Javier Orduz

Work Experience

2022–	Visiting Assistant Professor. Earlham College. USA
2022–	Instructor Online. Baylor Univesity. USA
2020–2022	Research Scholar. Baylor University. USA
2020–2022	Instructor. Baylor University. USA
2017–2020	Instructor Online. National Autonomous University of Mexico. Mexico
2017–2020	Associate Professor. National Autonomous University of Mexico. Mexico
2015–2017	Postdoctoral Researcher. National Autonomous University of Mexico. Mexico
2015–2016	Research Assistant. National Autonomous University of Mexico. Mexico

Education

2014	Doctor in Sciences: Applied Physics. Autonomous University of Puebla. Mexico
2010	Master in Sciences: Applied Physics. Autonomous University of Puebla. Mexico
2008	Bachelor's Degree: Physicist. Pedagogical and Technological University of Colombia. Colombia

Certifications

2020	Machine Learning Regression. University of Washington. USA-Online
2020	The Introduction to Quantum Computing. Saint Petersburg State University. Russia-Online
2020	Machine Learning Foundations: A Case Study Approach. University of Washington. USA-Online
2020	Machine Learning with Python. IBM. Online
2020	Python Data Structures. University of Michigan. USA-Online
2020	Python y OpendCV to computer vision. Udemy. Online
2019	Basic Swift. UNAM. Mexico
2019	AWS Educate. UNAM. Mexico
2019	Quantum Computing: Qtraining for Bronze. QWorld. Latvia
2017	Modern cryptography teaching. UNAM. Mexico
2017	Techniques for teaching advanced database topics. UNAM. Mexico
2016	Statistics with Mathematica and Python. UNAM. Mexico
2015	Didactic Planning for the Distance Education. UNAM. Mexico
2015	Teaching with ICT. UNAM. Mexico
2015	Assessor on distance education. UNAM. Mexico
2015	Web 2.0 Resources for the Distance Education. UNAM. Mexico

International Participation

2022	**Author.** LatinX in AI Research Workshop at ICML. Baltimore. USA
2022	**Attendee.** StoryMakers. Denver. USA
2022	**Attendee.** Faculty-Industry Relationships Workshop. Santa Clara. USA
2022	**Author.** The Southwest Data Science Conference 2022. Waco. USA
2021	**Speaker.** Int'l Conference on Computational Science and Computation Intelligence. Las Vegas. USA
2020	**Speaker.** XXXIV RADPyC. Mexico City. Mexico
2020	**Attendee.** ECT Talent School on ML and Data Analysis for Nuclear Physics.. Trento (online). Italy
2018	**Attendee.** Machine Learning on High Energy Physics. Oxford. UK
2018	**Speaker.** Machine Learning in Geometry and Physics. Sanya. China
2018	**Speaker.** LatinX in AI Research Workshop at NeurIPS. Montreal. Canada

Since 2005 I have participated in 63 international conferences in the following countries Brazil, Canada, China, Colombia, Guatemala, Germany, Mexico, USA, and UK. The main topics have been Artificial Intelligence, Quantum Computing, Quantum Machine Learning, Mathematics, Physics, and Particles and Fields.

International Organizing Committees

2023   **Organizer.**   Int'l Conf. on Emergent and Quantum Technologies CSCE23 Las Vegas, USA
2022   **Public Relations Chair.**   LatinX in AI at ICML Baltimore, USA
2022   **Organizer.**   Int'l Conf. on Emergent and Quantum Technologies CSCE22 Las Vegas, USA
2022   **Organizer.**   QWinter-QMexico Online, Mexico
2021   **Facilitator.**   Washington Quantum Computing Meetup Online, USA
2020   **Mentor.**   LatinX in AI at ICML Online, USA
2020   **Volunteer.**   ICML Austria , Vienna
2020   **Coordinator.**   QMexico Mexico City, Mexico
2019   **Finance Chair.**   LatinX in AI at ICML Long Beach, USA
2017   **Coordinator.**   STEM-Seminar FESAc-UNAM Naucalpan, Mexico
2018   **Leader.**   Quantum and Scientific Computing Group FESAc-UNAM Naucalpan, Mexico
2017   **Local committee.**   Scientific summer for High Energy Physics FESAc-UNAM Naucalpan, Mexico
2016   **Organizer.**   III Flavor Physics Symposium FESC-UNAM Cuautitlan, Mexico
2016   **Organizer.**   Workshop on Theoretical and Computational Physics FESC-UNAM Cuautitlan, Mexico

Professional Recognitions

2020   QMexico coordinator. QWorld.
2019   Proyecta Scholarship. Mexico-Canada.
2015   SNI 1 (Mexican office for Science). Mexico.
2015   UNAM Scholarship. Mexico.
2010   Conacyt Scholarship. Mexico.
2008   Conacyt Scholarship. Mexico.
2007   Guest researcher. Mexico.

