Pedro Lara-Benítez

Quantitative Developer (Market Risk)
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</> Python · SQL · JavaScript

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Quantitative developer with strong production engineering experience in market risk and desk-adjacent analytics. Built distributed compute and orchestration frameworks to run large-scale model analysis (full reval VaR, P&L vectors, stress testing) reliably within daily cycles. Proven delivery of automation-heavy regulatory platforms with end-to-end ownership across APIs, UIs, data pipelines, and compute. ML PhD with strong applied modelling foundations.

Experience

- **Bank of America** London, UK

  Vice President (VP) - Quantitative Financial Analyst *February 2024 - Present*

  - Core developer of a distributed compute service for model development and risk analytics (VaR, P&L vectors, stress testing) under FRTB regulatory workflows; enabled daily full revaluation runs for large legal entities where prior runtimes exceeded the daily cycle.
  - Designed and implemented scheduling/orchestration components (dependency management, smart retries, failure handling, run statistics) to increase reliability for failure-prone calculations impacted by upstream data, memory constraints, and pricing instability.
  - Built performance-driven task grouping/partitioning based on time and memory profiles to maximize throughput and grid utilisation across heterogeneous calculation types.
  - Delivered monitoring and user tooling (APIs + web UIs) for run control, lineage and failure triage, reducing time-to-diagnosis and improving operational visibility for model analysis users.
  - Developed an experimental shock/pricing framework for risk factors (scalars, curves, surfaces), including an API for building and applying historical moves and scenario shocks.

  Assistant Vice President (AVP) - Quantitative Financial Analyst *May 2022 - January 2024*

  - Led development and delivery of Risk Not in Stress (RNiS) application to support regulatory reporting; implemented models from documentation and integrated required data sources.
  - Delivered a production process generating ˜164 reports per quarter with in-application workflow controls and sign-offs.
  - Contributed to critical risk processes including VaR Backtesting and Overage Explains, improving operational efficiency.
  - Collaborated with cross-functional teams to align project goals and ensure seamless execution and handoffs.

  Contractor - Quantitative Developer *May 2021 - May 2022*

  - Contributed to the Risk Not in VaR (RNiV) platform, implementing models, automation and production support for recurring regulatory submissions.
  - Improved automation and reduced manual inputs (2025: 6,487 inputs processed; 82% automated) and supported ˜2,181 reports/year.

  Team: Global Risk Quantitative Engineering, Global Risk Analytics

- **University of Seville** Seville, Spain

  Machine Learning Researcher *October 2018 - May 2021*

  - Designed and ran deep learning experiments; analysed results and authored peer-reviewed publications.
  - Specialised in streaming time-series forecasting and online learning; contributed to top-tier journals/conferences.
  - Reviewed and published research papers in top-tier peer-reviewed journals and international conferences.

  Technologies: python, tensorflow, keras, pytorch, numpy, scikit-learn, matplotlib, latex, AWS.
  Theory: Deep Learning, Time series forecasting, Online learning, Data stream, and Computer vision.

- **Additional Experience** Seville, Spain

  Freelance Software Developer *2017 - 2019*

  - Android App for MSIG Smart Management and web information system for BBA Medical Centre.

Technical Proficiencies

- **Programming Languages:** Python, JavaScript, Java, SQL
- **ML/AI Frameworks:** TensorFlow, PyTorch, scikit-learn, XGBoost
- **Data Processing & Analytics:** Pandas, NumPy, River, DuckDB, Pyarrow, Plotly, Matplotlib, Dash
- **Web Development:** React, Vue, Flask, Django, RESTful APIs
- **Infrastructure:** AWS, Azure, Docker, Git, Linux, Distributed Computing
- **Domain Expertise:** Deep Learning, Time Series Analysis, Risk Analytics, FRTB, VaR, P&L Attribution

Education

- **University of Seville** — Seville, Spain
  PhD in Computer Science (Machine Learning) — Sobresaliente (highest grade), Cum Laude — *Sept. 2019 – July 2022*
  - Conducted research in machine learning, with a focus on deep learning, streaming time-series forecasting, and online learning.

  Thesis: Online Streaming Time Series Forecasting with Deep Learning.

- **University of Seville** — Seville, Spain
  M.Sc. in Software Engineering (Cloud, Data Science & IT Service Management) — 9.26/10 — *Sept. 2018 – Jun. 2019*
  - Selected coursework: Data Engineering, Machine Learning, Data Visualisation, Unstructured Data Analysis, Big Data.
  - Thesis: Asynchronous framework for the application of Deep Learning to streaming data.

- **Middlesex University** — London, UK
  B.Sc. in Computer Science (Erasmus year abroad) — *Sept. 2017 – Jun. 2018*
  - Selected coursework: Open Source Software, Quantum Information Theory, Artificial Intelligence.

- **University of Seville** — Seville, Spain
  B.Sc. in Computer Science (Software Engineering) — 8.55/10 — *Sept. 2014 – Jun. 2018*
  - Selected coursework: Statistics, Data Structures & Algorithms, Artificial Intelligence.
  - Thesis: Biomedical data analysis with deep learning.

