

Pedro Lara-Benítez

Machine Learning Researcher

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 pedrolarben

</> Python, Java, C, R

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Research-focused quantitative professional combining deep technical expertise in machine learning with practical financial industry experience. Track record of developing innovative solutions in distributed computing, risk analytics, and artificial intelligence, with multiple peer-reviewed publications in leading journals.

EXPERIENCE

• Bank of America

London, UK

Vice President (VP) - Quantitative Financial Analyst

February 2024 - Present

- Architected and implemented a distributed computing framework for model analysis, enabling efficient model calculations, including full-revaluation and risk-theoretical P&L, under the FRTB regulatory framework.
- Developed interactive dashboards for framework monitoring and control, improving user experience and operational visibility.
- Built an automated big-data analytics pipeline for VaR accuracy and P&L attribution analysis, delivering actionable risk insights.

Assistant Vice President (AVP) - Quantitative Financial Analyst

May 2022 - January 2024

- Led development of Risk Not in Stress (RNiS) application, transforming manual spreadsheet processes into an automated web-based solution.
- 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

- Enhanced Risk Not in VaR (RNiV) Calculator using React/Python, implementing robust testing and code review practices in an agile environment.

Team: Process Engineering, Global Risk Analytics - Financial data analysis and software development

• University of Seville

Seville, Spain

Machine Learning Researcher

October 2018 - May 2021

- Carry out experiments regarding deep learning, interpret results, and produce a written paper with conclusions of study.
- Demonstrate expertise in the state-of-art techniques of the field.
- Reviewed and published research papers in top-tier peer-reviewed journals and international conferences.

Technologies: python, tensorflow, keras, pytorch, numpy, sci-kit, 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 Sept. 2019 – July 2022
 - Researched about data science, machine learning and artificial intelligence. Mainly focused on deep learning, time series analysis, online learning and object detection.

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
 - Took selective courses on: Data Engineering, Machine Learning, Data visualisation techniques, Analysis of unstructured information, Big Data, Data Science.
 - (Thesis title) Asynchronous framework for the application of Deep Learning to streaming data.
- **Middlesex University** London, UK
[Erasmus year abroad] B.Sc in Computer Science Sept. 2017 – Jun. 2018
 - Took selective courses on: Open Source Software, Quantum Information Theory and Artificial Intelligence.
- **University of Seville** Seville, Spain
B.Sc in Computer Science - Software Engineering - 8.55/10 Sept. 2014 – Jun. 2018
 - Took courses such as: Statistics, Analysis and Design of Data structures and Algorithms, or Artificial Intelligence.
 - (Thesis title) Biomedical data analysis with deep learning.

 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 as one of the top 30 computer-science pre-doctoral student nationwide for a 4-year research fellowship (FPU).** 2020
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** (B1 Basic)