Manuel Moran-Pelaez

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EDUCATION

Massachusetts Institute of Technology — Cambridge, MA
Ph.D. In Operations Research — *2021 – Expected May 2025*

- GPA: 5.0/5.0
- Advisor: Georgia Perakis.
- Research interests: Operations Management, Retail Operations, Optimization, Machine Learning, Reinforcement Learning.
- Industry collaborators: Zara, Wayfair, InstaDeep.

Universidad Complutense de Madrid — Madrid, Spain
Master of Science in Statistical Learning and Data Science — *2016 – 2017*

- GPA: 9.71/10.0; 1st academic record.
- Thesis: Learning fuzzy rule-based strategies for RTS games.

Bachelor of Science in Computer Science — *2010 – 2016*

- GPA: 9.03/10.0; top 10%.
- Thesis: A real-time system for detection and tracking of moving objects in videos.

Bachelor of Science in Applied and Pure Mathematics — *2010 – 2015*

- GPA: 9.76/10.0; 2nd best academic record.
- Thesis: A categorical approach to automata and language theory; *Honors and best bachelor's thesis of 2015*.
- Recipient of the Community of Madrid Academic Excellence Fellowship for all years of undergraduate studies in recognition of an outstanding academic record.

Université de Liège — Liège, Belgium
Erasmus Program - Master of Science in Computer Science — *2015 – 2016*

Università di Camerino — Camerino, Italy
2nd EATCS and TOPDRIM School — *Fall 2015*

- Young researchers summer school on formal computational methods and topological data analysis.
- Awarded a full scholarship to participate in the program from Università di Camerino and Universidad Complutense de Madrid.

PUBLICATIONS

Papers

1. Moran-Pelaez M., Cohen-Hillel T., Fernandez-de-Castro B., and Perakis, G., 2024 **Manager Behavior in the Product Replacement Problem: Addressing Preferences and Uncertainty**[1], under review at *Management Science*.

   - Accepted to the Supply Chain Management SIG at MSOM 2024.

2. Moran-Pelaez M., and Perakis, G., 2024 **A Robust Optimization Approach to Assortment Planning with Cross-Item Effects**[1], soon to be submitted to *Management Science*.

3. Moran-Pelaez M., Dzimah S., and Perakis, G., 2024 **Understanding Cannibalization and Complementarity in Demand through Transformers**[1], soon to be submitted to *Management Science*.

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[1] Authors are listed in order of contribution

4. Cohen-Hillel T., Moran-Pelaez M., Perakis, G., Schoess, D. 2024 **A Multimodal Neural Network Approach to Demand Modeling: Capturing Cross-Item Effects and Returns**[2], soon to be submitted to *Operations Research.*

5. Moran-Pelaez, M., Perakis, G., and collaborators from InstaDeep, 2024, **Dynamic Policies for Combinatorial Problems in Operations: Adapting to New Structural Constraints**[1], work in progress.

Theses

6. Moran-Pelaez, M., 2017, **Learning fuzzy rule-based strategies for RTS games**, Master's Thesis, Universidad Complutense de Madrid.

7. Moran-Pelaez, M., 2016, **A real-time system for detection and tracking of moving objects in videos**, Bachelor's Thesis, Universidad Complutense de Madrid.

8. Moran-Pelaez, M., 2015, **A categorical approach to automata and language theory**, Bachelor's Thesis, Universidad Complutense de Madrid.

   - Honors and best bachelor's thesis at the School of Mathematics in 2015.

Honors and Awards

MIT Sloan Outstanding Teaching Assistant Award   2024
- Awarded each year to one teaching assistant at the Sloan School of Management for exceptional teaching.

MIT Graduate Student Council Teaching Award for the Sloan School of Management   2024
- The Graduate Student Council Teaching Awards are given each year to one professor or teaching assistant from each school, for excellence in teaching a graduate-level course.

Ramón Areces Fellowship for Graduate Studies in Social Sciences   2023 – 2025
- Competitive fellowship from Fundación Ramón Areces to pursue graduate level research in social sciences. It can be extended to an additional year.
- Amount: Full tuition, health insurance, and a monthly stipend.