Academic record: PhD (Sobresaliente, Cum Laude) · MSc 9.26/10 · BSc 8.55/10 · EBAU/Selectividad 11/14 · Bachillerato 7.37/10

Following sections items are clickable for references.

Research publications

- Riquelme-Dominguez, J. M., Carranza-García, M., Lara-Benítez, P., and González-Longatt, F. M. "**A machine learning-based methodology for short-term kinetic energy forecasting with real-time application: Nordic Power System case.**" International Journal of Electrical Power & Energy Systems, vol. 156, p. 109730, DOI:10.1016/j.ijepes.2023.109730, Feb 2024.
- Lara-Benítez, P., Carranza-García, M., Luna-Romera, J. M., and Riquelme, J. C. "**Short-term solar irradiance forecasting in streaming with deep learning.**" Neurocomputing, vol. 546, p. 126312, DOI:10.1016/j.neucom.2023.126312, Aug 2023.
- Lara-Benítez, P., Carranza-García, M., Gutiérrez-Avilés, D., and Riquelme, J. C. "**Data streams classification using deep learning under different speeds and drifts.**" Logic Journal of the IGPL, DOI:10.1093/jigpal/jzac033, Feb 2022.
- Lara-Benítez, P., Gallego-Ledesma, L., Carranza-García, M., and Luna-Romera, J. M. "**Evaluation of the Transformer Architecture for Univariate Time Series Forecasting.**" XIX Conference of the Spanish Association for Artificial Intelligence (CAEPIA), pp. 106-115, Springer, DOI:10.1007/978-3-030-85713-4_11, May 2021.
- Carranza-García, M., Lara-Benítez, P., and Riquelme, J. C. "**Feature selection on spatio-temporal data for solar irradiance forecasting.**" 16th International Conference on Soft Computing Models in Industrial and Environmental Applications (SOCO 21), pp. 654-664, Springer, DOI:10.1007/978-3-030-87869-6_62 May 2021.
- Carranza-García, M., Lara-Benítez, P., García-Gutiérrez, J., and Riquelme, J. C. "**Enhancing Object Detection in Autonomous Vehicles by Optimizing Anchor Generation and Addressing Class Imbalance.**" Neurocomputing, vol 449, p. 229-244, DOI:10.1016/j.neucom.2021.04.001, Apr 2021.
- Lara-Benítez, P., Carranza-García, M., and Riquelme, J. C. "**An Experimental Review on Deep Learning Architectures for Time Series Forecasting.**" International Journal of Neural Systems, vol. 31, no 03. p. 2130001, DOI:10.1142/S0129065721300011, Feb 2021.

- Carranza-García, M., Torres-Mateo, J., Lara-Benítez, P., and García-Gutiérrez, J. "**On the performance of one-stage and two-stage object detectors in autonomous vehicles using camera data.**" Remote Sensing, vol. 13, no 1, p. 89, DOI:10.3390/rs13010089, Nov 2020.
- Lara-Benítez, P., Carranza-García, M., Martínez-Álvarez, F, and Riquelme, J. C. "**On the performance of deep learning models for time series classification in streaming.**" 15th International Conference on Soft Computing Models in Industrial and Environmental Applications (SOCO 2020), vol. 1268, pp 144-154, Springer International Publishing, DOI:10.1007/978-3-030-57802-2_14, Aug 2020.
- Lara-Benítez, P., Carranza-García, M., Luna-Romera, J. M., Riquelme, J. C. "**Temporal Convolutional Networks Applied to Energy-Related Time Series Forecasting." Applied Sciences.** , vol. 10, pp 2322, DOI:10.3390/app10072322, March 2020.
- Lara-Benítez, P., Carranza-García, M., García-Gutiérrez, J., and Riquelme, J. C. "**Asynchronous dual-pipeline deep learning framework for online data stream classification.**" Integrated Computer-Aided Engineering, vol. 27, no. 2, pp. 101-119, DOI:10.3233/ICA-200617, Feb 2020.

Personal Projects

- ADLStream: A python open source library for online learning with Deep Learning models.
- Contribution to TensorFlow Addons with Echo State Network (ESN) implementation.

Not clickable anymore.

Awards

- **Winner of "Atmira Stock Prediction" challenge in the UniversityHack 2021 Datathon, the largest data analysis competition in Spain.** 2021
  Cajamar Data Lab
- **Selected for the Spanish FPU Fellowship (national competition)** 2020
  Top 30 Computer Science pre-doctoral awards; 4-year scholarship.
  Ministry of Science, Innovation and Universities; Government of Spain
- **Winner of OpenWebinars' Prize and 2nd Prize in Start-up Hackathon "Hack for good".** 2017
  Think Big, Fundación Telefónica
- **Finalist Circular Economy Start-up contest.** 2016
  GO APP! by Google
- **1st Prize in Code Competition "Everis Codefest Sevilla".** 2016
  Everis

Languages

- **Spanish** (Native), **English** (C1 Advanced), **Italian** (B2 Conversational)