CURRICULUM VITAE: Felipe Ortiz-Huerta

1. Personal Information

Name: Felipe Ortiz-Huerta
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2. Summary

I am a Data Scientist/AI Engineer with 7+ years of academic research experience with a PhD in quantum photonics (photon **statistics**, optics, and quantum mechanics topics), both theoretical and experimental, and 4+ years in Machine Learning applications for quantum optics research. Excellent problem-solving skills and ability to perform well in a team. I currently troubleshoot and resolve technical issues, ensuring optimal performance and user satisfaction for **Microsoft Azure AI Services**, which include LLMs (Large Language Models) deployments, RAG (Retrieval Augmented Generation) Web Apps technical assistance, Speech to text services, Azure AI containers (Docker) assistance, etc. I have also implemented practical solutions, using **AI and Machine Learning** algorithms, to increase the revenue of small and medium businesses through **algorithmic marketing** (churn prevention, geospatial analysis) and **algorithmic inventory** (forecasting with statistical and Machine Learning methods).

3. Skills

- I currently use **Python** for my AI/ML related projects. Cloud computing with **Azure Machine Learning** and **Azure AI Services (Azure OpenAI, Azure AI APIs)**. Machine Learning modelling and Time-Series Forecasting with **Scikit-learn**, **Tensorflow** and **Darts**. **PostgreSQL** for relational databases, **Django** and **Streamlit** for Web App development, DevOps best practices with **Docker** containers, version control with **Git** and **GitHub**, **Matlab** for Scientific computing, dataframe manipulation with **Pandas**, and **Lumerical** for Finite Difference Time-Domain simulations.

-VFX video content creator: Adobe **After Effects** composite videos.

4. Projects:

- **Clustering Analysis:** I realized a cluster analysis of the customers of a cleaning products company to segment their customers according to their buying frequency and quantity to help measure the loyalty of their customers and transfer this info to their marketing team. (Click here for more info).

- **Geospatial Analysis:** I realized a geospatial analysis of the customers of a cleaning products company converting the address to a geospatial location with google maps API and present the location with an interactive folium map. This analysis gave them the insights of their customers to make informed decisions about their potential business expansion. (Click here for more info).

- **Churn Prevention:** I developed a predictive algorithm to analyze Villahi customers and calculate their churn probability. trained algorithm (Random Forest classification algorithm). (Click here for more info).

- **EOQ Model for Inventory:** I developed and deployed a demo web-app that forecasts a product's yearly demand and uses the EOQ (Economic Order Quantity) Model to calculate how much of that product should be ordered and when it should be ordered. (Click here for web-app demo).

- **Forecasting of Inventory:** I developed and deployed a web-app that forecasts the demand of ~1000 products of a retail store. (Click here for web-app)

5. Professional Experience

Current Appointment:

-Machine Learning Support Engineer for Microsoft Azure AI Services at Sonata Software (December 2023-Current).

Previous Appointments:

-Freelance Data Scientist (self-employed) (October 2022-December 2023)

-University teacher. Courses given: Integral Calculus, Programming with Matlab and Numerical Analysis, at State University of Baja California (UABC) in Ensenada, Baja California. (2021-2023)

-Post-doctoral Data Science Researcher in "***Machine Learning*** *and Quantum Optics applications for Quantum Engineering*" at CICESE. October 2021- October 2022.

-Post-doctoral Researcher in *"**Quantum Statistics** and Microcavities applications for quantum information and quantum computation"* at CICESE. October 2020 – July 2021.

-Thesis committee member for Optics student at CICESE. (2021- 2022)

-Collaboration in CONACTY Project "Frontier Science 2020". Project title: Quantum control of light-matter interactions. 2020-2021.

- Technical trainer at the University of Bristol: I trained researchers in the School of Physics in the operation of a specific piece of equipment (home-built confocal microscope and Photonic Professional, Nanoscribe GmbH). 1st of March 2018- 30th April 2018.

-High-school Teacher at the Centre for Technical and Higher Education (CETYS University) in Ensenada, Baja California, México: Physics (Classical Mechanics, Electricity and Magnetism); Integral & Differential Calculus, Algebra, Geometry &Trigonometry. September 2009-June 2012.

-Group Counselor (Supervising academic development of the students and talking to their respective parents at CETYS University). September 2009-June 2012.

6. Professional Certificates

-Azure OpenAI Specialist. Issued January 2024.

- Cognitive Services Specialist. Issued January 2024

- Microsoft Azure Machine Learning for Data Scientists. Issued September 2023.

-Create Machine Learning Models in Microsoft Azure. Issued August 2023.

- *Introduction to Machine learning on AWS*. Issued August 2023.

- *Introduction to Machine Learning in Production*, from DeepLearning.AI. Issued August 2023

- *AWS Cloud Technical Essentials*. Issued July 2023.

- *MITx Machine Learning with Python-From Linear Models to Deep Learning*, from Massachusetts Institute of Technology (MIT). Issued December 2021.

