávila, Cuba.
- 2006 **XI Iberoamerican Congress on Pattern Recognition, CIARP**, Cancún, México
VII Conferencia Científica de Internacional UNICA 2006, Ciego de Ávila, Cuba
- 2005 **X Iberoamerican Congress on Pattern Recognition, CIARP**, Ciudad Habana, Cuba
Taller Internacional de Biotecnología Vegetal, BIOVEG 2005, Ciego de Ávila, Cuba
- 2004 **I Conferencia Científica de Ingeniería Agrícola de la Habana**, Ciudad Habana, Cuba
VI Conferencia Científica de Internacional UNICA 2004, Ciego de Ávila, Cuba
- 2003 **Taller Internacional de Biotecnología Vegetal, BIOVEG 2003**, Ciego de Ávila, Cuba
Primer Congreso Veracruzano de Ingeniería Biomédica, Veracruz, México
- 2001 **Taller Internacional de Biotecnología Vegetal, BIOVEG 2001**, Ciego de Ávila, Cuba

Postgraduate studies

- 2013 **Mining Uncertain and probabilistic data for big data analysis**. Dr. Jian Pei, Simon Fraser University.
Fundamentals of Iris Recognition. Professor Tieniu Tan, National Laboratory of Pattern Recognitions, China
- 2006 **Fuzzy Models for Pattern Recognition**. Professor James C. Bezdek, Universidad de Pensacola, USA
- 2005 **Feature Selection and Extraction**. Professor Joseph Kittler, Universidad de Surrey, UK
Video Segmentation, Semantic Annotation and Transcoding Professor Alberto del Bimbo, Universidad de Firenze, Italia

Awards

- 2016 **Special Award of the Ministry of Higher Education for Researching Results - MES**, Havana, Cuba
Scientific result with highest impact and originality in the year - Ministry of Higher Education, Havana, Cuba
- 2015 **National Academy of Sciences Award** to the result "Development and application of computational intelligence techniques", Habana, Cuba
- 2013 **State Academy of Sciences Award** to the result "Data pre-processing methods for recommender systems based on collaborative filtering", Ciego de Ávila, Cuba
- 2009 **State Academy of Sciences Award** to the result "Computer tools for forensics"
- 2008 **State Academy of Sciences Award**, Ciego de Ávila, Cuba.
- 2007 **Best Student Award** in the Computer Sciences Master, INAOE, México
State Academy of Sciences Award to the result "New methods for selecting objects and its applications for improving supervised classifiers", Ciego de Ávila, Cuba.
- 2006 **State Academy of Sciences Award** to the result "Improving supervised classifiers by feature and object selection", Ciego de Ávila, Cuba.
- 2003 **State Academy of Sciences Award**, Ciego de Ávila, Cuba.

Research Projects

- 2011-2015 **Supervised classifiers based on patterns**. Project CONACyT No. 106366, México.
- 2011-2015 **Document analysis based on frequent sub-structures**. Project CONACyT No. CB-106443, México.
- 2008-2012 **Automation of Temporal Immersion Biorreactors**, Project CITMA(state) No. PT08CG01805.
- 2008-2009 **Classifiers for large databases with mixed and incomplete data**. Project CONACyT No. 083947, México.

Directed Thesis

Doctoral studies

- 2010-2014 Miguel Ángel Medina. Algorithms for the automatic matching of latent fingerprints and palmprints. Instituto Nacional de Astrofísica, Óptica y Electrónica, Puebla, México. (Defended)
- 2011-2015 Andrés Eduardo Gutiérrez Rodríguez. Conceptual clusters based on emerging patterns. Instituto Nacional de Astrofísica, Óptica y Electrónica, Puebla, México. (Defended)
- 2013-2017 . Octavio Loyola González. Supervised classification based on emerging patterns in class imbalance problems. Instituto Nacional de Astrofísica, Óptica y Electrónica, Puebla, México.

Master studies

- 2012 Octavio Loyola González. Quality measures of clusters , UNICA, Cuba.
- 2011 Raciél Yera Toledo. Collaborative filters for collaborative networks , UNICA, Cuba.
- 2009 Andrés E. Rodríguez Gutiérrez. New algorithms for comparing ultraviolet spectra for substance identification , UNICA, Cuba.
- 2009 Miguel Medina Pérez. Algorithms for object selection for the ALVOT classifier , UNICA, Cuba.
- 2008 Yenny Villuendas Rey. Algorithms for the combined selection of features and objects , UNICA, Cuba.