



# NICOLÁS VILA

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 [niicovila.github.io](https://github.com/niicovila)

## EDUCATION

### Universitat Pompeu Fabra

*Mathematical Engineering on Data Science*

Honors: Numerical Methods, Machine Learning, Signals & Systems I, Probability, Operating Systems

Undergraduate Thesis: Regularized Deep Reinforcement Learning from a Linear Programming framework. Advisor: Gergely Neu.

**Barcelona, Spain**

Expected June 2024

### The University of Chicago

*Non-degree seeker, International Student at Large.*

Coursework: Time Dependent Data, Introduction to Cryptography, Introduction to Quantum Computing,

Data Science Clinic, Entrepreneurship in Technology, Multivariate Statistical Analysis, Introduction to Database Systems.

**Chicago, IL**

September 2022-June 2023

### University of Chicago Booth School of Business

*Exchange student*

Coursework: Big Data

**Chicago, IL**

April 2023- June 2023

### Toyota Technological Institute at Chicago (TTIC)

Coursework: Fundamentals of Deep Learning

**Chicago, IL**

September 2022-December 2022

## EXPERIENCE

### Amazon EU

*Data Engineer Intern.*

- Part of the Data Engineering team at ATS (Amazon Transportation Services) which handles data pipelines used by a range of different internal teams.
- Developed a visual analytics pipeline on AWS Quicksight to deploy dashboards and create automatic alerts from real-time data stored in an RDS Database using the AWS-CDK.

**Barcelona, Spain**

June 2023 - October 2023

### University of Chicago Law School

*Research Assistant.*

- Worked with OpenAI's API and fine-tuned open source Large Language Model LLaMa-v2 for automatic text generation in the realm of Law. Developed an AI system capable of drafting appellate legal briefs, worked with a team of attorneys to define methodologies and strategies.

**Chicago, IL**

March 2023 - October 2023

### University of Chicago Data Science Institute | Greenwave

*Data Science Clinic student.*

- Research and implementation of computer vision models to predict the mass of kelp from images.

**Chicago, IL**

January 2023 - March 2023

## PROJECTS

### Regularized Deep Reinforcement Learning from a Linear Programming framework | Python, PyTorch, Gymnasium | December 2023

- Research and comparison of different regularized RL algorithms. Developing a large scale implementation of the QREPS algorithm using Deep Neural Networks on a range of different discrete environments.

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

December 2023

- Developed and trained a Transformer-LSTM based hierarchical model for anomaly detection, consumption pattern recognition and prediction using daily water consumption time series data recorded from 2019 to 2022.

### Visual Analytics WebApp integrating ML and explainable AI for car price predictions | Python, Streamlit |

December 2023

- Developed a WebApp that features an in-depth data analysis and incorporates a predictive model trained using LightGBM on automobile data. The application also includes a model explainability section to interpret the model's performance.

### VQ-VAE Paper Extension | Python, PyTorch |

December 2022

- A modification of the VQ-VAE (Vector-Quantised Variational Auto-Encoder) paper decreasing by a half the reconstruction error.

## LEADERSHIP & ACTIVITIES

### Finalist of the ABDataChallenge by "Aigües de Barcelona"

December 2023

### Contestant at the 2022 ICPC Southwestern Europe Regional Contest.

April 2022

### Finalist of the "Big Data Challenge" by "CaixaBank".

March 2018

- One of the 10 finalists in a nation-wide contest organised by CaixaBank. Participated in the final dataton in Barcelona, Spain.

## SKILLS & LANGUAGES

**Skills:** Python, PyTorch, C, C++, Java, JavaScript, Matlab, R, Docker, Git, Linux, SQL, AWS, Spark

**Languages:** Spanish (Native), English (C1) and Catalan (Native).