

# Nicolas Mazzocchi

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## Summary

Full-time researcher, computer scientist in formal methods. Experience in **grant** writing, **teaching**, and **mentoring**. Publications in CAV, CONCUR, DLT, FCT, FOSSACS, FSTTCS, ICALP, MFCS, RV, IJFCS, and JCSS. Reviews in ATVA, CONCUR, JLMCS, LICS, FOSSACS, and FSTTCS.

## Education

- 
**Full-time Researcher at Slovak Technical University** 6/2024 → today  
 chief *Milan Vojvoda*
- 
**Postdoc at ISTA (IST Austria)** 1/2022 → 5/2024  
 topic Quantitative extensions of monitoring, safety, and liveness  
 advisor *Thomas A. Henzinger*
- 
**Postdoc at IMDEA Software Institute** 12/2020 → 12/2021  
 topic Decision procedures for language inclusion based on well quasi-orders  
 advisor *Pierre Ganty*
- 
**Doctorate at Université libre de Bruxelles** 10/2016 → 10/2020  
 title Contributions to formalisms for the specification and verification of quantitative properties  
 advisor *Emmanuel Filiot* and *Jean-François Raskin*
- 
**Master at ENS Paris-Saclay (ENS Cachan)** 9/2014 → 9/2016  
 name Algorithmique et Fondements de la Programmation (a.k.a. MPRI)
- 
**Bachelor at Aix-Marseille University** 9/2014 → 9/2011  
 name Licence Science et Technologies, mention informatique

## Research Internships and Visits

- 
**University of Liverpool** 11/2023  
 visit Collaboration on temporal explorability games.  
 host *Patrick Totzke*
- 
**Université libre de Bruxelles** 4/2016  
 internship Decidable weighted expressions for sum-automata with Lipschitz robustness applications  
 advisor *Emmanuel Filiot*
- 
**RWTH Aachen University** 6/2015  
 internship Uniformization of automatic relations by sub-sequential transducers  
 advisor *Christof Löding*
- 
**École des Mines d'Alès & Incubator Innov'up** 6/2014  
 internship Simultaneous real-time location and mapping for sub-aquatic environment  
 advisor *Jean-Marie Coldol*
- 
**Aix-Marseille University** 7/2013  
 internship Randomized singular value decomposition applied to spectral learning for regular automata  
 advisor *François Denis*
- 
**INSERM Luminy** 10/2011  
 internship Polymerase chain reaction applied to transfer the fluorescence gene of jellyfish  
 advisor *Constance Hammond*

## Publications (authors ordered alphabetically)

### Proceedings of international conferences with a peer-reviewed committee

- 2025** P. Austin, S. Bose, N. Mazzocchi and P. Totzk. Temporal Explorability Games. **SUBMITTED** (CSL 2025).
- 2024** M. Chalupa, T. A. Henzinger, N. Mazzocchi, and N. E. Saraç. QuAK: Quantitative Automata Kit. **SUBMITTED** (ISOLA 2024).
- T. A. Henzinger, N. Mazzocchi and N. E. Saraç. Strategic Dominance: A New Preorder for Nondeterministic Processes in **CONCUR24** proceedings, pages 29:1–29:20, 2024.  
URL: <https://doi.org/10.4230/LIPIcs.CONCUR.2024.29>
- 2023** U. Boker, T. A. Henzinger, N. Mazzocchi and N. E. Saraç. Safety and Liveness for Quantitative Automata in **CONCUR23** proceedings, page 17:1–17:18.  
URL: <https://doi.org/10.4230/LIPIcs.CONCUR.2023.17>
- T. A. Henzinger, P. Kebis, N. Mazzocchi and N. E. Saraç. Regular Methods for Operator Precedence Languages in **ICALP23** proceedings, 129:1–129:20, 2023.  
URL: <https://doi.org/10.4230/LIPIcs.ICALP.2023.129>
  - T. A. Henzinger, N. Mazzocchi and N. E. Saraç. Quantitative Safety and Liveness in **FOSSACS23** proceedings, pages 349–370, 2023.  
URL: [https://doi.org/10.1007/978-3-031-30829-1\\_17](https://doi.org/10.1007/978-3-031-30829-1_17)
- 2022** T. A. Henzinger, N. Mazzocchi and N. E. Saraç. Abstract Monitors for Quantitative Specifications in **RV22** proceedings, pages 200–220, 2022  
URL: [https://doi.org/10.1007/978-3-031-17196-3\\_11](https://doi.org/10.1007/978-3-031-17196-3_11)
- K. Doveri, P. Ganty and N. Mazzocchi. FORQ-based Language Inclusion Formal Testing in **CAV22** proceedings, pages 109–129, 2022  
URL: [https://doi.org/10.1007/978-3-031-13188-2\\_6](https://doi.org/10.1007/978-3-031-13188-2_6)
- 2021** I. Jecker, N. Mazzocchi and P. Wolf. Decomposing Permutation Automata in **CONCUR21** proceedings, pages 18:1–18:19, 2021  
URL: <https://doi.org/10.4230/LIPIcs.CONCUR.2021.18>
- 2020** E. Filiot, N. Mazzocchi, J.-F. Raskin, S. Sankaranarayanan and A. Trivedi. Weighted Transducers for Robustness Verification in **CONCUR20** proceedings, pages 17:1–17:21, 2020  
URL: <https://doi.org/10.4230/LIPIcs.CONCUR.2020.17>
- I. Jecker, O. Kupferman and N. Mazzocchi. Unary Prime Languages in **MFCS20** proceedings, pages 51:1–51:12, 2020  
URL: <https://doi.org/10.4230/LIPIcs.MFCS.2020.51>
- 2019** E. Filiot, S. Guha and N. Mazzocchi. Two-way Parikh Automata in **FSTTCS19** proceedings, pages 40:1–40:14, 2019  
URL: <https://doi.org/10.4230/LIPIcs.FSTTCS.2019.40>
- 2018** E. Filiot, N. Mazzocchi and J.-F. Raskin. Pattern Logic for Automata with Outputs in **DLT18** proceedings, pages 304–317, 2018  
URL: [https://doi.org/10.1007/978-3-319-98654-8\\_25](https://doi.org/10.1007/978-3-319-98654-8_25)
- 2017** E. Filiot, N. Mazzocchi and J.-F. Raskin. Decidable Weighted Expressions with Presburger Combinators in **FCT17** proceedings, pages 243–256, 2017.  
URL: [https://doi.org/10.1007/978-3-662-55751-8\\_20](https://doi.org/10.1007/978-3-662-55751-8_20)

