

JULIE CAILLER

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EDUCATION



PhD in Computer Science

Oct. 2020 - Sept. 2023

LIRMM, University of Montpellier | France

- Thesis topic: "Using concurrency for tableaux in first-order logic".
- Advisors: David DELAHAYE, Hinde Lilia BOUZIANE and Simon ROBILLARD.
- The aim of this thesis is the development and implementation in a tool of techniques using concurrency for the method of tableaux in first-order logic. The resulting prover, *Goéland*, has already shown the advantages of this approach, especially to manage fairness in proof-search.



Master Degree in Computer Science

Sept. 2018 - Aug. 2020

University of Montpellier | France

- Courses mainly focused on big data, artificial intelligence and natural language processing.
- Class representative.
- Rank: 3rd/18 (Semester 1) - 1st/17 (Semester 2) - 2nd/12 (Semester 3).



Bachelor in Computer Science

Sept. 2015 - Aug. 2018

University of Montpellier | France

- Introduction courses on a wide range of Computer Science subjects, including programming, logic, graph algorithms and network.
- Class representative.
- Rank: 7th/113.

SKILLS



Topics

Logic, automated & interactive theorem proving, parallel programming.



Programming Skills

Go, Python, Coq, Ocaml, C/C++, Java, SQL, \LaTeX , Git



Languages

- French (Mother tongue)
- English (Professional proficiency)
- Spanish (Beginner)

RESEARCH EXPERIENCES



Reliability Assessment in a Decision Support Tool

Jun. 2019 - Aug. 2019

INRAE | Montpellier, France

- Developpement of metrics to take in account uncertainties in user feedback.
- Visualisation and integration of these metrics in the DOCAMEX project.
- Survey among users to take into account their feedback and improve the tool.



Rubik's Cube Solver

Oct. 2018 - May 2019

University of Montpellier | Montpellier, France

- Detection of the current configuration of the cube using a camera.
- Resolution using multiple algorithms (shortest moves, didactic).
- 3D animation of the resolution's steps.



An Application for Multi-modal Travel

Jun. 2018 - Jul. 2018

LIRMM and Faciligo | Montpellier, France

- Conception and implementation of a module which matches the shortest path in multi-modal travel mode.
- Taking into account constraints regarding the client's disabilities in the context of cotravel.



Shannon Switching Game

Oct. 2017 - May 2018

University of Montpellier | Montpellier, France

- Implementation of the connection game created by C. Shannon.
- Grid generation (winning for a given player), movement animation.
- Single or two-players mode, artificial intelligence with difficulty levels.

SCIENTIFIC PRODUCTIONS



Conference Paper

Julie Cailler, David Delahaye, Olivier Harmant, Simon Robillard, Johann Rosain, and Hinde Lilia Bouziane (2023). **Complete Proof Search for Free-Variable Tableaux with Eager Closure**. (submitted at TABLEAUX 2023 - 32nd International Conference on Automated Reasoning with Analytic Tableaux and Related Methods).

Julie Cailler, Johann Rosain, David Delahaye, Simon Robillard, and Hinde Lilia Bouziane (2022). **Goéland: a Concurrent Tableau-Based Theorem Prover (System Description)**. In: *IJCAR 2022-11th International Joint Conference on Automated Reasoning*. Vol. 13385, pp. 359-368.



Posters

- Who Killed Agatha? 2022
PhD seminar | LIRMM, University of Montpellier, France
- A Concurrent Tableaux Proof-Search 2021
PhD seminar | LIRMM, University of Montpellier, France



Softwares

- Goéland 2022
Authors : Julie CAILLER, Johann ROSAIN, David DELAHAYE
Goéland is an automated theorem prover using a concurrent procedure for the tableau method for first-order logic. It is implemented in the Go programming language (with about 30 000 lines of code). As the main developer of the tool, I also supervised the different people that work or have worked on it. Goéland can be found at the following link : <https://github.com/GoelandProver/Goeland>

TALKS



Goéland: a Concurrent Tableaux-Based Theorem Prover

2023




AVM2023 | Prague, Czech Republic







Formal Method: The Art of Using Logic to Build Safer Systems

2023

Theoretical Computer Science Group | Faculty of Informatics and Data Science, University of Regensburg, Germany

	Reasoning Methods in Automated Theorem Proving <i>BOREAL team seminar LIRMM, University of Montpellier, France</i>	2023
	Who Killed Agatha? <i>PhD seminar LIRMM, University of Montpellier, France</i>	2022
	Goéland: a Concurrent Tableaux-Based Theorem Prover <i>IJCAR2022 Haifa, Israel</i>	2022
	A Concurrent Tableaux Proof-Search Procedure <i>LIRMM, University of Montpellier, France</i>	
	• <i>MaREL team seminar</i>	2022
	• <i>PhD seminar</i>	2021
	• <i>Proof day</i>	2021

