saylissedávila

about

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data analysis

R, Minitab,JMP,SQL, MS Office Suite,Python,VBA.

certifications

Six Sigma Black Belt
Certificate in Statistics
Engineer in Training
I-Corps PR
Online Course Creation

languages

[fluent] english
[native] spanish
[basic reading comprehension] french

skills

[applied statistics/machine learning] supervised learning (tree-based models, discriminant analysis, generalized linear models, regularized methods, rule-based classifiers), unsupervised learning (association rules, clustering, principal component analysis), feature selection, missing value imputation, meta-learners, experimental design.

education

2007-2010 **PhD** in Industrial Engineering — Arizona State University, Tempe, AZ
Major in Quality and Reliability Engineering
Minors in Statistics and Operations Research
GPA: 4.00/4.00
Dissertation: *Public Health Surveillance in High-Dimensions with Supervised Learning*

2005–2007 **MSE** in Industrial Engineering — Arizona State University, Tempe, AZ
GPA: 4.00/4.00

2000–2005 **BS** in Industrial Engineering — University of Puerto Rico, Mayagüez, PR
Awards:
Luis Stefani Raffucci, College of Engineering
Frederick Taylor, Department of Industrial Engineering
GPA: 4.00/4.00

awards

2013, 2014 **Outstanding Professor**, Department of Industrial Engineering
University of Puerto Rico, Mayagüez, PR

2014 **Innovation in Health Communication**, Merck & Co., Inc.
Carolina, PR

2013 **Best Paper**, Industrial Engineering Division
ASEE Annual Conference, Atlanta, GA

2005-2010 **AGEP Scholar**, Alliance for Graduate Education and the Professoriate
Arizona State University, Tempe, AZ

2009 **ARCS Scholar**
Achievement Awards for Research College Scientists, Phoenix, AZ

2009 **Thed Thal Graduate Fellow**
American Society for Quality

2009 **Technical Minority Fellow**
Xerox Foundation

2007-2008 **Graduate Education for Minorities (GEM) National Consortium Fellow**
Intel Corporation

2005-2008 **College of Engineering and Applied Sciences Deans Scholar**
Arizona State University, Tempe, AZ

2005	**Ira A. Fulton Enrichment Fellow** Arizona State University, Tempe, AZ
2005	**Graduate Fellow** Tau Beta Pi
2003-2005	**National Dean List**
2004	**Pride @ Boeing Employee Recognition** Boeing Commercial Airplanes
2004	**Undergraduate Scholarship** General Motors
2003	**First Place in Research and Poster Fair** University of Puerto Rico, Mayagüez, PR
2002	**National Collegiate Minority Leadership Award**
2002	**All-American Scholar Collegiate**
2000	**Honorary Award Recognition** Who's Who Among American High School Students

experience

2020- **University of Puerto Rico, Mayagüez, PR** — Professor & Associate Chair
Department of Industrial Engineering

Undergraduate Level Courses: *Probability and Statistics for Engineers, Undergraduate Research*
Graduate Level Courses: *Knowledge Discovery, Special Problems, Dissertation*
Service: IE Graduate Committee Member, College of Engineering Graduate Committee Member

2019-2020 **University of Puerto Rico, Mayagüez, PR** — Professor
Department of Industrial Engineering

Undergraduate Level Courses: *Probability and Statistics for Engineers, Undergraduate Research*
Graduate Level Courses: *Knowledge Discovery, Experimental Statistics, Multiple Regression Analysis, Thesis, Dissertation*
Service: Academic Senator, Advisor for UPRM American Society for Quality Student Chapter, IE Graduate Committee Member, College of Engineering Graduate Committee Member

2015-2019 **University of Puerto Rico, Mayagüez, PR** — Associate Professor
Department of Industrial Engineering

Undergraduate Level Courses: *Probability and Statistics for Engineers, Operations Management, Engineering Practice for Co-op Students, Industrial Engineering Practice, Undergraduate Research*
Graduate Level Courses: *Knowledge Discovery, Design of Experiments, Multiple Regression Analysis, Engineering Project, Thesis, Dissertation*
Service: Academic Senator, Advisor for UPRM American Society for Quality Student Chapter, IE Graduate Committee Member, College of Engineering Graduate Committee Member

2011-2014 **University of Puerto Rico, Mayagüez, PR** — Assistant Professor
Department of Industrial Engineering