Journal Committee

2022   Special Issue: Advances in Quantum Machine Learning and Quantum Information Guest Editor.
2022   Special Issue: Standards and Ethics in AI Guest Editor.
2020   ANIEI Editor commitee.

Student advising and committees

2020   Mentor. Baylor University. USA
2020   Bachelor thesis research advisor. UnADM. Mexico
2018   Master thesis research advisor. UNAM. Mexico
2020   Bachelor thesis research advisor. UNAM. Mexico
2020   Examination committee. UNAM. Mexico
2017   Examination committee. UNAM. Mexico
2017   Examination committee. UNAM. Mexico

Projects

2020   Quantum Machine Learning and applications. Baylor University. USA
2019   Teaching-programming reinforcement at high school and undergraduate level. UNAM. Mexico
2018   Probing New Physics and models using Machine Learning. UNAM. Mexico
2016   Flavor physics and dark matter in beyond standard model. UNAM. Mexico
2016   Flavor change in loop-level inside 2HDM in the phi to VV process. UNAM. Mexico
2015   Physics' Virtual Laboratory. UNAM. Mexico

Computing and Programming

Python/Swift	Linux	Markdown	Mathematica Wolfram	Git
C/C++	IOSX	LaTeX	Gnuplot	Bash
Fortran	Windows	HTML	Office	make

Languages

Spanish	Native
English	B1
French	A1

Indiana, USA. March 8, 2023

Javier Orduz

LIST OF PEER-REVIEWED PUBLICATIONS

[1] Khanal, B., Orduz, J., Rivas, P. and Baker, E. Supercomputing leverages quantum machine learning and Grover's algorithm. *J Supercomput*, 2022.

[2] Orduz, J. Rastogi, S. and and Baker, E. An introduction to quantum natural language processing and a study case, 2022. LatinXAI at ICML. To be published soon.

[3] Olawale Ayoade, Pablo Rivas, and Javier Orduz. Artificial intelligence computing at the quantum level. *Data*, 7(3), 2022.

[4] Ziheng Sun, Laura Sandoval, Robert Crystal-Ornelas, S. Mostafa Mousavi, Jinbo Wang, Cindy Lin, Nicoleta Cristea, Daniel Tong, Wendy Hawley Carande, Xiaogang Ma, Yuhan Rao, James A. Bednar, Amanda Tan, Jianwu Wang, Sanjay Purushotham, Thomas E. Gill, Julien Chastang, Daniel Howard, Benjamin Holt, Chandana Gangodagamage, Peisheng Zhao, Pablo Rivas, Zachary Chester, Javier Orduz, and Aji John. A review of earth artificial intelligence. *Computers & Geosciences*, 159:105034, 2022.

[5] Tonni Jui, Olawale Ayoade, Pablo Rivas, and Javier Orduz. Performance analysis of quantum machine learning classifiers. In *NeurIPS 2021 Workshop LatinX in AI*, 2021.

[6] Rivas, Pablo, and Zhao, Liang, and Zhang, Zhengrong, and Orduz, Javier. Hybrid Quantum Variational Autoencoders for Representation Learning. In *2021 International Conference on Computational Science and Computational Intelligence (CSCI)*, 2021. Accepted, to be published soon.

[7] Khanal, Bikram, and Rivas, Pablo, and Orduz, Javier. Quantum Machine Learning: A Case Study of Grover's Algorithm. In *2021 International Conference on Computational Science and Computational Intelligence (CSCI)*, 2021. Accepted, to be published soon.

[8] Khanal, Bikram, and Rivas, Pablo, and Orduz, Javier. Human Activity Classification Using Basic Machine Learning Models. In *2021 International Conference on Computational Science and Computational Intelligence (CSCI)*, 2021. Accepted, to be published soon.

