CARLOS PEREZ MENDOZA

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Professional summary

Research Scientist with a Ph.D. in Mathematics & Statistics and 8+ years of research experience in machine learning, reinforcement learning, and probabilistic modeling. Strong record of advancing theory and applications in quantitative finance, risk management, and digital health, with peer-reviewed publications and cross-disciplinary collaborations that deliver both academic and real-world impact.

Education

Doctor of Philosophy in Mathematics and Statistics *GPA: 4.3/4.3* — Canada
Concordia University, Department of Mathematics & Statistics — Sep 2021-Apr 2025

Master of Science in Modern Applications of Mathematics / Visiting researcher student. — United Kingdom
University of Bath, Department of Mathematical Sciences — Jan 2020-Jul 2020

Master of Science in Mathematics, Mathematical Statistics and Probability *GPA: 9.9/10* — Mexico
Institute of Applied Mathematics and Systems Research, UNAM — Jan 2019-Jul 2020

Specialist Degree in Financial Engineering, *GPA: 9.6/10* — Mexico
Universidad Nacional Autónoma de México, UNAM - Faculty of Engineering. — Aug 2021-Jul 2022

BSc. in Actuarial Sciences, Actuarial and Financial Mathematics, *GPA: 9.20/10* — Mexico
Universidad Nacional Autónoma de México, UNAM - Faculty of sciences — Aug 2010-Dec 2014

Graduate Diploma in Statistical Techniques and Data Mining, *GPA: 10/10* — Mexico
Universidad Nacional Autónoma de México, UNAM — Jan 2016-Oct 2016

Academic Positions

Postdoctoral Fellow — Montreal, Canada
McGill University — Since Jul 2025

Research Fellow, Department of Management Sciences — Montreal, Canada
HEC Montréal (Université de Montréal's Business School) — May 2025-Aug 2025

Instructor of Machine Learning Courses, Continuing Education for Professionals — Montreal, Canada
Université de Montréal — Jan 2024-Jan 2025

Instructor of Undergraduate Mathematics Courses, Department of Mathematics and Statistics — Montreal, Canada
Concordia University — Aug 2021-Mar 2025

Lecturer*, BSc. in Actuarial Sciences* — Mexico City, Mexico
Universidad Autónoma del Estado de México, UAEM — Jan 2019-Aug 2021

Lecturer, BSc*. in Actuarial Sciences* — Mexico City, Mexico
Universidad Nacional Autónoma de México, UNAM — Aug 2015-Aug 2021

Postgraduate teaching assistant*, M.Sc. in Mathematics & Spec. in Applied Statistics* — Mexico City, Mexico
Research Institute in Applied Mathematics and Systems, IIMAS - UNAM — Oct 2020-Aug 2021

Professional Experience (Industry)

JACOBB - Centre d'intelligence artificielle appliquée, Direction Recherche & Innovation — Montreal, Canada
Scientifique de recherche appliquée — Mar 2023 – Jul 2024

Plant-E Corp, Algorithmic Trading Department — Montreal, Canada
Quantitative Research Intern — Jul 2022-Nov 2022

Private Assistance Board of the Government of Mexico City Mexico City
Strategic Information Management Coordinator Mar 2021-Ago 2021

Private Assistance Board of the Government of Mexico City Mexico City
Presidential Advisor Oct 2020-Mar 2021

Bank of Mexico (Central Bank of Mexico), Technical Sub-Management of the Health Plan Mexico City
Head of the Office of Quantitative Health Plan Studies Nov 2017-Jan 2019

Bank of Mexico (Central Bank of Mexico), Health Plan Evaluation Sub-Management Mexico City
Market Research Analyst Mar 2015-Oct 2017

