

# Léo le Douarec

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## WORK EXPERIENCE

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**Digital Infrastructure Intern** Jul 2025 — Aug 2025  
International Telecommunications Union (ITU) *Geneva, Switzerland*

- Implementing broadband mapping in 11 Sub-Saharan Africa countries, in partnership with the European Commission and European telecommunications regulatory agencies.
- Desk research and report writing on best practices to implement national broadband mapping systems.
- Member of the ITU delegation to the 2025 Ukraine Recovery Conference in Rome.
- Data analysis, use of HTML and WordPress to enrich the project team's work and the [project's website](#).

**Machine Learning Engineer** Jul 2024 — Aug 2024  
Heptalytics *Paris, France*

- Training and evaluation of Graph Neural Networks to detect fraud, money laundering.
- Made data processing 100 times faster by implementing efficient sparse-matrices for matrix product.
- Statistics, Geometric deep learning, Sparse matrices, Data Analysis. Python, NumPy, PyTorch, PyTorch Geometric.

**Data Scientist** Sep 2023 — Jul 2024  
Caisse d'Epargne *Nancy, France*

- Machine Learning and statistics on large-scale datasets
- Proposed an index allowing to classify customers based on consuming habits, with encouraging results in first study.
- Interdisciplinary work with IT and marketing teams to produce large-scale data analysis and insights.
- Project management, Python, Pandas, SKlearn, Folium, computing on a distant computer cluster (GRID'5000).

## EDUCATION

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**Master in Public Policy** Paris, France  
*Sciences Po Paris* Sept 2024 — Graduate Aug 2026

- Double-Degree with Mines Nancy in New Technologies and Public Policy.
- Coursework: Economics of digital markets, Psychology, Sociology of the Digital Public Space, Diplomacy, Digital Law, Digital policies for local governments, Blockchain for Public Good, Global Security Law and New Technologies, Biases of AI.

**MSc Engineering, Applied Mathematics / Diplôme d'ingénieur** Nancy, France  
*École des Mines de Nancy, Université de Lorraine* Sept 2022 — Graduate Aug 2026

- Cumulative GPA: 3.9/4.0 (top 1%)
- Statistics Coursework: Deep Learning, Machine Learning, Computer Vision, Statistics, Data Analysis, Inverse Problems, Time Series analysis.
- Industrial Engineering Coursework: Operations Research, Databases, Discrete optimization, Heuristics for industrial engineering,
- Physics Coursework: Quantum Physics, Statistical Physics, Fluid Mechanics. Basics of Quantum computing.
- MiT MOOC on Ethics, Economics, Experimental Economics, Introduction to Law.

**BSc Mathematics, Physics, Computer Science** Rennes, France  
*Lycée Chateaubriand* Sept 2020 — Aug 2022

- Cumulative GPA: 4.0/4.0. 2-year undergraduate program preparing for national competitive exams to enter French most prestigious engineering graduate schools.
- Relevant coursework: Linear Algebra, Calculus, Probabilities, Functional Analysis, Signal Processing, Optics.

## SELECTED PROJECTS

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**Public Policy Incubator, Sciences Po** Jan 2025 — May 2025

- Project on digital law and ethics in partnership with french regulatory body CNIL.
- Worked on how to fairly develop and monitor the use of algorithms in the public sector.
- Find the project's details on the [incubator's website](#)

**Research Project, Biases in Artificial Intelligence** Jan 2025 — May 2025

- Project on algorithmic biases and ethics with Jean-Philippe Cointet (Sciences Po, Medialab)
- Developed and implemented a research methodology to test biases in Applicant Tracking Systems (ATS).
- Website of the project: [click here](#)

#### Research project, Computational Sociology

Autumn 2024 —

- Collected, processed 30k comments across YouTube, TikTok, Reddit using webscraping and APIs.
- Analyzed the collected data with Pandas, Seaborn.
- Finetuned a state-of-the art sentiment analysis model on TikTok-specific vocabulary.
- The code is available here: [GitHub repo](#).

#### Hackathon, Open Sky Network Contest

Autumn 2024 —

- Machine Learning contest to predict take-off weight of airplanes with XGBoost.
- Project lead in autonomy, teamwork, open-source ([click here](#) for the GitHub repository).

#### Research project, Graph Optimization

Spring 2024 —

- Built a mathematical model to optimize usage of an airport using an interval graph coloring approach and a sequential graph coloring algorithm with  $O(n \log n)$  time complexity.
- The code is available on [GitHub](#).

#### Research project, model checking

Sept 2021 — Jul 2022

- Worked with Nicolas Markey on Büchi automaton and Linear Temporal Logic (LTL) to perform model checking.
- OCaml implementation of an algorithm from the literature to construct a model-checking Automaton.

### SKILLS

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- **Programming Languages:** Python, OCaml, SQL, MongoDB, R, Matlab, VBA
- **Python Libraries:** PyTorch, PyTorch Geometric, Keras, TensorFlow, NumPy, Scikit-Learn, OpenCV, Pandas, Seaborn, SciPy, Multiprocessing, Selenium, Requests
- **Technologies:** Git, Linux, Excel, Graph Neural Networks, Catia V5, Typst, LaTeX, HuggingFace AutoTrain, ollama
- **Scientific experience:** Natural Language Processing, Computer vision, Deep learning, Transformers, Data Science, Optimization, Operations Research, Mathematics (Linear algebra), Fluid Mechanics, Quantum Physics and Mechanics
- **Languages spoken:** French (native), English (native), Chinese (B1 HSK3), German (B1)

### EXTRACURRICULAR ACTIVITIES

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#### Music

- > 16 years of Trombone in demanding conservatories.
- Supervized two orchestras as conductor and composer.
- Organized 5 concerts.
- Currently trombonist at OCUP Paris, Orchestre de Sciences Po (COSP).

#### Badminton, Sailing, Cycling, Drone Piloting (EU and UK A1/A3 certificates), PC building

### VOLUNTEERING EXPERIENCE

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#### Paris 2025 AI Action Summit

- took part in the organization of the Paris 2025 AI Action Summit
- accompanied and helped high-level visitors throughout the day.

#### Les Cordées de la Réussite

- Tutored students aged between 11 and 15 years old in Mathematics, French, English while in engineering school
- Focused on children with specific difficulties
- Presented the work at the steering committee.

#### Climate Fresk Animator

- I have followed the training and can autonomously organize a climate fresk to raise awareness on climate change.

#### French Red Cross

- Took part in food bank collections