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PROGRAMMING LANGUAGES

Python (advanced): transformers, JAX, TensorFlow, PyTorch, scikit-learn, dash, LangChain, spaCy, PySpark
SQL (advanced), **R** (advanced), **Java** (beginner), **JavaScript** (beginner)

EXPERIENCE

- **ETH Zürich** Zürich, Switzerland
Researcher in Economics, Machine Learning, and NLP. Member of AI Center Sept. 2023 - Present
 - **LLMs in Economics:** Co-authored an entry on the Palgrave Handbook of Economics and Language on large language models and their applications in economics ([Working paper](#) - [GitHub](#)).
 - **Recommender system (SECO - Swiss Government):** Partnered with the Swiss State Secretariat for Economic Affairs to develop a recommender system for the public employment service, achieving higher user satisfaction ratings than the previous system. The system utilized methods from the algorithmic fairness literature to prevent discrimination and included explanations for each recommendation.
 - **Explainable AI:** Collaborated in the development of a taxonomy of explainable machine learning techniques and in the design of a field experiment to test how they affect people's perception of automated decisions.
 - **Teaching:** Supported the development of three different courses with an average of 30 students ([GitHub](#)).
- **Machine Learning Consultant** Remote
Selected projects (references available upon request) June 2020 - Present
 - **Data extraction with LLMs (Inter-American Development Bank):** Developed a methodology for the IADB to identify and categorize structural reforms in Latin American countries from naturally occurring data (i.e. articles in newspapers), facilitating their prioritization of loan assignments.
 - **Text retrievers for market research (NODO Research):** Accomplished a 50% reduction in the time required for qualitative data analysis by developing custom retrieval systems to interact with the transcripts of market research interviews ([GitHub template code](#)).
 - **Automated transcription generation (NODO Research):** Achieved a 95% reduction in audio transcription time and a 20% cost reduction by developing an automatic transcription pipeline leveraging WhisperAI ([Hugging Face demo](#)).
 - **Master classes (IESE, CEMFI, Colombian Central Bank):** Developed and taught master classes on modern machine learning techniques for working with textual and unstructured data (e.g. IESE 2024: [GitHub](#) - [Website](#)).
- **University College London - Barcelona School of Economics** Remote
Researcher in Economics, Machine Learning, and NLP March 2021 - Aug. 2023
 - **Remote work prediction from job postings (Lightcast):** Partnered with Lightcast to develop a language model (fine-tuned distilBert) to predict the presence of remote work on over 1 billion job postings. Designed the annotation process to collect the labels for finetuning and the production pipeline to continuously generate predictions. The paper has been cited over 60 times and the data is currently used by over 800 researchers and internally by the company ([Webpage](#) - [Media](#) - [Model](#)).
 - **Text analysis methods in Economics (Annual Review of Economics):** Demonstrated techniques for algorithmic text analysis as part of an article for the Annual Review of Economics. The associated [GitHub repository](#) has over 100 stars, and the [article](#) has been cited over 100 times.
 - **Database creation and optimization:** Designed and developed a SQL database (PostgreSQL) to store and efficiently query the content of over 500M news articles from Dow Jones Newswires.
 - **Characterizing firms in a trade network:** Developed a method to characterize firms within a trade network using low-dimensional numeric representations (embeddings), enabling the creation of new measures of firm similarity and market competition. Presented a [poster](#) at CESifo Venice Summer Institute 2022 ([GitHub](#) - [Blog](#)).

- **Instiglio** Bogotá, Colombia
Data Analyst *Jan. 2018 - Aug. 2019*
 - **Model development (USAID):** Led the design of predictive models, utilizing regression analysis techniques, to forecast the performance of educational programs in Liberia. Supported the design of an innovative financing mechanism for a five-year educational project in the country.
 - **Data analysis:** Collected, cleaned, analyzed, and visualized historical data of all the company's projects to produce relevant insights for the Board's annual meeting.
 - **Business development:** Supported the business development efforts of the company by writing concept notes and formal proposals to prospective clients. Two of these efforts led to important projects for the company.

EDUCATION

- **Barcelona School of Economics** Barcelona, Spain
Master's Program in Data Science; GPA: 8.57/10.0 *Sept. 2019 – Sept. 2020*
 - **Relevant courses:** Machine Learning (A+), Text Mining (A+), Data Warehousing and Business Intelligence (A), Reinforcement Learning (A+), Data Visualization (A-)
- **Universidad de los Andes** Bogotá, Colombia
Bachelor of Economics; GPA: 4.44/5.0 *July 2013 – Dec. 2017*
 - **Relevant courses:** Advanced Econometrics (A-), Game Theory (A-), Microeconomics III (A-), Analysis of Armed Conflict (A+), Empirical Applications in Political Economy (A)

SKILLS

- **Technical skills:** Causal inference, machine learning, deep learning, natural language processing, large language models (chatbots, pre-training, fine-tuning, RAG, prompting), vector databases, computer vision, time-series analysis, experimental design, algorithmic fairness, data visualization, explainable machine learning
- **Tools and platforms:** Git, GCP, AWS, Docker, Hugging Face, Linux, Bash/Shell, Heroku, CSS, HTML
- **Soft skills:** Communication, teaching, public speaking, scientific writing, collaboration, problem-solving, creativity, adaptability
- **Languages:** Spanish (native), English (working proficiency), French (intermediate)