

Pablo Borrego Ramos

Paris · +34 640 580 473 · paborrego@alumnos.unex.es · Website

EDUCATION

ENS Paris-Saclay

Paris, France · Sep 2026 – Present

MVA master's program (Mathématiques, Vision, Apprentissage)

Universidad de Extremadura

Badajoz, Spain · Sep 2020 – Jun 2025

Dual Bachelor's Degrees in Mathematics & Statistics (5-year program)

Selected coursework: Functional Analysis, Measure & Integration Theory, Ordinary and Partial Differential Equations, Numerical and Computational Methods I–II, Operations Research (basic and advanced), Probability, Stochastic Processes (basic and advanced), Time Series, Multivariate Statistics.

Conferences attended:

- Methods in Banach Spaces, satellite conference of the 9th European Congress of Mathematics. Badajoz, Spain, June 2024.
- RTNS 2024 — XX DANCE Winter School in Dynamical Systems (Recent Trends in Nonlinear Science), DANCE Spanish network. Badajoz, Spain, January–February 2024.

RESEARCH

Research interests: optimization and operations research; optimal transport; differential equations and dynamical systems.

Preprints

An Exact Branch-and-Cut Method for the Asymmetric Orienteering Problem with Terrain-Driven Fatigue 2026

Introduces the Asymmetric Orienteering Problem with Fatigue (AOPF) over GIS-based terrain cost surfaces (Minetti metabolic model); develops two exact MILP formulations and a branch-and-cut solver with tailored cutting planes, including a novel family derived from the assignment relaxation; releases a benchmark suite built from real Spanish terrains.

Theses

Discrete Dynamical Systems in Low Dimensions 2025

BSc Thesis in Mathematics · Supervisor: Prof. José Luis Bravo Trinidad

Stability of non-hyperbolic fixed points of $\mathcal{C}^3$ maps (original criterion for $f'(\hat{x}) = \pm 1$); perturbations of monotone systems and period-doubling bifurcations; proof of chaos for the logistic family ($\lambda > 4$) via symbolic dynamics and conjugacy with the shift map.

Functional Data Analysis: Theory and Applications to Financial Time Series 2025

BSc Thesis in Statistics · Supervisor: Prof. Julián Ramajo Hernández

L^2 framework for functional data: basis expansions, penalised smoothing, functional PCA (Karhunen–Loève); functional regression and clustering; application to 655 ECB yield curves (2006–2009) with the IBEX 35 as response ($R^2 = 0.81$, OLS), in R.

AWARDS & DISTINCTIONS

- Best Academic Record in Statistics and in the Mathematics–Statistics Dual Degree (Faculty award), 2025.
- Merit-based tuition fee waiver (99% of tuition), renewed annually on academic performance, Junta de Extremadura, 2021–2025.

PROFESSIONAL EXPERIENCE

Amazon — Business Intelligence Engineer

Luxembourg · Feb 2025 – Aug 2026

Statistical and ML models (penalised regression, Poisson regression, gradient boosting, ARIMA/ETS) for throughput prediction and capacity planning across 500+ warehouse machines; end-to-end absenteeism forecasting system across 50+ European sites with automated retraining (WAPE reduced by 30%).

Metanogenia — Data Science Intern

Spain · Jun – Jul 2023

Methane-yield prediction from heterogeneous reactor data; benchmarked six regression methods with 5-fold CV ($R^2 = 0.71$).

ADDITIONAL INFORMATION

Programming: Python, R, C++, SageMath, Fortran, $\text{\LaTeX}$ — numerical simulation, statistical modelling, exact optimization (MILP, branch-and-cut), scientific writing.

Languages: Spanish (native), English (fluent, C1).

Other: Faculty Council member (student representative), UEx; European Solidarity Corps volunteer (2024); ADMO marrow-donor awareness campaigns (2024–2025); Spanish Adventure Racing League Champion (2021).