Undergraduate Level Courses: *Probability and Statistics for Engineers, Operations Management, Undergraduate Research*
Graduate Level Courses: *Knowledge Discovery, Design of Experiments, Queuing Theory and Applications, Engineering Project, Thesis*
Service: Advisor for UPRM American Society for Quality Student Chapter, IE Graduate Committee Member

2011 **University of Puerto Rico, Mayagüez, PR** Instructor
Department of Industrial Engineering
Undergraduate Level Courses: *Probability and Statistics for Engineers, Operations Management, Engineering Practice for Co-op Students, Industrial Engineering Practice, Undergraduate Research*

2009-2010 **John Wiley and Sons, Inc.** Contributor
Develop and edit solutions manual for the *Managing, Controlling, and Improving Quality* (2010) textbook by Montgomery, Jennings, and Pfund.

2008 **Intel Corporation, Chandler, AZ** Graduate Technical Intern
Technology Manufacturing Group, Materials Business Solutions
Develop a VBA/R-based application for the clustering and optimization of the Electronic Industry Citizenship Coalition (EICC) joint audit process.

2007 **Intel Corporation, Chandler, AZ** Graduate Technical Intern
Assembly Test and Technology Transfer, Module Engineering
Develop a database application for the retrieval and update of MOR/MSR key information.

2006 **Intel Corporation, Chandler, AZ** Graduate Technical Intern
Component Automation Systems, Supply Chain Solutions
Evaluate alternative inventory control strategies for CPU products using time series modeling and standard replenishment models.

2004 **Boeing Commercial Airplanes, WA** Summer Intern

sample projects

[NOAA/Sea Grant] Exposure and Sensitivity to Floods: A Comprehensive Vulnerability Assessment of Rincón's Neighborhoods Principal Investigator (PI)

Led a team of 15 members (faculty and students) responsible for developing: **(1)** an adaptive capacity to floods quantitative model based on Chronbach's alpha, (**2)** an overall flood vulnerability index based on custom implementation of analytic hierarchical process (AHP) indexes for exposure, sensitivity, and adaptive capacity, **(3)** a hybrid tsunami pedestrian evacuation model that merges anisotropic least cost distance model by providing intelligent agent capabilities in the form of evacuation speed, evacuation response, and a fatigue penalty based on distance traveled, **(4)** a georeferenced inventory of infrastructure based on custom ArcGIS mobile app for data collection.

[NSF] Educating the culturally-sensitive industrial engineer: A complex interdisciplinary systems perspective to global IE issues Co-PI

Designed and coordinated: **(1)** year-long IE research program and **(2)** experiential learning activities for summer program focused on developing culturally-sensitive skills in a blend of local and foreign undergraduate students.

[NSF] Nanotechnology Center for Biomedical, Environmental and Sustainability Applications – Phase II Senior Personnel

Mentor doctoral student working on sequential mixture experimental design and characterization of an eco-friendly concrete mixture using recycled plastic, fly ash, and nano-silica.

[PR-DoA,SEA] Work funded by Servicio de Extensión Agrícola and Puerto Rico Department of Agriculture. Co-PI

Collaborated with master's student in the development of: (1) an automated method for extracting clusters from a dendrogram, and (2) a method for transferring survey data at different levels of aggregation based on a combination of supervised and unsupervised methods.

[UPRM] Assessment Lead

Carried out 2011-2016 IE Graduate Program Assessment, IE Undergraduate Program Assessment, IE Strategic Plan Assessment, 2016-2018 RealTimePC Assessment.

training

2020 **Fostering Mental Health and Wellbeing on University Campuses**
Faculty Resource Network
New York University, New York, NY

2019 **Critical and Creative Thinking**
Faculty Resource Network
New York University, New York, NY

2018 **Entrepreneurship in Action**
Faculty Resource Network
New York University, New York, NY

2017 **Virtual Educator** Online Course
DECEP
University of Puerto Rico, Mayagüez, PR

2017 **Designing Innovative Curricula in Health Science and Public Health**
Faculty Resource Network
New York University, New York, NY

2016 **Cloud for Everyone**
National Science Foundation
Georgia Institute of Technology, Atlanta, GA

2016 **Entrepreneurship and the Business Curriculum**
Faculty Resource Network
New York University, New York, NY

2016 **I-Corps Puerto Rico**
Grupo Guayacán, Inc.
University of Puerto Rico, Mayagüez, PR

2015 **Yellow Peril: Understanding Xenophobia**
Faculty Resource Network
New York University, New York, NY

