Sergio Rivera

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Education

University of Cambridge — Cambridge, UK
MPhil in Advanced Computer Science (80.67/100, Distinction) — *Oct. 2023 – Jun. 2024*

Swansea University — Swansea, UK
BSc in Computer Science (83.86/100, First Class) — *Sep. 2019 – May 2023*

Experience

Deloitte — Madrid, ES
Data Scientist — *Jun. 2024 – Present*

- Led the development of one of Spain's largest "next best offer" neural network models for a major food retailer, impacting 4.5M clients on a weekly basis, projected to generate €50M in incremental sales over the next three years
- Developed data-driven marketing attribution models for a global luxury goods conglomerate, delivering a drastically enhanced understanding of their sales conversion funnels
- Delivered in-person technical presentations to cross-functional client stakeholders, effectively communicating complex AI solutions to technical teams, marketing departments, operational divisions, and business executives

Cambridge Department of Computer Science — Cambridge, UK
Graduate Researcher — *Oct. 2023 – Jun. 2024*

- Conducted research on using generative ML models (GAN, VAE, Diffusion) to accelerate centralized optimal control problem planners for multi-drone trajectories with Prof Amanda Prorok, scoring an 85/100 grade on my MPhil thesis at Cambridge

IBM — Hursley, UK
Software Engineer — *Jun. 2021 – Aug. 2022*

- Conducted NLP research on media bias detection by fine-tuning a BERT model using PyTorch to accurately identify abusive speech in news articles, scoring detection levels close to 80% accuracy
- Implemented a high-availability infrastructure Kubernetes cluster, centralizing logging from a network of several production servers, capturing over 1.4M logs weekly, leading to a 90% reduction in search times for critical-level messages

Projects

Statistical Arbitrage between Highly Cointegrated ETF Pairs — *Feb. 2025*

- Backtested mean-reversion trading strategies generating long/short signals for a derived spread instrument
- Performed the Engle-Granger two-step method for cointegration to statistically validate the mean-reversion assumption, leading to the selection of 10 American ETF pairs
- Analyzed the normality of my strategy's returns using the Shapiro-Wilk, D'Agostino-Pearson, and Jarque-Bera tests, verifying core assumptions to accurately interpret Sharpe and Calmar ratios

Device-Friendly Privacy-Preserving Generative Adversarial Networks — *Jan. 2024*

- Developed a novel compression framework for privacy-preserving generative adversarial networks (GANs), achieving 63.6% memory reduction and 49.8% reduction in floating-point operations while maintaining generation quality
- Implemented model distillation, channel pruning, and weight quantization techniques using PyTorch to create resource-efficient models compatible with edge devices

Skills

Software Engineering: Python, C++, SQL, Docker, Kubernetes, Git, FastAPI, BigQuery, Google Cloud, JavaScript
AI/ML Libraries: PyTorch, TensorFlow, Scikit-Learn, XGBoost, NumPy, Pandas, SciPy, Matplotlib, Polars, SHAP
Spoken Languages: Spanish (native), English (bilingual)