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

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

University of Liverpool — (scheduled) 11/2023

visit Collaboration on history-determinism for concurrent 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

nternship 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 **ACCEPTED** (CONCUR23 proceedings).

- *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.
- *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 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 of *Léo Exibard* (https://theses.fr)
8. As [FMR18] in the Bordeaux University PhD thesis of *Sougata Bose* (https://theses.fr)
9. As [FMR18] in the LaBRI Habilitation 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

2023 *T. A. Henzinger, N. Mazzocchi* and *N. E. Saraç*. Quantitative Safety and Liveness.
SUBMITTED (Journal Theoretical Computer Science).

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 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: 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.

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. URL:https://sites.uclouvain.be/rp2019/organizers.html — 9/2019

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 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

- 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 *Nicolas Mazzocchi*
advisor *Pierre Ganty*
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 *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.

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

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

Referees

1. *Thomas A. Henzinger*

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Am Campus 1
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2. *Jean-François Raskin*

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ULB Campus de la Plaine
1050 Bruxelles
BELGIUM
email jraskin@ulb.ac.be
URL http://di.ulb.ac.be/verif/jfr

3. *Orna Kupferman*

title Professor & former Vice Rector of HUJI
mail School of Computer Science and Engineering
Hebrew University

4. *Pierre Ganty*

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