Kaggle Bronze Medal and 1st place in ORC's Common Experience NLP Challenge   Summer 2022
- Participated in the Natural Language Processing and Deep Learning Kaggle competion *Feedback Prize - Predicting Effective Arguments* as part of the ORC's Common Experience Challange.
- 1st place within the ORC teams and bronze medal (top 10%) among the 1,557 teams participating in the challenge.

La Caixa Fellowship for Graduate Studies in Asia and North America   2021 – 2023
- Competitive fellowship from Fundación Bancaria La Caixa to pursue graduate studies in Asia and North America.
- Best student in the Mathematics and Physics section.
- Amount: Full tuition, health insurance, and a monthly stipend.

JAE Intro Grant   2015
- Competitive grant from Consejo Superior de Investigaciones Científicas (Spanish National Research Council) aimed at university students interested in starting a research career.

Undergraduate Research Scholarship from the Ministry of Education of Spain   2015
- Competitive scholarship to conduct the bachelor's thesis as part of a university department research project.

Academic Excellence Award from Community of Madrid   2011, 2012, 2013
- Scholarship granted to outstanding academic records in universities in the Community of Madrid.

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[2]Authors are listed in alphabetical order of last name

Conference Presentations and Selected Talks[3]

Moran-Pelaez M., Cohen-Hillel T., and Perakis, G. **The Product Replacement Problem: Addressing Manager Behavior and Demand Uncertainty**
- 2024 INFORMS Annual Conference in Seattle, WA. *Upcoming.*
- 2024 MSOM Supply Chain Management SIG Conference in Minneapolis, MN.
- 2024 POMS Annual Conference in Minneapolis, MN.
- Jan 2024 Invited seminar at the Operations, Information, and Technology Department at IESE Business School in Barcelona, Spain.
- 2023 INFORMS Annual Conference in Phoenix, AZ.
- 2023 Manufacturing & Services Operation Management (MSOM) Conference in Montreal, Canada.
- 2022 INFORMS Annual Conference in Indianapolis, IN.

Moran-Pelaez M., and Perakis, G. **A Robust Optimization Approach to Assortment Planning with Cross-Item Effects**
- 2024 INFORMS Annual Conference in Seattle, WA. *Upcoming.*
- 2024 Manufacturing & Services Operation Management (MSOM) Conference in Minneapolis, MN.

Moran-Pelaez M., Cohen-Hillel T., and Perakis, G. **A First-Order Approach to the Product Replacement Problem with Cross-Item Effects in Retail**
- 2023 INFORMS Annual Conference in Phoenix, AZ.

Moran-Pelaez M., and Platon-Alomar I. **Predictive Analytics with *Small Data***
- Spring 2020, Facebook Developers Circle Meetup in Madrid, Spain.

Moran-Pelaez M., and Dominguez-Vazquez D. **Data Science applied to real Location Intelligence problems**
- Fall 2019, Ironhack startups projects showcase in Madrid, Spain.

Teaching Experience

Instructor

MIT Sloan, Introduction to Python Tutorial for EMBA students   Spring 2024
- Created and led a new Python programming tutorial including developing all instructional materials.

MIT Sloan, Introduction to Excel Tutorial for EMBA students   Spring 2024
MIT Sloan, Introduction to Excel Tutorial for EMBA students   Spring 2023

Teaching Assistant

MIT Sloan, 15.730 Data, Models, and Decisions, Head Teaching Assistant   Spring 2024
- Executive MBA core course; 120+ students in two sections; Overall rating: 6.8/7.0

MIT Sloan, 15.774/780 Analytics of Operations Management, Head Teaching Assistant   Fall 2023
- Undergraduate, MBA, and Sloan Fellows course; 120+ students in two sections; Overall rating: 6.8/7.0

MIT Sloan, 15.730 Data, Models, and Decisions, Teaching Assistant   Spring 2023
- Executive MBA core course; 120+ students in two sections; Overall rating: 6.7/7.0

Mentor and Tutor

Research Mentor to Visiting Students at MIT Sloan   2023-2024
- Research mentor to one computer science master's student at ETH-Zurich and one last-year computer science and mathematics undergraduate student at Universidad Complutense de Madrid doing research in our group.

