

# Rémi Morvan

PH.D. STUDENT IN AUTOMATA THEORY

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## Education

### LaBRI, Université de Bordeaux

PH.D. IN COMPUTER SCIENCE

Under the supervision of Diego Figueira & Nathanaël Fijalkow, in LaBRI's Formal Methods and Models department.

since Sep. 2021

Bordeaux, France

### École normale supérieure Paris-Saclay

NORMALIEN CIVIL-SERVANT

- Parisian Master of Research in Computer Science (*Univ Paris-Cité*)
- *Agrégation* of Mathematics & Master of Higher Education in Mathematics (*Univ. Paris-Saclay*)

Sep. 2017 - Aug. 2021

Cachan, France

### Lycée Saint-Louis

UNDERGRADUATE STUDIES « *prépa* »

Majors in Mathematics and Physics.

Sep. 2015 - Aug. 2017

Paris, France

## Research Experience

### RESEARCH INTERNSHIPS & LONG VISITS

#### Uniwersytet Warszawski

RESEARCH VISIT

Four-week visit (two weeks in Feb. & two weeks in May), hosted by Nathanaël Fijalkow.

Feb. & May 2023

Warsaw, Poland

#### Pontificia Universidad Católica de Chile

RESEARCH VISIT

One-month visit, hosted by Pablo Barceló and Miguel Romero (Universidad Adolfo Ibáñez).

Oct. 2023

Santiago, Chile

#### IRIF, Université de Paris

MASTER 2 INTERNSHIP

Five-month internship, supervised by Thomas Colcombet and Sam van Gool, on *First-order separation over countable ordinals*.

Mar. – Aug. 2021

Paris, France

#### University of Warwick

MASTER 1 INTERNSHIP

Five-month internship, supervised by Marcin Jurdziński, on *Recursive algorithms for parity games*.

Mar. – Aug. 2019

Coventry, United Kingdom

#### CRISTAL, Université de Lille

BACHELOR INTERNSHIP

Six-week internship, supervised by Philippe Mathieu, on *Multi-agent systems in microeconomics*.

June – July 2018

Lille, France

### ATTENDED EVENTS (SPECIALIZED LONG WORKSHOPS)

**The Futures of Reactive Synthesis**, Dagstuhl seminar

Sep. 2023

**Discrete Mathematics and Logic**, CIRM research school

Jan. 2023

**Finite and Algorithmic Model Theory**, Dagstuhl seminar

Feb. 2022

## Teaching & Supervision

### SUPERVISION

#### Arthur Gall

MASTER 1 INTERN

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

May – July 2023

Warsaw, Poland

## COURSES

### Bordeaux INP Enseirb-Matmeca

TEACHING ASSISTANT

Sep. 2023 – Aug. 2024

Bordeaux, France

### Université de Bordeaux

TEACHING ASSISTANT

Sep. 2021 – Aug. 2023

Bordeaux, France

Total: 129h.

- Programming Project in C (Bachelor 2, 2022-2023, 32h)
- Automata Theory (Bachelor 3, 2022-2023, 32h)
- Computability and Complexity (Master 1, 2021-2022, 28h)
- Proofs & Logics (Bachelor 3, 2021-2022, 24h)
- Digital Literacy, (Bachelor 1, 2021-2022, 13h)

### Lycée Saint-Louis

ORAL EXAMINATIONS IN MATHEMATICS

Sep. 2020 – July. 2021

Paris, France

Total: 59h. For first year *prépa* (~ bachelor) students.

## Service

### ASSOCIATIVE & ELECTORAL ENGAGEMENT

#### AFoDIB

PRESIDENT (DEC. 2022 – Nov. 2023)

SECRETARY (DEC. 2021 – Nov. 2022)

since Dec. 2021

Bordeaux, France

Association for Ph.D. students in Computer Science from Bordeaux.

#### Council of the STEM Department

PH.D. STUDENTS SUBSTITUTE REPRESENTATIVE

since June 2023

Université de Bordeaux

#### Council of the Doctoral School of Mathematics & Computer Science (EDMI)

PH.D. STUDENTS SUBSTITUTE REPRESENTATIVE

July. 2022 – June. 2023

Université de Bordeaux

#### La Cinquième Parallèle

TREASURER

Sep. 2018 – Mar. 2019

Cachan, France

LGBTIQ+ association for the ENS Paris-Saclay students.

