

Rémi Morvan

Database Researcher



“ After four years advancing database theory, I want to apply it to real-world systems. My short-term goal is to deepen my practical skills and industry knowledge of large-scale data systems, in order to build a research project deeply rooted in practical needs. ”

✉ remi@morvan.xyz

👤 remimorvan

🔗 morvan.xyz

AWARDS

🏆 **DISTINGUISHED PAPER AWARD** at PODS '25 for *Minimization of Conjunctive Regular Path Queries*.

🏆 **SELECTED PAPER** at ICDT '23 for *Approximation and Semantic Tree-width of Conjunctive Regular Path Queries*.

💻 RESEARCH & ENGINEERING EXPERIENCE

since Oct. 2025 · Freelance

SOFTWARE & RESEARCH ENGINEER

- Commissioned by the CNRS to develop *LaTeXML* 📈.

Perl

TeX

XML

Sept. 2021 – Aug. 2025 · LaBRI, Université de Bordeaux

PH.D. RESEARCHER

- Research projects in **database theory** (graph database query optimization) and **automata theory** (model-checking of infinite structures). 6 publications and 24 seminars. [query optimization](#)
- **Main organiser** and founder of a **three-day workshop ATLAS '24** 🌐. Member of the organising committee of several conferences. [event organization](#)
- **Supervisor** of two interns. [student supervision](#)

💻 TEACHING EXPERIENCE

Dec. 2025 – Feb. 2026 · Lycée Montaigne (Bordeaux)

ORAL EXAMINER IN “PRÉPA” IN COMPUTER SCIENCE (14H)

C

OCaml

June – July 2024 · Bachelor 3 intern from ENS Ulm (France)

SUPERVISION OF ANTOINE CUVELIER

Bachelor thesis and six-week internship, on homomorphism problems on automatic structures.

Sep. 2023 – Aug. 2025 · Bordeaux INP Enseirb-Matmeca (Bordeaux, France)

TEACHING ASSISTANT

- Functional Programming Project – Bachelor 3, 2024–25, 25h [TypeScript](#)
- Imperative Programming – Bachelor 3, 2024–25, 20h [C](#)
- Database Management Systems – Master 1, 2024–25, 20h [PostgreSQL](#)
- Database Management Systems – Master 1, 2023–24, 20h

May – July 2023 · Master 1 intern from ENS Lyon (France)

SUPERVISION OF ARTHUR GALL

Three-month internship, co-supervised (remotely) with Nathanaël Fijalkow, on probabilistic automata.

Sep. 2021 – Aug. 2024 · Université de Bordeaux (Bordeaux, France)

TEACHING ASSISTANT

- Machine Learning & Deep Learning – Master 1 (AI track), 2023–24. 9h lecture + 9h exercise session. [Creation of the course](#). [scikit-learn](#)
- Programming Project – Bachelor 2, 2022–23, 32h [C](#)
- Automata Theory – Bachelor 3, 2022–23, 32h
- Computability and Complexity – Master 1, 2021–22, 28h
- Proofs & Logics – Bachelor 3, 2021–22, 24h [Rocq](#)
- Digital Literacy – Bachelor 1, 2021–22, 13h

Sep. 2020 – June 2021 · Lycée Saint-Louis (Paris)

ORAL EXAMINER IN “PRÉPA” IN MATHEMATICS (59H)

🚇 RESEARCH VISITS AND SELECTED EVENTS

May 2025 · Research seminar (Les Houches, France)

FINITE AND ALGORITHMIC MODEL THEORY

Mar. 2024 · Dagstuhl seminar (Wadern, Germany)

CATEGORIES FOR AUTOMATA AND LANGUAGE THEORY

Sep. 2023 · Dagstuhl seminar (Wadern, Germany)

THE FUTURES OF REACTIVE SYNTHESIS

Feb. & May 2023 · Uniwersytet Warszawski (Warsaw, Poland)

RESEARCH VISIT

Two two-week visits, hosted by Nathanaël Fijalkow.

- Oct. 2022 · Pontificia Universidad Católica de Chile (Santiago, Chile)
RESEARCH VISIT
One-month visit, hosted by Pablo Barceló and Miguel Romero.
- Feb. 2022 · Dagstuhl seminar (Wadern, Germany)
FINITE AND ALGORITHMIC MODEL THEORY



EDUCATION

Sept. 2021 – Aug. 2025

Université de Bordeaux

PH.D. IN COMPUTER SCIENCE

Title: “*Homomorphism Problems in Graph Databases and Automatic Structures*”.

Supervised by Diego Figueira and Nathanaël Fijalkow (LaBRI, CNRS).

