





Dr. Nicolas Mazzocchi

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Summary

Postdoctoral 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 LICS, FSTTCS, CONCUR, ATVA, and JLMCS.

Education

- | | | |
|--|---|-------------------|
|  | Postdoc at ISTA (IST Austria) | 01/2022 → today |
| topic | Resources/precision tread-off in quantitative extensions of monitoring | |
| 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

- | | | |
|---|---|--------------------|
|  | Brno University of Technology | (scheduled) 7/2023 |
| visit | Collaboration to establish a unified framework for inclusion checking of Büchi automata. | |
| host | Ondřej Lengál | |
|  | 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 |
| ntership | 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

- 2023** *U. Boker, T. A. Henzinger, N. Mazzocchi and N. E. Saraç.* Safety and Liveness for Quantitative Automata **SUBMITTED** (CONCUR23 proceedings).
- *T. A. Henzinger, P. Kebis, N. Mazzocchi and N. E. Saraç.* Regular Methods for Operator Precedence Languages **ACCEPTED** (ICALP23 proceedings).
 - *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
- 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
Citation:
1. As [30] in the [FOSSACS 2023 proceedings](#) DOI: 10.1007/978-3-031-30829-1_17
- *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
Citations:
1. As [12] in the [TACAS 2023 proceedings](#) DOI: 10.1007/978-3-031-30823-9_15
2. As [24] in the [TACAS 2023 proceedings](#) DOI: 10.1007/978-3-031-30823-9_8
3. As [18] in the [CAV 2022 proceedings](#) DOI: 10.1007/978-3-031-13188-2_9
- 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>
Citations:
1. As [17] in the [SOFSEM 2023 proceedings](#) DOI: 10.1007/978-3-031-23101-8_19
2. As [9] in the [NCMA 2022 proceedings](#) DOI: 10.4204/EPTCS.367.12
3. As [Jecker et al., 2021] in Trier University [PhD thesis of Petra Wolf](#) (<https://ubt.opus.hbz-nrw.de>)
- 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>
Citations:
1. As [6] in the [CSL 2023 proceedings](#) DOI: 10.4230/LIPIcs.CSL.2023.20
2. As [10] in the [ATVA 2022 proceedings](#) DOI: 10.1007/978-3-031-19992-9_23
3. As [3] in the [CPM 2022 proceedings](#) DOI: 10.4230/LIPIcs.CPM.2022.17
- *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>
Citations:
1. As [6] in the [Information and computation 2022 journal](#) DOI: 10.1016/j.ic.2022.104868
2. As [7] in the [CONCUR 2021 proceedings](#) DOI: 10.4230/LIPIcs.CONCUR.2021.18
3. As [2] in the [LATA 2021 proceedings](#) DOI: 10.1007/978-3-030-68195-1_11
4. As [Jecker et al., 2020] in Trier University [PhD thesis of Petra Wolf](#) (<https://ubt.opus.hbz-nrw.de>)
5. As [9] in Uppsala University [Master thesis of Hamid Kisha](#) (<https://www.diva-portal.org>)
- 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>
Citations:
1. As [22] in the [FOSSACS 2023 proceedings](#) DOI: 10.1007/978-3-031-30829-1_12
2. As [14] in the [ICALP 2020 proceedings](#) DOI: 10.4230/LIPIcs.ICALP.2020.114
3. As [15] in the [CONCUR 2020 proceedings](#) DOI: 10.4230/LIPIcs.CONCUR.2020.43
4. As [14] in the [FSTTCS 2022 proceedings](#) DOI: 10.4230/LIPIcs.FSTTCS.2022.40
5. As [FGM19] in the [LMCS 2022 journal](#) DOI: 10.46298/lmcs-18(2:23)2022
6. As [Filiot, Guha, and Mazzocchi 2019] in the [KR 2020 proceedings](#) DOI: 10.24963/kr.2020/53

7. As [FGM19] in the Gustave Eiffel University [PhD thesis](https://theses.fr) of *Florent Koechlin* (<https://theses.fr>)
- 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
Citations:
1. As [FMR18] in the [LMCS 2022 journal](#) DOI: 10.46298/lmcs-18(2:23)2022
2. As [15] in the [CONCUR 2020 proceedings](#) DOI: 10.4230/LIPIcs.CONCUR.2020.43
3. As [10] in the [FOSSACS 2020 proceedings](#) DOI: 10.1007/978-3-030-45231-5_12
4. As [14] in the [IJFCS 2020 journal](#) DOI: 10.1142/S0129054120410038
5. As [18] in the [ICALP19 proceedings](#) DOI: 10.4230/LIPIcs.ICALP.2019.128
6. As [10] in the [FSTTCS 2019 proceedings](#) DOI: 10.4230/LIPIcs.FSTTCS.2019.40
7. As [147] in the Aix-Marseille University [PhD thesis](https://theses.fr) of *Léo Exibard* (<https://theses.fr>)
8. As [FMR18] in the Bordeaux University [PhD thesis](https://theses.fr) of *Sougata Bose* (<https://theses.fr>)
9. As [FMR18] in the LaBRI [Habilitation](https://tel.archives-ouvertes.fr) of *Olivier Gauwin* (<https://tel.archives-ouvertes.fr>)
- 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
Citations:
1. As [15] in the [JCSS 2019 journal](#) DOI: 10.1016/j.jcss.2019.05.005