### SCIENTIFIC ENGAGEMENT

#### Games reading group

ORGANIZER

Sep. 2022 – June 2023

Bordeaux, France

Weekly two-hour reading group on games, automata & logic in LaBRI.

#### EDBT-Intended Summer School 2022

[WEBPAGE](#)

July 2022

WEBSITE DESIGN & STUDENT VOLUNTEER

## Softwares

#### knowledge-clustering

[GITHUB](#)

since Feb. 2022

Command-line tool facilitating the use of the  $\text{\LaTeX}$  package knowledge.

Written in Python and co-maintained with Aliaume Lopez & Thomas Colcombet.

#### atomPython

[GITHUB](#)

2018 – 2019

A platform for simulating double-auction markets to study the behaviour of artificial agents.

Written in Python; supervised by Philippe Mathieu.

## Publications

### JOURNAL ARTICLES

#### A Deterministic Behaviour for Realistic Price Dynamics

2019

PHILIPPE MATHIEU, RÉMI MORVAN [DOI](#)

*Physica A: Statistical Mechanics and its applications*. Elsevier

## CONFERENCE PROCEEDINGS

### Separating Automatic Relations

2023

PABLO BARCELÓ, DIEGO FIGUEIRA, RÉMI MORVAN [FULL VERSION](#)

*48th International Symposium on Mathematical Foundations of Computer Science (MFCS)*

### Approximation and Semantic Tree-Width of Conjunctive Regular Path Queries

2023

DIEGO FIGUEIRA, RÉMI MORVAN [DOI](#) [FULL VERSION](#)

*26th International Conference on Database Theory (ICDT)*

Selected for LMCS special issue.

### First-order Separation over Countable Ordinals

2022

THOMAS COLCOMBET, SAM VAN GOOL, RÉMI MORVAN [DOI](#) [FULL VERSION](#)

*25th International Conference on Foundations of Software Science and Computation Structures (FoSSaCS)*

### Universal Algorithms for Parity Games and Nested Fixpoints

2022

MARCIN JURDZINSKI, RÉMI MORVAN, K. S. THEJASWINI [DOI](#) [FULL VERSION](#)

*Principles of Systems Design - Essays Dedicated to Thomas A. Henzinger on the Occasion of His 60th Birthday*

## Presentations

Most slides are available on my website.

**Structure meets Power '23**, Algebras for regular relations, 20min, online

25 June 2023

**GT DAAL annual meeting '23**, Approximation and semantic tree-width of conjunctive regular path queries, 20min, Le Kremlin-Bicêtre

21 Apr. 2023

**ICDT '23**, Approximation and semantic tree-width of conjunctive regular path queries, 25min, online

29 Mar. 2023

**Verification seminar (IRIF)**, Universal algorithms for parity games and nested fixpoints, 50min, Paris

13 Feb. 2023

**MoVe seminar**, Approximation and semantic tree-width of conjunctive regular path queries, 50min, Marseille

12 Jan. 2023

**LINKS seminar**, Approximation and semantic tree-width of conjunctive regular path queries, 50min, Lille

9 Dec. 2022

**M2F seminar**, Approximation and semantic tree-width of conjunctive regular path queries, 50min, Bordeaux

6 Dec. 2022

**Journée M2F**, Approximation and semantic tree-width of conjunctive regular path queries, 8min, Bordeaux

7 Oct. 2022

**Highlights '22**, Quantitative algebraic characterisations on truly infinite words, 8min, Paris

1 July 2022

**EJCIM '22**, Quantitative algebraic characterisations on truly infinite words, 25min, Nice

8 June 2022

**FoSSaCS '22**, First-order separation over countable ordinals, 25min, Munich

5 Apr. 2022

**ANR Delta 6th meeting**, Separation over infinite words, 20min, online

4 Jan. 2022

**LX seminar**, First-order separation over countable ordinals, 50min, Bordeaux

7 Oct. 2021

**Internship defense**, Definability & separability of regular languages in first-order logic, 20min, Paris

3 Sep. 2021

**ANR Delta 5th meeting**, Universal algorithms for parity games and nested fixpoints, 20min, Paris

28 June 2021

**Highlights '20**, Universal algorithms for parity games and nested fixpoints, 5min, online

16 Sep. 2020

**Internship defense**, Solving parity games, 20min, Cachan

4 Sep. 2019