Members of the jury:

- Anca Muscholl: president
- Mikołaj Bojańczyk: reviewer
- Wim Martens: reviewer
- Antoine Amarilli: examiner
- Balder ten Cate: examiner
- Bartek Klin: examiner
- Sophie Tison: examiner
- Diego Figueira: supervisor
- Nathanaël Fijalkow: co-supervisor

Sept. 2017 – Aug. 2021

École Normale Supérieure Paris-Saclay

MASTER'S IN MATHEMATICS AND COMPUTER SCIENCE

• ENS Paris-Saclay diploma (civil-servant student) · 2021

• Parisian Master of Computer Science · Université Paris-Cité, 2021

• “Agrégation” of Mathematics & Master's of Higher Education in Mathematics · Université Paris-Saclay, 2020

Sept. 2015 – Aug. 2017

Lycée Saint-Louis

UNDERGRADUATE STUDIES “PRÉPA”



SOFTWARE PROJECTS

since May 2024

PYSEMIGROUP 2.0

Collaborative database project dedicated to visualizing and comparing research results in *automata theory*. I mostly dealt with **knowledge representation**. Project leader: Charles Paperman. Python Pydantic FastAPI

since Feb. 2022

KNOWLEDGE-CLUSTERING

LaTeX command-line writing assistance tool. Creator and main developer.

Python Clustering Natural Language Processing LaTeX

2018 – 2019

ATOM PYTHON

A platform for simulating double-auction markets to study the behaviour of artificial agents. Written in Python; supervised by Philippe Mathieu. Python

Multiagent systems



ASSOCIATIVE & ELECTORAL ENGAGEMENT

Dec. 2023 – Aug. 2025

LaBRI

MEMBER OF LABRI'S SCIENTIFIC COUNCIL

June 2023 – Aug. 2025

Université de Bordeaux

SUBSTITUTE MEMBER OF THE COUNCIL OF THE STEM DEPARTMENT

July 2022 – June 2023

Université de Bordeaux

SUBSTITUTE MEMBER OF THE COUNCIL OF THE DOCTORAL SCHOOL (EDMI)

Dec. 2021 – Nov. 2022

AFoDIB

PRESIDENT event organization communication funding application

Association of Computer Science Ph.D. Students in Bordeaux. I was also **secretary** (Dec. 2020 – Nov. 2021) and **member of the board** (Dec. 2022 – Nov. 2023).

- Sep. 2018 – Mar. 2019* ○ **La Cinquième Parallèle**
TREASURER
LGBTIQ+ Student Association at ENS Paris-Saclay.

SCIENTIFIC SERVICE

- 2026 – 2027* ○ **ICDT 2027**
MEMBER OF THE PROGRAM COMMITTEE
Main conference of database theory in Europe (CORE rank A).
- Sep. 2024* ○ **Highlights of Logic, Games and Automata 2024**
MEMBER OF THE ORGANIZING COMMITTEE
SafeToc counsellor and co-organizer of the workshop on algebraic methods in automata theory.
- Apr. 2024* ○ **ATLAS 24**
INITIATOR & CO-ORGANIZER
Workshop on Automata, Transducers, Logic, Algebras & Semigroups. First edition of the workshop. 45 participants, 16 talks including two invited ones (Sreejith A V and Christof Löding). Co-organized with Thomas Colcombet, Hugo Bazille and Uli Fahrenberg.
- Sep. 2023 – Aug. 2024* ○ **LX Seminar (Logical foundations of computing)**
CO-ORGANIZER
Bimonthly one-hour seminar of the LX team. Co-organized with Guillaume Lagarde.
- Sep. 2022 – June 2023* ○ **Games reading group**
ORGANIZER
Weekly two-hour reading group on games, automata & logic in LaBRI.

RESEARCH ETHICS & VALUES

- Given the urgency of the climate crisis, I decided in 2021 (start of my Ph.D.) to only take the plane for *long-term visits* (≥ 1 month) to countries inaccessible by train, and to limit the number of these visits. In particular, **I do not take the plane to go to conferences**—and I do not ask of my coauthors to take the plane in my stead.
- As of 2022, I also decided **not to publish in for-profit publishers** (Springer, Elsevier, etc.), although I still occasionally accept to review for them.

PUBLICATIONS

IN PREPARATION

- 2026* ○ In preparation; invited for publication at TheoretCS
w/ Diego Figueira and Miguel Romero
Minimizing Conjunctive Regular Path Queries

- 2026* ○ In preparation
w/ Antoine Cuvier
A Dichotomy Theorem for Automatic Structures

- 2026* ○ In preparation; journal version of CSL '25 article
Relative Membership of Regular Languages

JOURNAL

- 2025* ○ LMCS (Selected Papers of ICDT '23)
w/ Diego Figueira
Semantic Tree-Width and Path-Width of Conjunctive Regular Path Queries

- 2019* ○ Physica A: Statistical Mechanics and its Applications
w/ Philippe Mathieu
A deterministic behaviour for realistic price dynamics