PRIZES AND DISTINCTIONS

	3rd Prize - 3MT <i>French edition of 3 minutes thesis Nîmes, France</i> Contest in which each candidate must popularise his thesis in 3 minutes. I won the 3 rd prize at the regional final.	2023
	1st Prize - 5 Minutes to Convince <i>University of Montpellier Montpellier, France</i> Contest in which each candidate must present an innovant project in 5 minutes. I won the 1 st price at the PhD category.	2023
	Woody Bledsoe Award <i>IJCAR2022 Haifa, Israel</i> Student grant won at IJCAR2022 for the paper "Goéland: a Concurrent Tableau-Based Theorem Prover (System Description)"	2022
	Best Newcomer Prover <i>CASC2022 Haifa, Israel</i> Award for the best new prover at CASC, a prover competition.	2022

SCIENCE PROMOTION

	The Importance of Popularisation Promotion of science popularisation through the experience of 3 minute thesis.	
	• <i>Science radio programme Divergence FM</i>	2023
	• <i>University newsletter University of Montpellier</i>	2023
	Introduction to Research <i>Jules GUESDE high school Montpellier, France</i> Presentation of the researcher's work to high school students.	2023



Who Killed Agatha?

Introduction to logical reasoning and software verification by solving riddles.

- **Regional academic delegation to research and innovation** | **2022**
LIRMM, France
- **LIRMM's open days** | *LIRMM, France* **2022**



Introduction to Computer Sciences

Girls and STEM

Exchanges between female high school student and female scientist about computer science, to promote girls in science.

- **Girls and Maths** | *Women and Maths, Animaths* **2023**
- **MathsC2+** | *French Mathematics Society, Ministry of education, Animaths* **2022**



Introduction to Logic

2020-2023

LIRMM | *Montpellier, France*

Multiple presentations of logic towards administrative managers, scientists from outside the field or interns. Introduction to logic in everyday life with puzzles and debates.

EVENT ORGANISATION



Session of National Council of Universities, 27th Section (CNU27)

2022

Montpellier, France



The 11th International Colloquium on Graph Theory and combinatorics (ICGT)

2022

Montpellier, France



The 20th International Conference on Software & Systems Reuse (ICSR)

2022

Montpellier, France



30th Anniversary of LIRMM

2022

Montpellier, France



PhD Seminar of LIRMM

2021, 2022

Montpellier, France

REVIEWS



Certified Programs and Proofs (CPP)

2024



International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI)

2024



Certified Programs and Proofs (CPP)

2023



International Joint Conference on Automated Reasoning (IJCAR)

2022

TEACHING



University of Montpellier

- Parallel and Distributed Programming 2020-2021
First year of master in computer science
- Data Warehouse and Big Data 2021-2022
First year of master in computer science
- First-Order Logic 2021-2022
Third year of bachelor in computer science
- Network and Concurrent Programming 2021-2022
Third year of bachelor in computer science
- Program Verification 2022-2023
Third year of bachelor in computer science
- Network, System and Web 2020-2021
First year of bachelor in computer science
- Functional Programming 2022-2023
First year of bachelor in computer science



Bachelor's Thesis Co-Supervision

- Johann ROSAIN 2021-2022
Deduction modulo theory and polymorphism in Goéland
- Cédric CAHUZAC, Enzo GOULESQUE, Lorenzo PUCCIO, Margaux RENOIR, Tom SIMULA 2021-2022
Arithmetic in Goéland



Internship Co-Supervision

- Dylan BETTENDROFFER 2023
A Dedukti output for Goéland | 2nd year of master
- Johann ROSAIN 2023
Deskolemization in First-Order Logic | 3rd year of bachelor
- Matthieu PIERRET 2023
Interactive proof in Goéland | 2nd year of bachelor
- Lorenzo PUCCIO 2022
A Coq output for Goéland | 3rd year of bachelor
- Adrien MECIBAH 2022
Interactive traces for ATP | 2nd year of bachelor
- Nina JANEVA 2021
Automated tool for benchmark | 3rd year of bachelor
- Johann ROSAIN 2021
Code trees for unification | 2nd year of bachelor

COLLECTIVE TASKS



Research Group HRS4R

Dec. 2022 - Sept. 2023

University of Montpellier | Montpellier, France

Reflection group on the needs of researchers in the scope of the "HR Excellence in Research" label.



PhD Council of the Laboratory

Mar. 2022 - Sept. 2023

LIRMM | Montpellier, France

Organisation of scientific and cultural activities for the laboratory's doctoral students.



Doctoral School Council (I2S, ED166)

Jun. 2021 - Sept. 2023

I2S | France

Doctoral students' representative in the doctoral school council.



Laboratory Council

Oct. 2020 - Sept. 2023

LIRMM | Montpellier, France

Doctoral students' representative in the laboratory council.

PROFESSIONAL EXPERIENCES



Project Leader in Clinical Supply Chain

Aug. 2019- Sept. 2020

Sanofi | Montpellier, France

- Project leader of the software migration for translation of drug leaflets.
- Data visualisation and criticality analysis of the application park.
- Documentation and validation strategies.

REFERENCES



**Pr David
DELAHAYE**

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**PhD
Advisor**



**Dr Hinde Lilia
BOUZIANE**

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**PhD
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**PhD
Advisor**