7. Academic Qualifications

Doctorate: PhD awarded by the Faculty of Engineering, Department of Electrical and Electronic Engineering, University of Bristol, Quantum Engineering Labs (QET Labs).
Link: http://www.bristol.ac.uk/qet-labs/.
PhD thesis title: *Fabrication and optimization of hybrid Fabry-Perot microcavities for single-photon sources*.
Admission: September 2013.
Graduation: May 2018.
Supervisor: Professor John G. Rarity.

MSc: Optics with orientation on Optoelectronics, Department of Applied Physics, Scientific Research Center and Higher Education of Ensenada, Baja California Mexico (CICESE).
Link: https://www.cicese.edu.mx/investigacion/optica/1.
Admission: September 2005.
Graduation: April 2008.
MSc thesis title: *Adaptive Interferometer with a photorefractive CdTe Crystal.*
Supervisor: Professor Anatoly Khomenko.

University: Electrical and Electronic Engineering, Faculty of Engineering, State University of Baja California (UABC), Ensenada Baja California, Mexico.
Admission: August 2000.
Graduation: December 2004.

8. Publications:

Journals:

1) Ortiz-Huerta, F., & Garay-Palmett, K. (2022). Analytical and numerical design of a hybrid Fabry–Perot plano-concave microcavity for hexagonal boron nitride. Beilstein Journal of Nanotechnology, 13(1), 1030-1037.

2)F. Ortiz-Huerta, L. Chen, M. Taverne, J. P. Hadden, M. Johnson, Y. L. D. Ho, and J. G. Rarity, "Fabrication of hybrid Fabry-Pérot microcavity using two-photon lithography for single-photon sources" ,Opt. Express 26, 33245-33252 (2018)

3) Knauer S, Ortiz-Huerta F, Lopez-Garcia M & Rarity J.G, 2017, 'Polymer photonic microstructures for quantum applications and sensing'. *Optical and Quantum Electronics*, vol 49.

Conference talks:

4) F. Ortiz-Huerta, "Fabrication of hybrid Fabry-Pérot microcavity using two-photon lithography for single-photon sources". Invited talk at the Scientific Research Center and Higher Education of Ensenada (CICESE) held 3rd of December 2018, Ensenada, Baja California, México.

5) F. Ortiz-Huerta, "Why and how to construct a quantum computer". Invited talk at "Technological Institute of Ensenada" held 6th of September of 2018, Ensenada, Baja California, México.

6) Huerta, FO, 2016, 'Progress towards a spin photon interface'. In Photon 16: held 5-8 September 2016, University of Leeds, UK.

7) Knauer S, Ortiz-Huerta F, Lopez-Garcia M & Rarity J.G, 2016, 'Polymer photonic microstructures for quantum applications and sensing'. in: 2016 International Conference on Numerical Simulation of Optoelectronic Devices (NUSOD 2016): Proceedings of a meeting held 11-15 July 2016, Sydney, Australia. Institute of Electrical and Electronics Engineers (IEEE), pp. 99-100.

Poster presentations

8) F. Ortiz-Huerta, L.Chen, M. Taverne, J.P. Hadden, D. Ho, M. Johnson and J.G. Rarity, "Fabrication of Hybrid Fabry-Perot Microcavities for Single-Photon Sources" in Student Chapter OSA-SPIE-CICESE Meeting: held 25-27 September 2018, CICESE,Ensenada, Baja California, Mexico.

9) F. Ortiz-Huerta, L.Chen, M. Taverne, J.P. Hadden, D. Ho, M. Johnson and J.G. Rarity, "Fabrication of Hybrid Fabry-Perot Microcavities for Single-Photon Sources" in Bristol Quantum Engineering Technologies (BQIT) Meeting: held 18-20 April 2018, University of Bristol, UK.

10) F. Ortiz-Huerta, S. Knauer, M.Taverne, L. Chen, D. Ho and J.G. Rarity, "Optimization of Optical Microcavities for Single-Photon Sources" in Single-Photons Single-Spins (SPSS) Meeting: held 12-13 September 2016, University of Oxford, UK.

9. Special Awards, Honours and Distinctions

- Member of the National System of Researchers in Mexico (SNI). (2021-current)
- Full-time scholarship award from CONACYT (National Council of Science and Technology of México) for PhD studies at the University of Bristol (2013-2017).
- Honorary mention as best poster presentation at Bristol Quantum Engineering Technologies (BQIT) Meeting: held 18-20 April 2018, University of Bristol, UK.
- 3rd place as best poster presentation at Student Chapter OSA-SPIE-CICESE Meeting: held 25-27 September 2018 at CICESE, Ensenada, Baja California, Mexico.
-Official acknowledgement as outstanding counseling given at students at CETYS Universidad in Ensenada, Baja California, Mexico (June 2012).

10.Languages

-Spanish
-English
-Exam TOEFL (iBT) 101 points.

11.Hobbies

- Gym
- Dancing.
- Film and history buff.