Afonso Moniz **Moreira**

Data Science Lead · Mathematician · Economist

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Summary

AI/ML Engineer with 8+ years of experience in financial regulation, combining expertise in mathematics, economics, and machine learning. Currently leading the Data Science Hub at CMVM (Portuguese Securities Market Commission), designing, deploying and maintaining AI/ML applications including Generative AI solutions (RAG, LLMs) to support supervision technology (SupTech) and data-driven oversight. PhD in Mathematics from IST with strong foundation in statistical learning and optimization.

Work Experience

CMVM - Comissão do Mercado de Valores Mobiliários — *Data Science Hub - Information and Technology Department*

Specialist Coordinator - Data Science Hub Lead — *Lisbon, Portugal*

Oct 2025 - Present

- Lead a multidisciplinary Data Science Hub in a hub-and-spoke setup, with departmental spokes enabling coordination and rollout of AI/ML architecture and cross-functional initiatives.
- Design and operationalize AI/ML projects to solve problems proposed by internal clients.
- Drive AI adoption through knowledge sharing, best practices dissemination, and technical mentorship.
- Research, evaluate and deploy emerging AI technologies (LLMs, GenAI) to support organizational digital transformation.

CMVM - Comissão do Mercado de Valores Mobiliários — *Market Supervision Department*

Machine Learning Research/Engineer — *Lisbon, Portugal*

Feb 2023 - Sept 2025

- Automating supervision procedures end-to-end, from Oracle SQL querying to Big Data processing and reporting in Python with Dask and Modin.
- Developed NLP pipelines for market abuse detection including text classification, clustering, and summarization (TensorFlow, KerasNLP, Scikit-learn).
- Built a RAG system using Azure OpenAI and Ollama (LLMs), leveraging Azure Document Intelligence for document ingestion/extraction and prompt engineering to enable cross-department regulatory rules validation.
- Architected and deployed a financial entity risk relationship graph (EMIR/SFTR/SSR data) with DASK/Modin backend and Dash (Plotly) frontend.
- Built, operated and maintained ML applications on Azure VMs, connecting to Oracle databases and exposing ML model execution through Streamlit/Gradio apps used by supervision departments.
- Created custom GPTs for market supervision tasks with tailored knowledge bases, custom instructions, and API actions integration.

FCT - Portuguese National Funding Agency for Science, Research and Technology — *Leave of absence due to PhD Scholarship - SFRH/BD/136134/2018*

FCT PhD Scholarship - Investment in High Technological Firms Driven by Machine Learning Analysis — *Lisbon, Portugal*

Sept 2018 - Oct 2023

- The PhD thesis is composed of three symbiotic research blocks: Real options theory, optimal stopping problems and machine learning techniques. The core objective of the former combination was to demonstrate that transforming classical optimal stopping problems, as those posed by real options, into statistical learning problems can mitigate the dimensionality problem.

ISCTE-IUL - Lisbon University Institute — *Department of Quantitative Methods for Management and Economics*

Invited Assistant Professor — *Lisbon, Portugal*

Nov 2023 - Present

- Practical classes of Statistics I, Statistics II (Coordinator), Computational Statistics, Decision Making Under Uncertainty and Data Analysis and Visualization.

ISCTE-IUL - Lisbon University Institute — *Economics Department*

Invited Lecturer — *Lisbon, Portugal*

Sept 2017 - Oct 2023

- Practical classes of Microeconomics, Macroeconomics I and Macroeconomics II.

CMVM - Comissão do Mercado de Valores Mobiliários — *Market Supervision Department*

Economist — *Lisbon, Portugal*

Sept 2016 - Jan 2023

- Analysis of insider trading and market manipulation.
- Analysis of available information and possibility of trading halts.

- Automated, standardized, and continuously improved management reports for decision-making using R and VBA (Excel, Word, Outlook).
- Analysis and reporting of qualified positions.
- Analysis and reporting of short selling positions.

Millenium BCP - Banco Comercial Português *Fixed Income and Structured Products Desk*

TRAINEE *Lisbon, Portugal*

Jan 2016 - Sept 2016

- Trading of fixed income securities for investment portfolio.
- Design and assembly of structured products for both retail and private banking clients.
- Issue and syndication of new corporate bonds.
- Continuous automation and optimization of P&L reports.

Banif - Banco Internacional do Funchal *Market Risk Department*

TRAINEE *Lisbon, Portugal*

Jul 2015 - Dec 2015

- Value-at-Risk (VAR) analysis regarding the bank portfolio holdings.
- Risk analysis of real estate funds under the bank balance sheet.

Education

IST - Instituto Superior Técnico *Lisbon, Portugal*

PHD IN MATHEMATICS *Sept. 2018 - Oct. 2023*

Curricular Grade: 18 out of 20, Qualitative Grade: Pass

ISCTE-IUL - Instituto Universitário de Lisboa *Lisbon, Portugal*

MASTER IN ECONOMICS *Sept. 2013 - Nov. 2015*

Grade: 18 out of 20 - IBS Top Master 16+ Student Honors

ISCTE-IUL - Instituto Universitário de Lisboa *Lisbon, Portugal*

BACHELOR IN ECONOMICS *Sept. 2010 - Jul. 2013*

Grade: 15 out of 20 - Top IBS 15+ Student Honors

EAMCN - Escola Artística de Música do Conservatório Nacional de Lisboa *Lisbon, Portugal*

BASIC CLASSICAL GUITAR COURSE - 5TH GRADE *Sept. 2007 - Jul. 2012*

Grade: 17 out of 20

Additional Skills

Programming	Python (TensorFlow, Keras, PyTorch, Scikit-learn, DASK, Modin, Pandas, NumPy), SQL, VBA, R, Matlab.
AI/ML	Generative AI, LLMs, RAG, Prompt Engineering, NLP (Classification, Clustering, Summarization), Deep Learning.
MLOps & Cloud	Microsoft Azure (VMs, OpenAI and Document Intelligence), Ollama, GitHub, Docker, Linux.
Data & BI	Plotly Dash, Power BI, Bloomberg Terminal, Reuters Eikon.
Soft Skills	Cross-functional Collaboration, Academic Research, Teaching.
Languages	Portuguese (Native), English (Proficient), Spanish (Basic).

Peer Reviewed Publications

International Review Of Economics and Finance *Journal Link*

A NEW MECHANISM FOR ANTICIPATING PRICE EXUBERANCE *Jan 2020*

Conference Publications

15th Viennese Conference On Optimal Control and Dynamic Games *Vienna, Austria*

CONTRIBUTED SESSION 66 - INVESTMENT STRATEGY AND CAPACITY OPTIMIZATION UNDER STOCHASTIC INNOVATIONS *2022*

Conference Book Link

EEA-ESEM Congress *Geneva, Switzerland*

CONTRIBUTED SESSION 1 - A NEW MECHANISM FOR ANTECIPATING PRICE EXUBERANCE *2016*

Conference Book Link