

# Clément ROUVROY

ENS Ulm, ex-NTU Singapore, ML/DB Research Student

✉ clement.rouvroy@ens.psl.eu 🌐 www.crvr.fr 📧 @CRouvroy 🏠 crouvroy 📍 Paris, France

I'm a master student in computer sciences at Ecole normale supérieure (Paris), one of France's most selective school. I have conducted research at INRIA, ENS, and NTU (Singapore). I'm interested in Database optimization through ML, and in ML optimization through databases.

**Updated:** 09/21/2025

## Education

### Ecole normale supérieur - Paris Sciences & Lettres

2025 - 2026 Paris, France

M.Sc. 2nd year at IASD Master in Computer Science

**Result:** on-going.

### Ecole normale supérieur - Paris Sciences & Lettres

2024 - 2025 Paris, France

M.Sc. 1st year at ENS, with courses from MVA and MPRI, in Computer Science

**Result:** First class honour, best grade in Deep Learning. (17.13/20)

### Ecole normale supérieur - Paris Sciences & Lettres

2023 - 2024 Paris, France

B.Sc. in Computer Science

**Result:** First class honour. (16.8/20)

## Publications & Works

### Talks

*Enumerating with constant delay and linear preprocessing acyclic CQs with self-joins*, **Presentation** at LIRMM's Boreal Seminar (CNRS lab) (2024), [PDF](#)

### Reports

*Report: Hypothetical Index Benefit Estimation for Column-oriented databases using Quantiles* **Internship Report** (2025), [PDF](#)

*Report: On the enumeration of answers to acyclic conjunctive queries with self-joins*, **Internship Report** (2025), [PDF](#)

## Research Experience

### Research Intern

Nanyang Technological University (MLXDB) - Gao Cong Jiachen Shi

📅 2025 Feb. – 2025 Jul. 📍 Singapore, Singapore

- Made the first Hypothetical Index Benefit Estimator for Column-oriented databases. Getting 81% ranking score on zero-shot, and less than 9% average error once tuned.
- Introduced Quantile Regression to trade-off risk and benefit in What-If.
- Implemented in Python and tested on a commercial database system

### Research Intern

ENS Paris / INRIA - Luc Segoufin Nofar Carmeli David Carral

📅 2024 Jun. – 2025 Jan. 📍 Paris / Montpellier, France

- Found a new sufficient condition and new hardness conditions for enumeration of conjunctive queries with self-joins.

## Objective

Looking forward for opportunities in ML/DL, Query optimization, Graph Databases, Vector Databases.

## Projects

**Hypothetical Index for Column-oriented databases** [GitHub](#)

**Diffusion models** [GitHub](#)

**Reinforcement Learning for Autonomous Cars** [GitHub](#)

**Graph Neural Network - Fake News Detection (MVA)** [GitHub](#)

**RISC CPU in Netlist, with our own ASM** [Blog](#)

**PureScript Lexer, Parser, Type checker (with inference), Compiler**

**Git clone in C++ (server and client)** [GitHub](#)

## Expertise

**Languages and tools:** Python, Pytorch, Numpy, C, C++, Go, OCaml, SQL

**Skills:** Research, Mathematics, AI, Formal Languages and Complexity, Databases, Optimizations, Algorithms

**Languages:** French, English, German

## Coursework

**Theory** (Advanced Complexity, Formal languages and complexity, Algebra) from ENS and MPRI

**AI** (ML Foundation, Optimization for ML, Reinforcement Learning, LLM and NLP, Deep Learning for Image Analysis, Computer Vision, Deep Learning, Statistical Learning) from ENS, IASD and MVA

**Database** (Database Theory; Data Acquisition, Extraction, and Storage) from ENS and IASD

**Coding** (Compilation, OS, Numerical System) from ENS

**Algorithm** (Algorithm, Convex Optimization, Combinatorial Optimization) from ENS