### International journals with a peer-reviewed committee

- 2025** T. A. Henzinger, P. Kebis, N. Mazzocchi and N. E. Saraç. Regular Methods for Operator Precedence Languages. **SUBMITTED** (Journal of Theoretical Computer Science)
- 2023** T. A. Henzinger, N. Mazzocchi and N. E. Saraç. Quantitative Safety and Liveness. **ACCEPTED: Invited to TCS as a special issue of CONCUR23**
- 2022** I. Jecker, N. Mazzocchi and P. Wolf. Decomposing Permutation Automata. **ACCEPTED** (Journal of Foundations of Computer Science)
- 2020** E. Filiot, N. Mazzocchi and J.-F. Raskin. Pattern Logic for Automata with Outputs in International Journal of Foundations of Computer Science, volume 31, pages 711–748, 2020  
**Invited to IJFCS as a special issue of DLT18**

URL: <https://doi.org/10.1142/S0129054120410038>

**2019** E. Filiot, N. Mazzocchi and J.-F. Raskin. Decidable Weighted Expressions with Presburger Combinators in Journal of Computer and System Sciences, volume 106, pages 1–22, 2019

**Invited to JCSS as a special issue of FCT17**

URL: <https://doi.org/10.1016/j.jcss.2019.05.005>

## Research communications

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### Paper presentations

- 34<sup>th</sup> International Conference CONCUR, Calgary 9/2024
- 33<sup>rd</sup> International Conference CONCUR, Antwerp 9/2023
- 26<sup>th</sup> International Conference FOSSACS, Paris 4/2023
- 50<sup>th</sup> International Symposium ICALP, Paderborn 7/2023
- 22<sup>nd</sup> International Conference RV, online 9/2022
- 32<sup>nd</sup> International Conference CONCUR, online 8/2021
- 31<sup>st</sup> International Conference CONCUR, online 9/2020
- 39<sup>th</sup> IARCS Annual Conference FSTTCS, Mumbai 12/2019
- 22<sup>nd</sup> International Symposium DLT, Tokyo 9/2018
- 21<sup>st</sup> International Symposium FCT, Bordeaux 9/2017

### Workshop talks

- 12<sup>th</sup> Highlights of Logic, Games, and Automata, Bordeaux 9/2024
- 7<sup>th</sup> Highlights of Logic, Games, and Automata, Warsaw 9/2019
- 6<sup>th</sup> Highlights of Logic, Games, and Automata, Berlin 9/2018
- 2<sup>nd</sup> Winter School in Engineering and Computer Science, Jerusalem 12/2017
- 5<sup>th</sup> Highlights of Logic, Games, and Automata, London 9/2017

### Invited Seminars

- VUT Brno, Czech Republic 7/2024
- University of Liverpool, UK 11/2023
- IST Austria, Klosterneuburg 9/2021
- Colorado Boulder University, online 4/2020
- IST Austria, Klosterneuburg 2/2018

## Professional activity

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### Reviews

Conferences: ATVA, CONCUR, LICS, FOSSACS, FSTTCS

Journal: Logical Methods in Computer Science

### Grant writing

Doctoral fellowship Quantitative Models for Verification and Applications 9/2016  
FRIA-B1 and FRIA-B2 of the Belgian FNRS. **Granted.**

The objective of the FRIA grants is to complete a Ph.D. in 4 years in fields of research related to industry or agriculture. It is in the form of two successive grants: B1 for a maximum duration of 27 months and B2 for a maximum duration of 21 months.