CONFERENCES

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- A vertical timeline of publications and thesis work, marked by a black dot for the thesis and small circles for other entries.
- PODS '25
w/ Diego Figueira and Miguel Romero
 - CSL '25
 - MFCS '23
w/ Pablo Barceló and Diego Figueira
 - ICDT '23
w/ Diego Figueira
 - Principles of Systems Design (Thomas Henzinger's Festschrift)
Universal Algorithms for Parity Games and Nested Fixpoints
w/ Marcin Jurdziński and K. S. Thejaswini
 - FoSSaCS '22
w/ Thomas Colcombet and Sam van Gool
 - THESIS**
 - Ph.D. thesis
Homomorphism Problems in Graph Databases and Automatic Structures
 - Internship report, MPRI, École normale supérieure Paris-Saclay
First-order separation of transfinite regular languages
2021

- ## TALKS
- A vertical timeline of talks, marked by a black circle for the thesis and small circles for other entries.
- Relational AI
Homomorphisms Problems in Graph Databases and Automatic Structures, and Beyond
30/07/2025
online · 45min
 - PhD Defence
Homomorphisms Problems in Graph Databases and Automatic Structures
03/07/2025
Bordeaux · 45min
 - Finite Model Theory
Minimizing Conjunctive Regular Path Queries
28/05/2025
Les Houches · 15min
 - Categories for Automata and Language Theory
Relative Membership of Regular Languages
31/03/2025
Dagstuhl · 25min
 - CSL '25
The Algebras for Automatic Relations
14/02/2025
Amsterdam · 25min
 - LeaLog@CSL '25
Residual Probabilistic Automata
10/02/2025
Amsterdam · 15min
 - RATIO seminar
Minimizing Conjunctive Regular Path Queries
04/02/2025
Bordeaux · 50min
 - Highlights '24
Minimizing Conjunctive Regular Path Queries
20/09/2024
Bordeaux · 8min
 - GT DAAL '24
The Algebras for Automatic Relations
25/04/2024
Rennes · 30min
 - SemAuto
Automatic relations through the prism of graph colourability and algebraic language theory
08/03/2024
Paris · 50min
 - LX Seminar
Automatic relations through the prism of graph colourability and algebraic language theory
22/02/2024
Bordeaux · 50min
 - Sémidoc
What's Your Thesis About? Abolishing Capitalism. (Popularization Talk)
15/11/2023
Bordeaux · 30min
 - MFCS '23
Separating Automatic Relations, or: Graph Colouring for Impractical Mathematicians
28/08/2023
Bordeaux · 20min

-  27/07/2023 Kassel · 10min **Highlights '23**
[Algebras for Regular Relations](#)
-  25/06/2023 online/Boston · 20min **Structure meets Power '23**
[Algebras for Regular Relations](#)
-  21/04/2023 Le Kremlin-Bicêtre · 20min **GT DAAL '23**
[Approximation and Semantic Tree-width of Conjunctive Regular Path Queries](#)
-  29/03/2023 online/Ioannina · 25min **ICDT '23**
[Approximation and Semantic Tree-width of Conjunctive Regular Path Queries](#)
-  12/01/2023 Marseille · 50min **MoVe Seminar**
[Approximation and Semantic Tree-width of Conjunctive Regular Path Queries](#)
-  9/12/2022 Lille · 50min **LINKS Seminar**
[Approximation and Semantic Tree-width of Conjunctive Regular Path Queries](#)
-  6/12/2022 Bordeaux · 50min **M2F Seminar**
[Approximation and Semantic Tree-width of Conjunctive Regular Path Queries](#)
-  7/10/2022 Bordeaux · 8min **Journée M2F**
[Approximation and Semantic Tree-width of Conjunctive Regular Path Queries](#)
-  1/07/2022 Paris · 8min **Highlights '22**
[Quantitative Algebraic Characterisations on Truly Infinite Words](#)
-  8/06/2022 Nice · 25min **EJCIM '22**
[Quantitative Algebraic Characterisations on Truly Infinite Words](#)
-  4/01/2022 online · 20min **6th ANR Delta meeting**
[Quantitative Algebraic Characterisations on Truly Infinite Words](#)
-  5/04/2022 Munich · 25min **FoSSaCS '22**
[First-order Separation over Countable Ordinals](#)
-  7/10/2021 Bordeaux · 50min **LX Seminar**
[First-order Separation over Countable Ordinals](#)
-  3/09/2021 Paris · 20min **M2 internship defense**
[First-order Separation over Countable Ordinals](#)
-  13/02/2023 Paris · 50min **Verification Seminar @ IRIF**
[Universal Algorithms for Parity Games and Nested Fixpoints](#)
-  28/06/2021 Paris · 20min **5th ANR Delta meeting**
[Universal Algorithms for Parity Games and Nested Fixpoints](#)
-  16/09/2020 online · 5min **Highlights '20**
[Universal Algorithms for Parity Games and Nested Fixpoints](#)
-  4/09/2019 Cachan · 20min **M1 internship defense**
[Universal Algorithms for Parity Games and Nested Fixpoints](#)