Esteban Payares

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Employment History

Feb 2025 – Present **Quantum Machine Learning Intern.** IQM Quantum Computers.
Paris, France.

May 2024 – Aug 2024 **Research Intern.** CNRS, Laboratoire de Physique des Solides.
Orsay, France.

Feb 2022 – Aug 2024 **DevOps Engineer.** Ormuco Inc.
Montreal, Canada. (Remote).

Jan 2021 – Aug 2023 **Research Assistant.** Research Department, Universidad Tecnológica de Bolívar.
Cartagena, Colombia.

Education

2023 – 2025 **MSc. Quantum & Distributed Computer Science.** Université Paris-Saclay.
ENS Paris-Saclay, Institut d'Optique Graduate School, IPP Telecom Paris.
Concentrations:

- *Quantum, atomic, and many-body physics.*
- *Artificial Intelligence.*

2016 – 2021 **B.S. Electronic Engineering.** Universidad Tecnológica de Bolívar.
Graduation Thesis title: *Applied Quantum Computation in The Noisy Intermediate-scale Era for Quantum Machine Learning: A Novel Approach for Modern Applications.*

Research Publications

Book Chapters

1. E. Payares and J. C. Martinez-Santos, "Advancements in quantum machine learning for intrusion detection: A comprehensive overview," in *Advances in Digital Crime, Forensics, and Cyber Terrorism*. IGI Global, Sep. 2023, pp. 167–176, ISBN: 9781668484241. DOI: 10.4018/978-1-6684-8422-7.ch009.

Conference Proceedings

1. E. Payares, E. Puertas, and J. C. Martinez-Santos, "Team QTB on Feature Selection Via Quantum Annealing and Hybrid Models," in *Working Notes of the Conference and Labs of the Evaluation Forum (CLEF 2024), Grenoble, France, September 9th to 12th*, 2024.
2. E. Payares and J. C. Martínez, "The enhancement of quantum machine learning models via quantum Fourier transform in near-term applications," 1, vol. 2872, Sep. 2023, p. 120 089. DOI: 10.1063/5.0163355.
3. E. Payares, E. Puertas, and J. C. Martinez-Santos, "Quantum n-gram language models for tweet classification," in *2023 IEEE 5th International Conference on Cognitive Machine Intelligence (CogMI)*, 2023, pp. 69–74. DOI: 10.1109/CogMI58952.2023.00019.
4. E. Payares and J. Martinez-Santos, "Parallel quantum computation approach for quantum deep learning and classical-quantum models," 1, vol. 2090, IOP Publishing, Nov. 2021, p. 012 171. DOI: 10.1088/1742-6596/2090/1/012171.

5 E. Payares and J. C. Martinez-Santos, "Quantum machine learning for intrusion detection of distributed denial of service attacks: A comparative overview," in *Quantum Computing, Communication, and Simulation*, P. R. Hemmer and A. L. Migdall, Eds., Online Only, United States: SPIE, Mar. 2021, p. 47, ISBN: 9781510642331 9781510642348. DOI: 10.1117/12.2593297.

Skills

Misc.	Academic Research, Quantum Physics, Quantum Computing, Competitive Programming, Machine Learning & Applied AI, Data Science, Optimization, Computational Neuroscience, Cloud Computing, Cybersecurity, Teamwork.
Quantum Programming	Pennylane, Qiskit, Cirq.
Coding	Python, C++, Julia, MATLAB, LaTeX.
Databases	MySQL, PostgreSQL, SQLite.
DevOps	Linux, OpenStack, Bash, Ceph, Docker, Kubernetes, Infra architecture.
Languages	Strong reading, writing, and speaking competencies in English and Spanish.

Miscellaneous Experience

Open Source Contributions

2021 **Create a Pytorch simulator (Pull request #1360)**. Creation of a quantum simulator to allow all quantum operations and measurements to be performed within the PyTorch workflow.
PennyLaneAI/pennylane

Quantum Programming Competitions

2023 **iQuHACK**. By Massachusetts Institute of Technology.

2022 **PennyLane Code Camp**. by Xanadu Quantum Technologies.

HAQS. By qBraid.

iQuHACK. By Massachusetts Institute of Technology.

2021 **QC Hack**. By Quantum Coalition.

UnitaryHack. By Unitary Fund.

Qhack. By Xanadu Quantum Technologies.

Certifications

Quantum Excellence at Qiskit Global Summer School on Quantum Machine Learning. Awarded by IBM.

Introduction to Quantum Computing. Awarded by The Coding School.

2020 **Applied Data Science with Python (Specialization).** Awarded by Coursera.

Open Source Software Development, Linux and Git (Specialization). Awarded by Coursera.

Academic Extracurriculars at Universidad Tecnológica de Bolívar

- Applied Technologies and Information Systems research group member.
- Creator of Quantum Computing for Modern Applications research seedbed.
- SPIE, IEEE student member and IEEE student chapter member.
- International Society of Automation (ISA) student chapter member and co-founder.
- Creator of the syllabus for the Introduction to Quantum Computing course.

References

Prof. Marcelo Rozenberg, Ph.D.
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Laboratoire de Physique des Solides,
Université Paris-Saclay,
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Prof. Sonia Contreras, Ph.D.
Full Professor, Dean of Faculty
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Prof. Juan Carlos Martínez, Ph.D.
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