R3 researcher fellowship Verification of real life programs 7/2024  
**VAIA**

### Responsibilities

- Member of the Bachelor/Master evaluation committee 7/2024 → today
- Organization of the team seminars at ISTA 9/2022 → 6/2024
- Co-organization of the inter-team (ISTA, TU Wien) seminars at ISTA 9/2022 → 6/2024
- Co-organization of the inter-team seminars at IMDEA 5/2021 → 9/2021
- Organization of the team seminars at ULB 1/2017 → 9/2020
- SVN Administrator of the research team Modelization and Verification at ULB 1/2017 → 9/2020

- Conference organizer of RP19. Administrator of the EasyChair submissions, and welcome packs manager. 9/2019  
URL: <https://sites.uclouvain.be/rp2019/organizers.html>

## Training

- Grant implementation workshop, ISTA 5/2022, 5/2023
- Marie Curie Postdoctoral Fellowships seminar series, ISTA 8/2022
- Scientific writing courses, ISTA 6/2022
- Gender Equity in Science, ISTA 5/2022
- Research Integrity and Ethics, ISTA 4/2022
- 2<sup>nd</sup> Winter School in Engineering and Computer Science, HUJI 12/2017
- International Summer School Marktoberdorf 2017, TUM 8/2017

## Teaching

### Teaching Assistant (exercises only)

- Formal Verification at ULB Spring 2017, 2018, 2019, 2020  
Full-semester, 20-25 graduated students  
Preparation and teaching of practicals based on courses.  
Managing and grading personalized group projects of 3,4 or 5 students.
- Embedded systems at ULB Spring 2018, 2019  
Full-semester, 25-30 graduated students  
Teaching practicals on computer. Introduction to model-checkers Lustre, JKind, UPPAAL Tiga and Prism.
- Fundamental computer science at ULB Spring 2018  
Full-semester, 60-70 undergraduate students  
Managing and grading a C++ project on SAT solver (MiniSAT)

### Teaching Instructor (lectures and exercises)

- Foundation of Model Checking at ISTA. Spring 2023  
Half-semester, 5 PhD students.

**I prepared and submitted this new course to the IST graduate school.**

### Students Advising

- Advisor of *Alexandra Reviláková* at STU. 9/2022 → today  
Preparation of the Master Thesis research subject and supervision.
- Co-advisor, with Thomas A. Henzinger, of the intern *Pavol Kebis* at ISTA. 7/2022 → 9/2022  
Preparation of its research subject, and regular discussions on its progress.
- Consultant of the Ph.D. student *N. Ege Saraç* at ISTA. 2/2022 → today  
Collaborations in writing conference papers.
- Consultant of the Ph.D. student *Kyveli Doveri* at IMDEA Software Institute 3/2021 → 12/2021  
Collaboration in writing a conference paper

## Software

function	Quantitative automata safety-liveness monitoring, checker, and synthesizer	Summer 2024
developer	<i>Nicolas Mazzocchi (main), N. Ege Saraç, Marek Chalupa</i>	
advisor	<i>Thomas A. Henzinger</i>	
description	QuAK: Quantitative Automata Kit. URL: <a href="https://github.com/ista-vamos/QuAK">https://github.com/ista-vamos/QuAK</a>	
function	Büchi automata inclusion checker	Spring 2021
developer	<i>Nicolas Mazzocchi</i>	
advisor	<i>Pierre Ganty</i>	
description	FORKLIFT is an inclusion checker for Büchi automata. <b>This tool has been peer-reviewed by the CAV22 artifact committee.</b> URL: <a href="https://doi.org/10.5281/zenodo.6552870">https://doi.org/10.5281/zenodo.6552870</a>	
function	Deterministic finite state automata learner	Spring 2013

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developer *Mattias Gybels* (main), *Nicolas Mazzocchi*  
advisor *François Denis*  
description DFA spectral learner based on randomized singular value decomposition of Hankel matrix used to solve some PAutomaC challenges.

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function Led's Chat game Spring 2013  
developer *Nicolas Mazzocchi*  
advisor *Peter Niebert, Mathieu Caralp*  
description Pure parallel programming of microcontrollers in Led's Chat to promote the city of Marseille being the European Capital of Culture 2013.  
URL: <https://mozaik.leds-chat.com>

## Miscellaneous

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Language: French (native), English (professional),  
Italian (B1 in 2011), Czech (A1.1 in 2023), Slovak (A1 in 2024)  
Citizenship: French / EU

## Referees

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### 1. *Thomas A. Henzinger*

title Professor / President of ISTA  
mail IST Austria  
Am Campus 1  
3400 Klosterneuburg  
AUSTRIA  
email [tah@ist.ac.at](mailto:tah@ist.ac.at)  
URL <https://pub.ist.ac.at/~tah>

### 2. *Pierre Ganty*

title Associate Research Professor  
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28223 Pozuelo de Alarcón  
SPAIN  
email [pierre.ganty@imdea.org](mailto:pierre.ganty@imdea.org)  
URL <https://software.imdea.org/~pierreganty>

### 3. *Orna Kupferman*

title Professor & former Vice Rector of HUJI  
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ISRAEL  
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URL <https://www.cs.huji.ac.il/~ornak>

### 4. *Jean-François Raskin*

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URL <http://di.ulb.ac.be/verif/jfr>