José Emmanuel **Gómez-Rocha**

PhD Candidate · Operations Research
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Profile

Researcher and lecturer at Tecnológico de Monterrey, currently pursuing a PhD in Engineering Sciences. My work focuses on mathematical optimization, decomposition algorithms, resilient supply chains, service systems, and interpretable machine learning. I am actively engaged in Mexico's operations research community through research, teaching, and collaboration across universities and industry.

Education

Tecnológico de Monterrey
PhD candidate in Engineering Sciences, 2023-2027
Dissertation: Flexibility, Resilience and Trustworthy in Supply Chain as a Service.

Tecnológico de Monterrey, Monterrey
MSc in Engineering Sciences

Teaching and experience

Tecnológico de Monterrey
Lecturer, August 2022-present
Teach Industrial Engineering courses in optimization and supply chain management.

Ariza de México, Ford Zapata Joint Venture
Mathematical Programming Consultant, Nov-Dec 2025
Developed optimization models for workforce planning and interpretable pricing, with projected annual gross margin impact above USD 1 million.

Bravos Energía
Mathematical Programming Consultant, Nov 2024-Mar 2026
Reformulated an ERCOT operations model, reducing solve time from 10 hours to under 40 minutes. Built large-scale LP models; estimated annual gross profit impact of USD 1.5 million.

Methods and tools

Exact optimization, branch-and-cut, Benders decomposition, stochastic programming, mathematical programming, machine learning, and model evaluation.
Software: Gurobi, CPLEX, FICO Xpress, MOSEK, HiGHS, SCIP, AMPL, OPL, Python, scikit-learn, Pandas, Matplotlib.
Languages: Spanish (native), English (C1).

Honors

First place (2024). SMIO Best Master's Thesis in Operations Research in Mexico Award, Guadalajara.

First place (2021). SMIO Best Bachelor's Thesis in Operations Research in Mexico Award, Aguascalientes.

Invited speaker (2024). Selected student presentation at the 2nd Copenhagen School of Stochastic Programming, University of Copenhagen.

Selected publications

H. G. de Alba, H. Li, A. Téllez-Crespo, C. A. Santos, **J. E. Gómez-Rocha**, et al. (2026). Using optimization and AI for large-scale stochastic resource planning. *Annals of Operations Research*, advance online publication. DOI.

H. G.-de-Alba, A. Téllez, **J. E. Gómez-Rocha**, C. Santos, J. A. Orozco, & R. Baeza-Yates (2026). Towards a trade-off of interpretability, accuracy and scalability: Enhanced formulations in linear classification models. *Computers & Operations Research*, 189, Article 107411. DOI.

S. Nucamendi-Guillén, **J. E. Gómez-Rocha**, J.-F. Camacho-Vallejo, J. A. Moraga Pardo, & R. G. González-Ramírez (2026). The latency location routing problem with split deliveries: Mathematical formulation and metaheuristic algorithm. *International Transactions in Operational Research*, 33(3), 1609–1635. DOI.

J. E. Gómez-Rocha, E. S. Hernández-Gress, J.-F. Camacho-Vallejo, & C. Santos (2024). An enhanced Benders decomposition method and a matheuristic algorithm for solving the stochastic capacitated facility location problem with shortages. *Expert Systems with Applications*, 255, Article 124802. DOI.

Research visits

Universitdad de Sevilla, IMUS, Spain, August 2025. Host: Prof. Justo Puerto.

Universidad de Cádiz, Spain, September 2026. Host: Prof. Elena Fernández.

University of Sheffield, UK, July 2026. Hosts: Profs. Diego Ruiz-Hernández and Francisco Saldanha-da-Gama.
MIT Center for Transportation and Logistics, USA, September 2026. Hosts: Prof.Christopher Mejía Argueta.

Academic network

Research and teaching collaborations with Tecnológico de Monterrey, Universidad Panamericana, Universidad de Sevilla, University of Sheffield, and AMPL Optimization.