

# David Pérez Carrasco

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Leveraging analytical and critical thinking skills, I develop impactful Machine Learning models through rigorous research in the field of AI. Committed to perfection, I relentlessly pursue optimal solutions. Ambitious, detail-oriented, and determined, driven to excel in AI/ML research at a world-leading company.

## WORK EXPERIENCE

### AI & ML Researcher at Universitat Pompeu Fabra | Internship

Barcelona, Spain

Jul 2023 - Jul 2024

- Developed a comprehensive RL simulator, incorporating deterministic and stochastic sequential actions, and improving agent decision-making capabilities.
- Developed novel and robust embedding techniques through MDPs and LMDPs, achieving a 99.23% precision improvement for stochastic MDPs.

## EDUCATION

### Universitat Pompeu Fabra - Mathematical Engineering in Data Science

Barcelona, Spain

Bachelor's Thesis: Efficient Algorithms for Linearly Solvable Markov Decision Processes

Sept 2020 - Jun 2024

Grade: 8.72 | Ranked 2nd in Graduating Class

Honors: Introduction to Programming, Introduction to Network Science, Discrete Mathematics, Data Structures & Algorithms, Object-Oriented Programming, Algorithm Design, Probabilistic Graphical Models, Information and Codification Theory.

### University of British Columbia – Exchange Program

Vancouver, Canada

34<sup>th</sup> best university worldwide according to 2023 [QS ranking](#) and 19<sup>th</sup> in Data Science.

Sept 2022 - Dec 2022

Coursework: Relational Databases (A), Machine Learning and Data Mining (A-), Finding Relationships in Data (A-) and Artificial Intelligence (B).

## PROJECTS

### Sentiment Analysis and Contextual Retrieval with LLMs and Transformers | Python

Jun 2024

- Fine-tuned BERT for sentiment analysis, used Hugging Face transformer for retrieval, and engineered prompts for Mistral's LLM to generate summaries.

### Hierarchical Deep Learning Model for Anomaly Detection | Python (PyTorch, Streamlit)

Dec 2023

- Developed and trained a Transformer-LSTM based hierarchical model for anomaly detection and consumption pattern recognition in time series data.

### Information Retrieval Search Engine for Russo-Ukrainian War | Python, HTML, CSS

Nov 2023

- Built a large-scale information retrieval search engine for analyzing Russo-Ukrainian War tweets using text processing, TF-IDF, Word2Vec and web analytics.

### SRGAN for Image Super Resolution | Python (PyTorch, NumPy)

Jun 2023

- Enhanced image quality by 4x and reduced noise through SRGAN implementation.

### Deep Learning for Cryptanalysis | Python (PyTorch, Pandas, NumPy)

May 2023

- Decoded corrupted files implementing, training, and testing CNNs and LSTMs.

### Apache Spark for Big Data – Tweets filtering | Java, Apache Spark, AWS (S3 & EMR)

Apr 2023

- Filtered real-time tweets with distributed computation and cloud storage.

### Machine Learning for Customer Segmentation and BI | Python

May 2022

## ACHIEVEMENTS

### Finalist in the 2023 AB Data Challenge

Barcelona, Spain

- Predicted water consumption and detected 50k anomalies with a DL Meta-Model.

Dec 2023

### Contestant at the 2022 IPCP Southwestern Europe Regional Contest

Milan, Italy

- Represented UPF in a 5-hour programming competition.

Apr 2022

## SKILLS

**Technical skills:** Python, SQL, Excel, R, MATLAB, Tableau, Java, JavaScript, C, C++, Julia, PHP, Oracle, AWS, GraphML, Agile, Jira, Maven, Apache Spark, MPI, Cuda, RDS, Hadoop, CSS, Git, Gymnasium, Huggingface

**Languages:** Spanish (Native), Catalan (Native), English (C1 – Cambridge English | February 2022).

## HONORS & AWARDS

- Academic distinction issued by the Catalan Government for my outstanding results in PAU.
- Placed in the honor roll for my outstanding academic performance in 2018-2019 academic year.