[9] Sooksatra, Korn, and Rivas, Pablo, and Orduz, Javier. Evaluating Accuracy and Adversarial Robustness of Quanvolutional Neural Networks. In *2021 International Conference on Computational Science and Computational Intelligence (CSCI)*, 2021. Accepted, to be published soon.

[10] Orduz, J. and Rivas, P. and Baker, E. Quantum Machine Learning Foundations and Applications: A Succinct Literature Review. In *International Conference on Scientific Computing*. Springer, Transactions on Computational Science and Computational Intelligence, July 2021. To be published soon: `https://www.springer.com/series/11769`.

[11] Orduz, J. and Rivas, P. and Baker, E. Quantum Circuits for Quantum Convolutions: A Quantum Convolutional Autoencoder. In *International Conference on Scientific Computing*. Springer, Transactions on Computational Science and Computational Intelligence, August 2021. To be published soon: `https://www.springer.com/series/11769`.

[12] Orduz, J. and Iyer, V. Quantum Machine Learning concepts for Physicists. 2021. To be published soon: `https://terc.mx/index.php/terc`.

[13] Orduz, J. and Iyer, V. Quantum Machine Learning concepts and applications, 2020. LatinXAI at NeuRIPS. PDF: `https://tinyurl.com/yzzga8eu`.

[14] Orduz-Ducuara, J. A. Higgs decay mediated by top-quark with flavor-changing neutral scalar interactions. *J. Phys. Conf. Ser.*, 912(1):012032, 2017. See the website: `https://goo.gl/KFpxKU`.

[15] Gaitan, R. and Montes de Oca, J. H. and Orduz-Ducuara, J. A. Probing flavor parameters in the scalar sector and new bounds for the fermion sector. *PTEP*, 2017(7):073B02, 2017. See the website: `https://goo.gl/YjCVdE`.

[16] Orduz-Ducuara, J. A. Exclusions on Z' mass and its non-universal couplings in LFV decays. 8 2016. See the website: `https://goo.gl/8Ll9FL`.

[17] Gaitan, R. and Orduz-Ducuara, J. A. Brief description of the flavor-changing neutral scalar interactions at two-loop level. *J. Phys. Conf. Ser.*, 761(1):012011, 2016. See the website: `http://bit.ly/2fB8te0`.

[18] Orduz-Ducuara, Javier A. Tecnicas en informatica educativa (TIE): LaTeX y Python (herramientas para la enseñanza de las ciencias). *Revista Mexicana de Bachillerato a Distancia*, 8(15):124–137, 2016. See the website: `http://goo.gl/Dkz6S8`.

[19] Diaz-Cruz, J. Lorenzo and Diaz, Enrique and Orduz-Ducuara, Javier A. The texturized 2HDM (2HDM-TX) and Higgs signature at colliders. *J. Phys. Conf. Ser.*, 651(1):012016, 2015. See the website: `http://goo.gl/ziuACv`.

[20] Diaz-Cruz, J. L. and Honorato, C. G. and Orduz-Ducuara, J. A. and Perez, M. A. One-loop decays $A^0 \to ZZ, Z\gamma, \gamma\gamma$ within the 2HDM and its search at the LHC. *Phys. Rev. D*, 90(9):095019, 2014. See the website: `http://goo.gl/hKGvOF`.

[21] Hernandez Lopez, J. M. and Orduz-Ducuara, J. A. A calculation for $Br(Z' \to tth)$ in a B-L model. *J. Phys. Conf. Ser.*, 468:012012, 2013. See the website: `http://goo.gl/3xGWw0`.

[22] Arroyo-Ureña, Marco A. and Diaz-Cruz, J. Lorenzo and Diaz, Enrique and Orduz-Ducuara, Javier A. Flavor violating Higgs signals in the Texturized Two-Higgs Doublet Model (THDM-Tx). *Chin. Phys. C*, 40(12):123103, 2016. See the website: `https://goo.gl/aR6NV4`.

[23] Diaz-Cruz, J. Lorenzo and Hernandez-Lopez, Javier M. and Orduz-Ducuara, Javier A. An extra Z' gauge boson as a source of Higgs particles. *J. Phys. G*, 40:125002, 2013. See the website: `http://goo.gl/LcUyPf`.

Indiana, USA. March 8, 2023