2014 **Multiple Dimensions of Blended Learning**
Faculty Resource Network
New York University, New York, NY

2012 **Data-Driven Decisions in Health Care**
Durham, NC

2012 **Women in Industrial Engineering Academia**
Kadir Has Üniversitesi, Istanbul, Turkey

2012 **NIH Regional Seminar on Program Funding and Grants Administration**
Indianapolis, IN

2012 **Workshop on Engineering Enterprise and Innovation**
NSF Minority Faculty Development Program
Georgia Institute of Technology, Atlanta, GA

2012 **NIH-EARDA Grant Writing Initiative**
University of Puerto Rico, Mayagüez, PR

2011 **Affinity Research Group (ARG) Fundamentals**
Computing Alliance for Hispanic-Serving Institutions, Rincón, PR

2008 **Data Mining in Healthcare Workshop**
INFORMS Annual Meeting, Washington, DC

2008 **Six Sigma Black Belt Certification**
Arizona State University, Tempe, AZ

2008 **Certificate in Statistics**
Arizona State University, Tempe, AZ

2005 **Engineer in Training**
Engineering Examination Services, PR

publications

Journal Articles

Dávila, S., Runger, G., and Tuv, E. (2014). *Public Health Surveillance with Ensemble-Based Supervised Learning*. IIE Transactions Special Issue on Surveillance.

Cotto-Ramos, A., Dávila, S., Torres-García, W., and Cáceres-Fernández, A. (2020). *Experimental design of concrete mixtures using recycled plastic, fly ash, and silica nanoparticles*. Construction and Building Materials, 254, 119207.

Faucher, J. E., Dávila, S., Hernández-Cruz, X. (2020). *Modeling Pedestrian Evacuation for Near-field tsunamis fusing ALCD and agent-based approaches: A case study of Rincón, PR*. International Journal of Disaster Risk Reduction, 49, 101606.

Hernández-Cruz, X., Dávila, S. (2020) *Quantifying adaptive capacity to floods: An assessment of Rincón, PR*. Natural Hazards: Journal of the International Society for the Prevention and Mitigation of Natural Hazards, 103, 1537-1564.

Rosado, H. and Dávila, S. (2020) *Tree-based missing value imputation using feature selection (TI-FS)*. Journal of Data Science, 18(4), 606-631.

Book Chapters

Deng, H., S. Dávila, G. Runger, and E. Tuv (2010). "Learning Markov Blankets for Continuous or Discrete Networks via Feature Selection," Editors: Valentini, G.; Okun, O.; Re, M., *2010 Workshop on Supervised and Unsupervised Ensemble Methods and their Applications*, European Conference on Machine Learning, Barcelona, Spain.

Refereed Conference Proceedings

Medina, L.A., Dávila, S., Oquendo, N., and Velázquez, M.A. (2020) *Developing a meta-model of critical factors for females in STEM with application to a minority-serving institution*. Proceedings of the 2020 ASEE Conference and Exposition.

Hernández, X. and Dávila, S. (2019) *A Hybrid Pedestrian Evacuation Model for Tsunamis*. Proceedings of the 2019 Industrial Systems Engineering Research Conference, Orlando, FL.

Hernández, X., Dávila, S., Oquendo, N., and Ríos, M. (2018) *A Quantitative Approach to Measure Adaptive Capacity to Floods*. Proceedings of the 2018 Industrial Systems Engineering Research Conference, Orlando, FL.

Dávila, S., Franqui, N., and Hernández, X. (2017) *Modeling Pedestrian Evacuation Response for Tsunami Events*. Proceedings of the 2017 Industrial Systems Engineering Research Conference, Pittsburgh, PA.

Hernández, X., Dávila, S., and Franqui, N. (2017) *Relaxing Assumptions in Evacuation Models using Sports Event Data* . Proceedings of the 2017 Industrial Systems Engineering Research Conference, Pittsburgh, PA.

Rosado, H. and Dávila, S. (2017) *Performance of Missing Value Imputation Schemes in Women's Health Data* . Proceedings of the 2017 Industrial Systems Engineering Research Conference, Pittsburgh, PA.

Dávila, S., Castiel-Camacho, N., Sánchez, C., and Medina, L. (2016) *Vulnerability Attribute Selection*. Proceedings of the 2016 Industrial Systems Engineering Research Conference, Anaheim, CA.

