Javier Alfaro

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EDUCATION

London School of Economics and Political Science   Sep. 2023 – Sep. 2024

MSc Geographic Data Science - Best dissertation prize

- **Courses:** Artificial Intelligence, Deep Learning, Graph Data Analytics, Applied Quantitative Methods, Applied GIS, Techniques of Spatial Econometrics, Economics of Urbanisation
- **Dissertation:** Using deep learning techniques too track physical changes and use these feature to predict gentrification in London, presented at Oxford Saïd Business School.

Postgraduate in Analytics for Data Science   January 2021 - October 2022

Statistics.com — ESEN — Full scholarship

- Specialized studies in data analytics to apply machine learning and optimization models to solve real-world problems. Certificates here.

Higher School of Economics and Business   January 2015 – January 2020

B.S. in Economics

EXPERIENCE

GeoKapti   December 2021 - Present

Data Scientist and Machine Learning Expert

- Manage data science, machine learning and automation projects for customers in London and Latin America.
- Built and productionized an LLM Agent using LangGraph that intelligently switches between SQL workflows and conversational memory, generating insights from live, large-scale tabular data and exposing GenAI capabilities via APIs for seamless microservice integration.

DMA Analytics   March 2021 - Present

Data Scientist

- Manage data science, machine learning, automation and geospatial projects. Contribute as principal analyst for economics-based research in projects with The World Bank, Inter-American Development Bank and private companies.
- Led an environmental monitoring project, developing a workflow to extract, process, and visualize satellite imagery time series for indices across Latin American and Caribbean countries using Google Earth Engine, including automated detection and correction of outliers.

Directorate General of Customs - AI Department   November 2020 - December 2021

Jr Data Scientist

- Manage and optimize the AI and risk management modules of the recently implemented institutional self-management system with the aim of improving foreign trade processes. Managed over 100 million trade transactions.
- Automated over 10 public administration processes, such as data recollection for Customs Valuation.

PROJECTS

The Alan Turing Institute | *Co-Facilitator - Data Study Group (DSG)*   January - February 2025

- Co-facilitated a machine learning project aimed at automating shallow gas detection from legacy marine seismic images.
- Contributed to georeferencing seismic images and assisted in developing deep learning models for classification, segmentation, and object detection.
- Implemented preprocessing techniques such as adaptive normalization, background removal, and denoising to improve the quality of seismic image analysis.

Nokia Bell Labs Cambridge | *Urban Transformation in London*   April 2024 - October 2024

- Investigate urban transformations in London, focusing on population demographics, housing affordability, neighborhood dynamics, with an emphasis on gentrification and displacement.
- Use census data, high-resolution satellite imagery from Sentinel-1 and Sentinel-2, and prescription records to analyze urban changes over time.

- Apply Deep Learning techniques to create change detection maps by comparing satellite images from 2016 and 2021, conducting spatial and predictive analyses to link urban transformations with potential gentrification patterns.

LSE | *Evaluating Deep Learning Models for LULC Change Prediction* Jan 2024 - Apr 2024
- Evaluate various deep learning architectures for predicting land use and land cover (LULC) changes, focusing on model performance comparisons.
- Identify superior performance of custom-crafted U-Net, Temporal CNN, and Temporal Transformer models, outperforming a baseline 3D CNN. Discuss hardware constraints, dataset biases, scarcity, and suggest future research directions for performance enhancement.

LSE | *Airport Scheduling Optmization* Jan 2024 - Apr 2024
- Developed algorithms (Breadth-First Search, Uniform-Cost Search, Constraint Satisfaction Problem) to optimize airport flight schedules during sudden runway closures and anticipated disruptions.
- Utilized tree search and mixed-integer programming methods to minimize delays and financial losses and conducted numerical experiments demonstrating significant improvements in delay minimization and revenue protection during disruptions.

GeoKapti | *ML/AI Training and Satellite Data Analysis Expertise* January 2020 - August 2023
- Conducted ML/AI workshops for government institutions, focusing on Python syntax, data manipulation, visualization, and theoretical principles of machine learning with TensorFlow, promoting algorithmic problem-solving and software translation.
- Specialized in satellite data analysis and visualization, processing Sentinel-2 and Sentinel 5-P satellite data to assess vegetation, water, land indices, and air pollution. Created multidimensional data cubes for regions in El Salvador and Guatemala, and performed temporal analysis and projections with Plotly.
- Developed and reviewed ML/AI models for retail credit risk, involving data cleaning, model benchmarking to optimize default risk probabilities, and hyperparameter selection using Scikit-learn and TensorFlow. Utilized XGBoost, LightGBM, and tree methods for model assembly and testing.

University Lecturer

Higher School of Economics and Business April 2022 - June 2023

Undergraduate courses
- Introduction to Python and Data Processing
- Intermediate Python

Teacher Assistant

Higher School of Economics and Business August 2018 - December 2020

Undergraduate courses
- Introduction to Public Policy — Society and Economics
- Introduction to Python and Data Processing — Advanced Python
- Introduction to Research — Qualitative Research Methods

Books / Book Chapters

Computational Urban Planning and Urban Management June 25, 2025

Gentrification from the Sky: Using Remote Sensing and Machine Learning for Urban Change Detection
- Book Chapter in Cloud Cities edition (CUPUM)

The Alan Turing Institute June 24, 2025

Detecting Shallow Gas from Marine Seismic Images (Version 1).
- Data Study Group Team. (2025). Data Study Group Final Report: British Geological Survey https://doi.org/10.5281/zenodo.15728505

Technical Skills

Programming languages: Python, R, Stata, SQL, VBA
Frameworks: Flask, Heroku, Ngrok
Software: Linux, Git, LaTeX, Google Cloud Platform, Azure, QGIS, Docker
Libraries: Pandas, Geopandas, NumPy, Scikit-learn, PyTorch, TensorFlow/Keras, OpenCV

Languages

Languages: Spanish (Native), English (Fluent), Italian (Intermediate).