Research reports submitted for publication in peer-reviewed journals

1. **Pérez-Mendoza, C. O.** , G., Godin, F. (2025). Hedging Targeted Risks with Reinforcement Learning: Application to Life Insurance Contracts with Embedded Guarantees, submitted to *ASTIN Bulletin: The Journal of the IAA.* *https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5279418*
2. François, P., Gauthier, G., Godin, F., **Pérez-Mendoza, C. O.** (2025). Deep Hedging with Options using the Implied Volatility Surface, submitted to *Management Sience.* *https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5209935*
3. François, P., Gauthier, G., Godin, F., **Pérez-Mendoza, C. O**. (2024). Is the difference between deep hedging and delta hedging a statistical arbitrage?, *Finance Research Letters*, 73:106590.
4. François, P., Gauthier, G., Godin, F., **Pérez-Mendoza, C. O.** (2024). Enhancing Deep Hedging of Options with Implied Volatility Surface Feedback Information, submitted to *Mathematical Finance.* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4910867

Working papers

1. **Pérez-Mendoza, C. O**., Siri-Jégousse, A., Gutiérrez-Peña, E., Riva-Palacio, A. (2025). Parameter estimation for partially observed stable continuous-state branching processes.

Conferences

Hedging Targeted Risks with Reinforcement Learning: Application to Life Insurance Contracts with Embedded Guarantees, 60th Actuarial Research Conference. Toronto Jul 2025

Enhancing Deep Hedging of Options with Implied Volatility Surface Feedback Information, Minnesota Center for Financial and Actuarial Mathematics, University of Minnesota. Minnesota, USA Sep 2024

Financial simulation of the cost of health services at retirement age, National Autonomous University of Mexico, Faculty of Higher Studies Acatlán, 3rd Financial Colloquium. Mexico City Apr 2018

Binary logistical models such as epidemiological profiling technique, National Autonomous University of Mexico, Faculty of Higher Studies Acatlán, 6th Statistical Colloquium. Mexico City Feb 2018

Financial projection in the health sector via stochastic simulation, Autonomous University of the State of Mexico, 3rd International Congress of Actuarial Science and Economics. Mexico City Nov 2017

Markov processes in the evaluation of health prevention projects, National Autonomous University of Mexico, Faculty of Higher Studies Acatlán, 5th Statistical Colloquium. Mexico City Mar 2017

Population classification and risk segmentation in the health sector, National Autonomous University of Mexico, Faculty of Higher Studies Acatlán, XVII Academic Week of the career of Actuary. Mexico City Sep 2016

Poisson-Gamma Model as identifier of atypical behaviors, National Autonomous University of Mexico, Faculty of Higher Studies Acatlán, 4th Colloquium of Statistics. Mexico City Mar 2016

Recognitions

- **MITACS Elevate Postdoctoral Fellowship Program** – Prestigious postdoctoral fellowship supporting collaborative research and leadership development. — Jul 2025-Jul 2026
- **CIA Academic Research Grant** – Awarded by the Canadian Institute of Actuaries to support PhD research. — Apr 2024-Apr 2025
- **MITACS Accelerate Program** – Industry-academic internship funding for PhD students. — Jun 2022-Nov 2022
- **FIN-ML Graduate Fellowship (NSERC-CREATE Grant at the Doctorate Level)** – Competitive fellowship for AI/ML research in financial applications. — Sep 2021-Sep 2022
- **CONACYT National Postgraduate Fellowship** – Awarded by the Mexican government for top graduate students. — Feb 2019-Feb 2021
- **Top 3 GPA Award** – Awarded for ranking among the top three students in Actuarial Science, *Universidad Nacional Autónoma de México.* — Aug 2010-Dec 2014
- **Student of Excellence Award** - Conferred by the Government of the State of Mexico for outstanding academic performance. — Jul 2012

Workshops & Volunteer Experience

Université de Montreal & CIMAT — Canada - Mexico
Workshop - Machine Learning applied to Industry — Jan 2023 - Feb 2023

Université de Montreal, UdeM — Canada
Workshop - Machine Learning applied to Finance and Insurance — Nov 2021 - Dec 2021

Massachusetts Institute of Technology, MIT — United States of America - India
Volunteer for Mentoring — Jul 2020, Sep 2020

University of Bath — United Kingdom - Mexico
Workshop - Integrative Think Tank — Jul 2019 - Ago 2019

National Autonomous University of Mexico, UNAM — Mexico City
Volunteer for Mentoring — Jan 2020 - Sep 2020