Dávila, S., Franqui, N., Medina, L., and Carrasco, M.(2016) *Adaptive Capacity: A Case Study of Rincón, PR*. Proceedings of the 2016 Industrial Systems Engineering Research Conference, Anaheim, CA.

Ruiz, B., Rodríguez, B., and Dávila, S.(2016) *What is my data revealing? Identifying clusters in Ward's dendrograms*. Proceedings of the 2016 Industrial Systems Engineering Research Conference, Anaheim, CA.

Dávila, S., Cruz, M., García, T., Bonet, S., and Ruiz-Vélez, R. (2015) *Global Ranks in High-Dimensional Tsunami Exposure Indexes*. Proceedings of the 2015 Industrial Systems Engineering Research Conference, Nashville, TN.

Dávila, S. and Rosado, H. (2015) *Performance of Missing Value Imputation Schemes in Women's Health Data*. Proceedings of the 2015 Symposium of Health Informatics in Latin America and the Caribbean, San Juan, PR.

Dávila, Cruz, M., García, T., Bonet, S., and Ruiz-Vélez, R. (2015) *Global Ranks in High-Dimensional Tsunami Exposure Indexes*. Proceedings of the 2015 Industrial Systems Engineering Research Conference, Nashville, TN.

Dávila, S., Carmona, M., Pérez, E., Rosado, H., and Flores, I. (2015) *Towards a non-invasive endometriosis diagnosis: The conceptual framework of the Endometriosis Risk Calculator*. Proceedings of the 2015 Industrial Systems Engineering Research Conference, Nashville, TN.

Dávila, S., Torres-García, and Cesaní, V. (2015) *Mining the Profile of Successful IE Students: Using Historical Data to Drive Curricular Interventions* . Proceedings of the 2015 Industrial Systems Engineering Research Conference, Nashville, TN.

Dávila, S., Ayala, J., Salazar, F., and Ruiz, R. (2014) *A Conceptual Framework for Measuring the Exposure to Tsunami in Puerto Rican coastal communities*. Proceedings of the 2014 Industrial Systems Engineering Research Conference, Montreal, Canada.

Medina, L. and Dávila, S. (2013) *Design for FDA: A predictive model for the FDA's decision time for medical devices*. Proceedings of the ASME 2013 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, Portland, OR.

Dávila, S., Cesaní, V., and Medina-Borja, A. (2013) *Measuring intercultural sensitivity: A case study of the REU program at UPRM*. Proceedings of the 2013 ASEE Annual Conference and Exposition, Atlanta, GA.

Dávila, S., Runger, G., and Pacheco, P. (2013) *High-dimensional disease outbreak detection using tree-based ensembles*. Proceedings of the 2013 Industrial Systems Engineering Research Conference, San Juan, PR.

Dávila, S., Marín, R., Fourquet, J., and Flores, I. (2013) *Modeling the risk of endometriosis in Puerto Rican females*. Proceedings of the 2013 Industrial Systems Engineering Research Conference, San Juan, PR.

Dávila, S., Runger, G., and Torres, M. (2012) *Diagnosing out-of-control signals using rule-based classifiers*. Proceedings of the 2012 Industrial Systems Engineering Research Conference, Orlando, FL.

S. Dávila, G. Runger, and E. Tuv (2011) *High-dimensional surveillance*. Proceedings of the 2011 International Conference on Artificial Neural Networks, Espoo, Finland.

Dávila, S. and Bartolomei-Suarez, S. M. (2007) *Fare elasticities and their effect on Tren Urbano's ridership levels*. Proceedings of the 2007 Industrial Engineering Research Conference, Nashville, TN.

graduate students

2016-	**Anamarie Cotto, Civil Engineering** **Topic:** *Experimental Design and Characterization of Alternative Concrete Mixtures using Recycled Plastic, Fly Ash and Nano-Silica*	PhD, Co-Chair
2014-2017	**Heizel Rosado, Industrial Engineering** **Topic:** *Missing Value Imputation using Feature Selection*	MS, Chair
2013-2017	**Jean-Eduoard Faucher, Industrial Engineering** **Topic:** *A Hybrid Approach to Pedestrian Evacuation Models*	MS, Chair
2020-	**Luis Gutierrez, Mechanical Engineering** **Topic:** *Comparison Between VR and CAD Product Representation on Subject Preference via Discrete Choice Experimentation*	MS, Committee Member
2020-	**Nolgie Oquendo, Industrial Engineering** **Topic:** *Understanding the Understanding the Intersectionality of Cultural Components as an Influential Factor for the Development of Females' Engineering Identity*	MS, Committee Member
2018-	**Yindhira Taveras, Civil Engineering** **Topic:** *Drivers' Performance and Brain Workload Activities after Alcohol Consumption using Driving Simulation*	PhD, Committee Member
2020	**Valerie Y. Odeh, Industrial Engineering** **Topic:** *Characterization of CAR-T Cells*	MS, Committee Member
2019	**Enid M. Colón, Civil Engineering** **Topic:** *Operational and Safety Based Analysis of School Zone using a Driving Simulator*	MS, Committee Member

