JAVIER PEREZ TOBIA

APPLIED AI / ML ENGINEER | POWER & GAS TRADING | RESEARCH TO PRODUCTION

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PROFILE

Applied AI/ML engineer and researcher who owns AI systems from problem framing through modeling, optimization, productionization, and enterprise adoption. Senior Data Scientist I (Associate) at QuantumBlack, AI by McKinsey, leading data-science teams of 5+ across power & gas trading, banking, and telecom while staying hands-on in the code. Deep experience in **power & gas trading and energy management**, production **ML engineering** (real-time models, MLOps, data platforms) and **applied AI** (LLM and agentic systems with humans in the loop), with deployed models driving tangible profit uplift; five peer-reviewed papers from UBC research.

TECHNICAL EXPERTISE

Power & gas trading: Hydro scheduling and bidding (day-ahead, intraday, aFRR/mFRR); gas storage valuation (rolling intrinsic, LSMC) and delta hedging; gas logistics balancing; forward curves, Monte Carlo price models; multi-asset trading optimization

ML & research stack: **Python, PyTorch, JAX, Qiskit**, scikit-learn, NumPy, pandas; research in deep learning, vision, time series, generative modeling, adversarial robustness, biomolecular ML

Applied AI & LLM systems: agentic co-development and harnessing, RAG, agentic workflows, vector retrieval, tool calling, LLM evaluation, human-in-the-loop systems, production LLM applications

Optimization & control systems: **Gurobi, MATLAB, C++**; MILP, stochastic and portfolio optimization, LSMC, adaptive model predictive control, digital twins

ML engineering & production: **SQL, Linux, Git, AWS, Azure**; MLOps, model serving, data pipelines and data-lake architecture, real-time ML, enterprise AI platform design

PROFESSIONAL EXPERIENCE

Senior Data Scientist I (Associate) — **Sep 2023 – Present**
QuantumBlack, AI by McKinsey — *Madrid, Spain*

Data Scientist I (Sep 23–Nov 24) → Data Scientist II (Nov 24–Nov 25) → Senior Data Scientist I / Associate (Nov 25–Present).

Own end-to-end AI workstreams and lead data-science teams of 5+ across power & gas trading, banking, and telecom in Europe and Latin America, turning ambiguous business problems into models, production systems, and operating-model changes. Namely:

- **Power & gas trading and energy management:** built and deployed ML forecasting models, Gurobi-based multi-asset optimization and stochastic valuation tools now used daily by a European utility's trading and operations teams; redesigned the end-to-end process so AI feeds core trading decisions, and upskilled the client's software teams to run it.
- **Applied AI / LLM systems:** led the build of an LLM call-auditing system with humans in the loop for a major telecom's contact centre; designed and taught a course on coding with AI agents to a trading desk's analysts.
- **ML engineering for refining operations:** built a digital twin of a refinery, real-time ML models that predict crude properties, and optimization modules, then integrated them into day-to-day operational workflows.
- **ML-driven retail-bank deposit pricing:** developed price-sensitivity and portfolio-allocation models for a European retail bank; proofs of concept showed measurable P&L impact in under four weeks, followed by a wave-based rollout across the managed portfolio.
- **Customer-value optimization:** redesigned analytics for major telecoms in Latin America and Europe: built ML targeting models and LLM-based call-transcription analytics and knowledge retrieval, re-architected the data lake, and delivered a company-wide engine that automates segmentation, targeting and campaigns.

RESEARCH EXPERIENCE

Machine Learning Researcher — **May 2021 – Jul 2022**
University of British Columbia – DAIS & IDSL Labs — *Kelowna, Canada*

- **Robust deep learning / computer vision:** developed architectures and attribution-guided defenses to improve neural-network robustness against adversarial examples; achieved state-of-the-art results against AutoAttack on benchmark datasets. **IDA 2022**
- **Bioinformatics / biomolecular ML:** built models for aptamer–protein binding and methods for aptamer sequence search and generation with experimentally validated predicted sequences. **ACS Synthetic Biology 2023**
- **Time-series / trace reconstruction and imbalanced learning:** conducted research on event-trace reconstruction and data-generation methods for imbalanced classification. **IEEE SMC 2021**
- **Other publications:** **Improving imbalanced dataset classification using Conditional Classifier-Generator (cCGen), IEEE SMC 2022**; **Lorentz symmetry breaking in SUSY QED, IJGMMP 2020**

EDUCATION & HONORS

B.Sc. – Physics & Mathematics (96.2% cumulative average) — **2018 – 2023**
University of British Columbia — *Kelowna, Canada*

- **Selected honors:** Graduating Student Award in Physics & Mathematics; International Student Faculty Award; International Major Entrance Scholarship; Outstanding International Student.
- **QHack 2022 quantum computing hackathon: #29 globally** of 800+; all 25 challenges solved (quantum algorithms, QML).
- **CAN-SBX winner:** co-led the team behind a stratospheric balloon experiment flown by the Canadian Space Agency.
- **High school:** first of my class; **13.24/14** EBAU entrance exam; 1st prize Math Olympiad, bronze Physics Olympiad (local).
- **Academic leadership:** Co-founder, Student Independent Research Club; Teaching Assistant for undergraduate mathematics courses.

LANGUAGES

Spanish: native | English: C2 / bilingual proficiency | French: B2 / intermediate proficiency