Max Vilarasau Serra

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About

I am specialized in Machine Learning & Artificial Intelligence; with a focus on Deep Reinforcement Learning and a profound interest in Quantitative Finance and Blockchain Technologies. With extensive experience in Python, my aim is to develop algorithmic trading systems with rigorous quantitative methodologies to extract actionable financial insights. I am currently interested in causal inference, stochastic processes, and market making.

Experience

Bluecap Management Solutions September 2025 – Current
Associate Madrid, Spain

- Developing a risk-assessment algorithm for a leading Spanish bank to estimate business loan default probability and optimize lending decisions
- Incorporating Explicable Machine Learning techniques to design the pre-delinquency algorithm

Riedulab February 2023 – June 2023
Analyst Barcelona, Spain (Remote)

- Analyzed the soft skills of 1,496 adolescent students from Spanish and Portuguese schools; drew inferences employing Factor Analysis & Structural Equation Modeling

Projects *(all available on my GitHub)*

- **Domain Randomization for Deep Reinforcement Learning** → /DR4DRL
  - Researched and implemented Domain Randomization techniques to improve the generalization of Deep Reinforcement Learning agents in financial portfolio management
  - Developed and trained DDPG-based trading agents under randomized market conditions (volatility, price dynamics, noise, etc)
  - Achieved higher Sharpe ratios and reduced overfitting vs. the baseline models
  - Validated model robustness on Dow Jones data, demonstrating statistically significant performance gains across multiple return-risk metrics
- **Clustering Unacquainted Students at ICADE Graduate Campus** → /Unsupervised-ML-Clustering-Students
  - Developed unsupervised learning models to analyze behavioral patterns among graduate students using Hierarchical Clustering and Principal Components Aanalysis
  - Designed a self-constructed *Affinity Test* to group individuals based on multivariate similarity metrics
  - Enabled data-driven segmentation and dimensionality reduction for enhanced interpretation
  - Interpreted cluster structures through visualization and explained variance analysis to extract actionable insights
- **Recursive Neural Networks for Apple Stock Price Prediction** → /Deep-Learning-RNN-Apple-Stock
  - Developed a deep learning model for time-series forecasting of Apple stock prices using LSTM networks
  - Designed and implemented data preprocessing pipelines for normalization, sequence generation, and model validation
  - Achieved accurate next-day closing price predictions using optimized hyperparameters
  - Visualized learning dynamics and error metrics to evaluate model convergence and predictive performance

Education

Master of Science in Business Analytics – ICADE October 2024 – July 2025
Major in Machine Learning & Artificial Intelligence Madrid, Spain

- Honors (3): [1] AI & Reinforcement Learning – [2] Quantitative Finance – [3] Thesis
- GPA: 8.8/10.0

Bachelor in Global Studies & Management – Ramon Llull University September 2020 – June 2024
Major in Management & Digital Business Barcelona, Spain

- Honor (1): [1] Applied Statistics
- GPA: 7.1/10.0

Degree in Classical Piano – Granados-Marshall Academy September 2016 – June 2020
Studied under Pianist and Prof. Xavier Ricarte Barcelona, Spain

Achievements & Awards

- Awarded Best Thesis during M.Sc. studies → tinyurl.com/DR4DRL
- Co-authored an article in a Q2 journal → doi.org/10.1016/j.explore.2023.07.008
- Jiu-Jitsu Blue Belt awarded by Robin Gracie; son of Hélio Gracie (founder of Brazilian Jiu-Jitsu)

Skills, Languages & More

- **Technical Skills**: Python (some libraries: NumPy; Pandas; SciKit-learn; Keras; Stable Baselines3...); Git; LaTeX
- **Industry Skills**: Machine Learning; Artificial Intelligence; Econometric Analysis; Financial Modeling
- **Languages** (5): English (native); Spanish (native); Catalan (native); French (advanced); Russian (beginner)
- **Hobbies**: Classical Music; Strategy Board Games; Combat Sports
- **Sports**: Judo; Jiu-Jitsu; Grappling; Wrestling