2018	**Ricardo E. García, Civil Engineering** **Topic:** *Operational and Safety Performance of a Two-Way Left Turn Lane using a Driving Simulator*	MS, Committee Member
2017	**Zachary M. Soto, Industrial Engineering** **Topic:** *Operational and Safety Performance of a Two-Way Left Turn Lane using a Driving Simulator*	MS, Committee Member
2017	**Miguel Ruiz, Industrial Engineering** **Topic:** *Re-Engineering a Diverse Service System: Multi-Criteria Resource Assignment*	MS, Committee Member
2017	**Lace Hernández, Industrial Engineering** **Topic:** *A Predictive Model to Estimate FDA'S Decision Time for Medical Device Development OF 510(k)'s*	ME, Committee Member
2015	**Nitza García, Industrial Engineering** **Topic:** *Effect of Fly Ash and Nanosilica on Concrete Compressive Strength at Early Age*	MS, Committee Member
2015	**Juan Rosas, Industrial Engineering** **Topic:** *Biological Signaling Pathways and Potential Mathematical Network Representations: Biological Discovery through Optimization*	MS, Committee Member
2014	**Nydia I. López, Finance** **Topic:** *How Has the Ethical Meltdown Affected the Financial Performance of the US Incorporated Global Systemically Important Banks?*	MS, Committee Member
2014	**Karina Gelis, Statistics** **Topic:** *Estimación de Tasas de Transmisión para Dos Serotipos de Dengue con un Modelo Matemático para las Epidemia de los Años 2010 y 2012 en Puerto Rico*	MS, Committee Member
2014	**Gerado López, Statistics** **Topic:** *Estimación de Parámetros Epidemiológicos para la Dinámica Estacional de la Fiebre del Dengue en Puerto Rico Utilizando Datos de Incidencia*	MS, Committee Member
2014	**Carlos Palacio, Finance** **Topic:** *Whether Investor Sentiment is Affected by Changes in the Statutory Limit of U.S. Federal Debt*	MS, Committee Member
2013	**Katia Camacho, Industrial Engineering** **Topic:** *Optimization-Driven Meta-Analysis: the Simultaneous Search for Cancer Biomarkers with Multiple Microarray Experiments*	MS, Committee Member

service

2018-2020	**Academic Senate** *School of Engineering, Senator*	UPRM
2019-2020	**Academic Senate** *Faculty Affairs Committee, Member*	UPRM
2018-2020	**Academic Senate** *Student Affairs Committee, Member*	UPRM
2015-	**Graduate Studies and Research Committee** *School of Engineering, Member*	SoE@UPRM
2013-	**American Society for Quality** *Student Chapter, Advisor*	ASQ
2012-	**Graduate Studies Committee** *Member*	IE@UPRM
2011-	**Statistics Committee** *Member*	IE@UPRM
2019	**Sea Grant Puerto Rico** *Reviewer*	SGPR
2019-2020	**National Science Foundation** *Panelist and Ad-Hoc Reviewer*	NSF

2012-2018	**Institute of Industrial and Systems Engineering** *ISERC Research Track, Reviewer and Session Chair*	IISE
2018	**American Society for Quality** *Yellow Belt Exam Proctor*	ASQ
2017	**National Science Foundation** *Panelist*	NSF
2013-2015	**MSCHE Standard 10: Faculty Task Force** *Member*	UPRM
2014	**National Science Foundation** *Panelist*	NSF
2013	**Institute of Industrial and Systems Engineering** *ISERC Student Track, Panel Moderator*	IISE
2011-2012	**Library Committee** *Member*	UPRM
2009-2010	**Quality and Reliability Engineering International** *Reviewer*	QREI
2009	**Data Mining in Healthcare and Biology** *Annual Meeting, Session Chair*	INFORMS
2008	**American Society for Quality** *Fall Technical Conference, Registration*	ASQ