

María Guadalupe Villarreal Marroquín, PhD

CONACYT Research Fellow

Centro de Investigación en Matemáticas, A.C. - Monterrey Office

Member of the Mexican System of Researchers: Level 1

Alianza Centro 502, Parque de Investigación e Innovación Tecnología (PIIT)

Apodaca, Nuevo León, México, CP. 66629

Tel. +52 (81) 21872056 ext. 1220

e-mail: maria.villarreal@cimat.mx

Research Interest

- Mathematical and statistical modeling for multiple objective optimizations and simulation of manufactures processes.
- Mathematical and statistical analysis of massive and complex data sets.

Education

PhD, Industrial and Systems Engineering, The Ohio State University, USA, 2013

M.S., Systems Engineering, Universidad Autónoma de Nuevo León (UANL), México, 2007

B.Sc. in Mathematics, Universidad Autónoma de Nuevo León, México, 2005

Academic and Visiting Appointments

CONACYT Research Fellow, Mathematics Research Center, Monterrey, Mexico (2014-present)

Visiting Scholar, Integrated Systems Engineering Department, The Ohio State University, USA (2008,2013, 2015)

Graduate Research Assistant, Integrated Systems Engineering Department, The Ohio State University, USA (2009-2012)

Honors

SNI 1: Mexican System of Researchers Level 1 (2015-2017).

State's Youth Award, award granted to the most outstanding young people of the state of Nuevo Leon in the Academic Category (2008).

Mexican Women Inventors and Innovators Award: first place on the Category Innovation in Science and Technology (2008).

UANL Research Award: Most prestigious university-wide award granted by UANL to the best research work in the Exact Sciences Category (2008).

Study Fellowships: PhD studies from CONACyT (2009-2012) & The Ohio State University Grad School (2009-2010), MS studies from CONACyT (2005-2006).

Research Paper Awards: Best Conference Paper in Computer Science track in the 5th International Conference in Innovation and Technology Development (México, 2007).

Publications

Book Chapters: (1)

- *Artificial Neural Networks-based forecasting: an attractive option for Just-in-time Systems*, in *Just in Time Systems*, Springer Series on Optimization and its Applications (2012).

Journal Paper: (10)

- *Multiobjective optimization of Injection Molding using a calibrated predictor based on physical and simulated data thickness*, Journal of Polymer Engineering and Science (in press, 2016)

- *Optimization via simulation: a metamodeling-based method and a case study*, European Journal of Industrial Engineering (2013)

- *A Comparison of two Metamodel-Based Methodologies for Multiple Criteria Simulation Optimization using an Injection Molding Case Study*, Journal of Polymer Engineering (2013)

- *Generating multiple time series forecasts with artificial neural networks in a telecommunications company*, International Journal of Industrial Engineering: Theory, Applications and Practice (2011)

- *A multicriteria simulation optimization method for injection molding*, Journal of Polymer Engineering (2011)

- *Selecting Process Parameter in Injection Molding via Simulation Optimization*, Journal of Polymer Engineering (2011)

- *Minimum "safe cycle time": selecting the frozen layer thickness* (Polymer Engineering and Science, 2009)

- *Time Series: Empirical Characterization and Artificial Neural Network-based Selection of Forecasting Techniques*, Intelligent Data Analysis: An International Journal (2009)

- *A Study on Material Distribution and Mechanical Properties in Co-Injection Molding*, Journal of Polymer Engineering (2008)

Talks

1st International Workshop on BiLevel Programming (Mexico, 2016); Congreso Nacional Multidisciplinario de Educación, Ciencia Y Tecnología (Mexico, 2015); National Conference of the Mexican Society of Operation Research (Mexico, 2015); Latin-Iberian-American Conference on Operations Research (Mexico, 2014); Polymer Processing Society Americas Conference (Canada, 2012); Winter Simulation Conference (USA, 2007, 2009, 2011); Industrial Engineering Research Conference (USA, 2011); Congreso Internacional de Innovación y Desarrollo Tecnológico,

Cuernavaca (Mexico, 2006, 2007); INFORMS International Meeting (USA, 2007); Conference of the Mexican Society of Mathematics (Mexico, 2006), among others.

Teaching

Graduate Courses:

- Multiple Criteria Optimization
- Simulation via Optimization
- Design of Experiments

Current Academic Memberships

Mexican Society of Operation Research: Regular Member and Treasurer (2014-2016)

Languages and Computer Skills

Languages: Spanish (native) and English

Statistical Software: Minitab, and R.

Optimization: MATLAB

Simulation Software: Discrete Event: Simul8 & ARENA; for Plastics: Moldex3D & Moldflow.

Updated: October 2016