Iker Caballero Bragagnini

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EDUCATION

Universitat Oberta de Catalunya & Universitat Rovira i Virgili **Barcelona, Spain**
Master's degree in Computational and Mathematical Engineering *Sept 2023 – June 2025*

- ***Grade*: 8.95/10**
- ***Relevant Coursework*:** Simulation, Numerical Methods, High Performance Computing, Modelling with Differential Equations, Finite Differences & Elements Methods for solving PDEs, Dynamic Chaotic Systems, Pattern Recognition
- ***Dissertation*:** "Time Series & Noise Modelling using Neural Networks" (currently writing)

Universitat Politècnica de Catalunya & Universitat de Barcelona **Barcelona, Spain**
Master's degree in Statistics & Operations Research *Sept 2022 – June 2024*

- ***Grade*:** 8.56/10
- ***Relevant Coursework*:** Probability & Stochastic Processes, Statistical Software, Multivariant Analysis, Time Series, Bayesian Analysis, Statistical Learning, Optimization in Data Science, Statistical Inference
- ***Dissertation*:** "Statistical and Probabilistic Tools for Power Laws in Complex Systems: Applications to Finance" directed by Alvaro Corral from the CRM Complex Systems Group

Universitat Pompeu Fabra **Barcelona, Spain**
Bachelor of Science in Economics *Sept 2018 – July 2022*

- ***Grade***: 8.27/10 (Awarded Top 10 Best Students)
- 12 Highest Honors (MH) mentions & took 256 ECTS from 240 mandatory ECTS.
- ***Advanced Quantitative Methods Track*:** Mathematics, Statistics & Computing modules (**9.06/10)**
- ***Dissertation*:** "The SABR model in Financial Practice" directed by Elisa Alòs (**10/10** & Published by the University)

Barcelona School of Economics **Barcelona, Spain**
Advanced Undergraduate Program *April 2022 – July 2022*

- ***Grade**:* 9.4/10
- Advanced program reserved for undergraduate students with excellent grades and recommended by teachers
- ***Relevant Coursework*:** Advanced Option Pricing (Elisa Alòs) and Macro-finance (Dmitry Kuvshinov)

University of Warwick **Coventry, UK**
Advanced Undergraduate Program *Sept 2021 – April 2022*

- ***Grade**: 8,6/10 (Converted)*
- ***Relevant Coursework*:** Mathematical Economics II, Mathematical Analysis, Alternative Investments, Operations Research
- ***Awards:*** Erasmus + Scholarship & AGAUR MOBINT Scholarship (merit-based scholarship from Generalitat de Catalunya)

PROFESSIONAL EXPERIENCE

Metron Trading **Barcelona, Spain**
Quantitative Researcher & Developer *July 2024 – Present*

- Implemented more than 3 market-making bots for digital assets' markets based on ML and stochastic calculus using Python and Rust.
- Created the risk management pipeline for algorithmic trading strategies and its backtesting procedure according to the academic literature (López del Prado, Cartea, Stoikov, Mantegna & Stanley, and others)
- Writing research papers about ML & statistics related to algorithmic trading and market microstructure for digital assets.

Deloitte S.L. **Barcelona, Spain**
Quantitative Risk Analyst – Credit Risk (AI & ML Team) *Sept 2023 – July 2024*

- Designed a Reinforcement Learning model in Python for debt monitoring and collection for one of the major Spanish banks.
- Created a unified framework in Python & R for ML model development for the Quantitative Credit Risk department at the firm.
- Built credit risk model for provision adjustments, PD and early warning models for other Spanish banks.

RESEARCH EXPERIENCE

Centre de Recerca Matemàtica (CRM) **Barcelona, Spain**
Research Intern *July 2023 – Sept 2023*

- Developed my Master's thesis titled "Statistical and Probabilistic Tools for Power Laws in Complex Systems: Applications to Finance" jointly with the RiskCenter UB.
- Interned at the Complex Systems Group during the summer to research about Econophysics and Statistics.
- Treated high-frequency financial time series for experimentation using different extreme value theory methodologies (block maxima, peaks-over-threshold) and PL estimation methods using R.
- Explained theoretical and empirical results regarding the effect of regularly-varying tails and the central limit theorem for the shape of the tails of the distribution of returns for different frequencies.
- ***Awards*:** CRM Internship Grant to fund my dissertation research (used to buy books & resources)

Universitat Politècnica de Catalunya & Universitat de Barcelona **Barcelona, Spain**
Research Intern *Oct 2022 – June 2023*

- Developed a stochastic model with Dr. Luis Ortiz using stochastic differential equations and statistical methods to take into account climate change for risk management.
- Used Ornstein-Uhlenbeck processes to estimate the process of temperatures as a proxy of physical climate risk and incorporated it to a quantitative framework to estimate the PD, LGD and the EAD for capital requirements.
- Researched different economic and mathematical models to assess their alignment with Basel II guidelines and the most up-to-date reports of the BIS regarding climate change risks for the banking sector.
- ***Awards:*** Bosch I Gimpera Foundation Scholarship (merit-based scholarship for researching with RISKcenter UB), Master+ UB Scholarship (merit-based scholarship for researching with RISKcenter UB) & Santander Master+ UB Complementary Scholarship

LEADERSHIP AND PROJECTS

Nova Talent **Barcelona, Spain**
Member *July 2024 - Present*

- Accepted to the community, which connects the Top 3% talent amongst them and gives exclusive opportunities.

Virus Matemàtic **Barcelona, Spain**
Collaborator *May 2024 - Present*

- Country-wide projected created and coordinated by Nicolás Atanés, which aims to spread the importance and applications of theoretical and applied mathematics to everybody.
- Called him to personally collaborate spreading the usefulness of mathematics for the labor market in high schools and universities given the current economic situation for young students.
- Arranged events and talks during 2024-2025 in universities (UPF, UB, ESADE) and different high schools in Barcelona to talk about how statistics and machine learning work and their applications in different jobs and areas.

Pompeu Research Club **Barcelona, Spain**
Founder and President *Oct 2021 – July 2022*

- Organized multiple talks and events with faculty professors and experienced professionals to talk about different economics and finance fields and how to obtain academic research opportunities for interested students.
- Wrote different articles about economic topics such as growth, monetary policy and technological development.

Pompeu Investment Club **Barcelona, Spain**
President *Sept 2020 – Oct 2021*

- Coordinated different events for students interested in corporate finance to learn about the different processes of Spanish boutiques and banks and the different activities and careers that financial markets offer.
- Implemented automated DCF and Comparable Analysis models using Python and designed a web-scrapper that allowed to obtain title news and other data in order to collect information in an automated and centralized way.

ADDITIONAL SKILLS & INFORMATION

Languages: English (C1), Spanish & Catalan (Native), German (A2), Japanese (A1), Chinese (HSK3 level)
Computing: Python (High), R (High), C++ (Medium), Rust (Medium), SAS (Medium), SQL (High), Matlab (Basic)
Research: Attended to OxML Representation Learning & Generative AI (Oxford Univ. & AI for Global Goals)