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[3]Presenter listed first

Research Mentor to MIT Sloan Master of Business Analytics Research Assistants 2021-2024
- Research mentor to three Master of Business Analytics students at MIT Sloan doing research in our group.

MIT Sloan, 15.089 Analytics Capstone, Research Advisor Spring/Summer 2022
- Master of Business Analytics Capstone Project in collaboration with Wayfair. Project title: *The Value of a Dollar: Optimizing Bidding Strategies for Suppliers.*

Conento Decision Science, Internship Tutor and Master's Thesis Advisor Spring 2018
- Internship tutor and company advisor of Santos Nuñez Jareño's master's thesis for the M.Sc. in Data Science and Big Data at Afi Escuela de Finanzas, Madrid
- Thesis: *Design and implementation of a system for house price estimation*
- Current status: Research Associate in Machine Learning and AI at the University of Leicester, United Kingdom.

Professional Experience

InstaDeep *(currently part of BioNTech)* Summer 2021
Research Science Intern *Cambridge, MA*

- Explored traditional and state-of-the-art techniques for the 3D bin-packing problem (logistics) to find research opportunities in the intersection of Deep Reinforcement Learning and Optimization.
- Developed tractable solutions for the 3D bin-packing problem in logistics that can adapt to new structural constraints.

Capchase *(New York-based fintech startup)* 2020 – 2021
Lead Data Scientist *Madrid, Spain*

- Set up and managed Capchase data team (5 direct reports), and coordinated with the other tech team leads.
- Defined, prioritized, and managed the data roadmap of the company.
- Led the automation of business insights extraction to drive decision-making and significantly reduce risk assessment time from a manual version of 3-5 days to a semi-automatic version of 4-5 hours.

Geoblink *(Spanish location intelligence startup)* 2018 – 2020
Senior Data Scientist *Madrid, Spain*

- Led the technical definition and implementation of two of the most used products, the Sales Forecast, and Sales Analysis, used to identify opportunity levers and optimize the performance of retail networks.
- Researched state-of-the-art approaches on model interpretability, and designed and implemented our own model-agnostic explainer in production.
- Led the Tech Brand Awareness Committee at the company.

Conento Decision Science *(currently part of Deloitte)* 2017 – 2018
Senior Data Analyst *Madrid, Spain*

- Worked as a principal analyst in several Marketing Mix Modeling projects for companies over different industries, including MediaMarkt, Banc Sabadell, Once, and AXA.
- Redesigned and re-implemented our core Media Mix Optimization tool making it orders of magnitude faster and producing exact solutions instead of approximations.

Leadership, Service, and Outreach

Coordinator of the ORC IAP Seminar, MIT ORC Winter 2023
- Topic: Health Security

INFORMS Officer of INFORMS student chapter, MIT 2021-2022
- Organized bi-weekly social events and activities for graduate students at MIT, organized social activities during the Open House for incoming students, and organized our annual retreat.

Founder and President of the Tech Brand Awareness Committee, Geoblink-Madrid   2018-2020
- Put together a team of motivated workers from different technical backgrounds at Geoblink to increase the visibility of Geoblink as a strong technical company in Spain and attract talent.
- Organized and participated in technical events representing Geoblink's Tech Team.

Founder and Mentor of the Machine Learning Club, Conento-Madrid   2017-2018
- Established the Machine Learning Club, providing a forum within the company to exchange technical knowledge in Machine Learning, and Optimization across different proficiency levels.
- Presented the project to the company's executive management, successfully securing dedicated weekly work hours for the club's meetings.

ADDITIONAL INFORMATION

Programming: Advanced: Python (production-level), Julia, R, SQL; Intermediate: MATLAB, Java, C++

Languages: Spanish, English (Fluent), German (Conversational)

Interests: Padel Tennis, Squash, Running