International journals with a peer-reviewed committee

- 2022** *I. Jecker, N. Mazzocchi and P. Wolf*. Decomposing Permutation Automata.
SUBMITTED (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>
Citations:
1. As [14] in the [FSTTCS 2022 proceedings](#) DOI: 10.4230/LIPIcs.FSTTCS.2022.40
2. As [149] in the Aix-Marseille University [PhD thesis](https://theses.fr) of *Léo Exibard* (<https://theses.fr>)
- 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>
Citation:
1. As [20] in the [LICS 2022 proceedings](#) DOI: 10.1145/3531130.3533336

Research communications

Paper presentations

- 22nd International Conference RV, online 9/2022
- 32nd International Conference CONCUR, online 8/2021
- 31st International Conference CONCUR, online 9/2020
- 39th IARCS Annual Conference FSTTCS, Mumbai 12/2019
- 22nd International Symposium DLT, Tokyo 9/2018
- 21st International Symposium FCT, Bordeaux 9/2017

Workshop talks

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

Invited Seminars

- VUT Brno, Czech Republic (scheduled) 7/2023
- IST Austria, Klosterneuburg 9/2021

- Colorado Boulder University, online 4/2020
- IST Austria, Klosterneuburg 2/2018

Professional activity

Reviews

Conferences: FSTTCS, LICS, CONCUR, ATVA
Journal: Logical Methods in Computer Science

Grant writing

Doctoral Quantitative Models for Verification and Applications 9/2016
fellowship 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.

Responsibilities

- Organization of the team seminars at ISTA 9/2022 → today
- Co-organization of the inter-team (ISTA, TU Wien) seminars at ISTA 9/2022 → today
- Co-organization of the inter-team seminars at IMDEA 5/2021 → 9/2021
- Organization of the team seminars at ULB 2017 → 2020
- SVN Administrator of the research team Modelization and Verification at ULB 2017 → 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

- Lecture of Milan Straka on Deep Learning at Charles University 5/2023 → today
I am following this lecture to be able to teach on this topic.
URL: <https://ufal.mff.cuni.cz/courses/npfl114/2223-summer#lectures>
- **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
- The 2nd Winter School in Engineering and Computer Science, HUJI 12/2017
- International Summer School Marktoberdorf 2017, TUM 8/2017

Teaching

Teaching Assistant

- 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 tige 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

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

Based on my experience at ULB, I prepared and submitted this new course to the IST graduate school. I was helped by one teaching assistant.

Students Advising

- 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 (RV22, FOSSACS23, ICALP23, CONCUR23), and preparation for future submission.
- Consultant of the Ph.D. student *Kyveli Doveri* at IMDEA Software Institute 3/2021 → 12/2021
Collaboration in writing a conference paper (CAV22)

Software

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. This tool has been peer-reviewed by the CAV22 artifact committee. URL: https://doi.org/10.5281/zenodo.6552870	
function	Deterministic finite state automata learner	Spring 2013
developer	<i>Mattias Gybels</i> (main), <i>Nicolas Mazzocchi</i>	
advisor	<i>François Denis</i>	
description	DFA spectral learner based on randomized singular value decomposition of Hankel matrix used to solve some PAutomataC challenges.	
function	Led's Chat game	Spring 2013
developer	<i>Nicolas Mazzocchi</i>	
advisor	<i>Peter Niebert, Mathieu Caralp</i>	
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

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

Referees

- | | |
|---|---|
| 1. Thomas A. Henzinger | 2. Jean-François Raskin |
| title Professor / President of ISTA | title Professor |
| mail IST Austria | mail Departement informatique CP-212 |
| Am Campus 1 | ULB Campus de la Plaine |
| 3400 Klosterneuburg | 1050 Bruxelles |
| AUSTRIA | BELGIUM |
| email tah@ist.ac.at | email jraskin@ulb.ac.be |
| URL https://pub.ist.ac.at/~tah | URL http://di.ulb.ac.be/verif/jfr |
| 3. Orna Kupferman | 4. Pierre Ganty |
| title Professor & former Vice Rector of HUJI | title Associate Research Professor |
| mail School of Computer Science and Engineering | mail IMDEA Software Institute |
| Hebrew University | Campus Montegancedo UPM |
| 91904 Jerusalem | 28223 Pozuelo de Alarcón |
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