

Dr. Nicolas Mazzocchi

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Summary

Postdoctoral computer scientist in formal methods. Experience in **grant** writing, **teaching**, and **mentoring**. Publications in RV, CONCUR, MFCS, FCT, DLT, CAV, FSTTCS, IJFCS and JCSS. Reviews in LICS, FSTTCS, and JLMCS.

Education

	Postdoc at IST Austria	01/2022 – today
topic	Resources/precision tread-off in quantitative extensions of monitoring	
advisor	Thomas Anton Henzinger	
	Postdoc at IMDEA Software Institute	12/2020 – 12/2021
topic	Decision procedures for language inclusion based on well quasi-orders	
advisor	Pierre Ganty	
	Postdoc at Colorado Boulder University	11/2020
topic	Logical approaches for the representation of knowledge and beliefs	I revoked this contract due to the COVID19
advisor	Sriram Sankaranarayanan	
	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 Cachan ENS Paris-Saclay	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

	Université libre de Bruxelles	33 weeks, 4/2016
title	Decidable weighted expressions for sum-automata with Lipschitz robustness applications	
advisor	Emmanuel Filiot	
	RWTH Aachen University	11 weeks, 6/2015
title	Uniformization of automatic relations by sub-sequential transducers	
advisor	Christof Löding	
	École des Mines d'Alès & Incubator Innov'up	4 weeks, 6/2014
title	Simultaneous real-time location and mapping for sub-aquatic environment	
advisor	Jean-Marie Coldol	
	Aix-Marseille University	4 weeks, 7/2013
title	Randomized singular value decomposition applied to spectral learning for regular automata	
advisor	François Denis	
	INSERM Luminy	1 week, 10/2011
title	Polymerase chain reaction applied to transfer the fluorescence gene of jellyfish	
advisor	Constance Hammond	

Publications (authors ordered alphabetically)

Proceedings of international conferences with review committee

1. T. A. Henzinger, N. Mazzocchi and N. E. Saraç. Abstract Monitors for Quantitative Specifications in RV22 proceedings, **accepted**
2. K. Doveri, P. Ganty and N. Mazzocchi. FORQ-based Language Inclusion Formal Testing in CAV22 proceedings, **accepted**
3. I. Jecker, N. Mazzocchi and P. Wolf. Decomposing Permutation Automata in CONCUR21 proceedings, pages 18:1–18:19, 2021
4. 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
5. I. Jecker, O. Kupferman and N. Mazzocchi. Unary Prime Languages in MFCS20 proceedings, pages 51:1–51:12, 2020
6. E. Filiot, S. Guha and N. Mazzocchi. Two-way Parikh Automata in FSTTCS19 proceedings, pages 40:1–40:14, 2019
7. E. Filiot, N. Mazzocchi and J.-F. Raskin. Pattern Logic for Automata with Outputs in DLT18 proceedings, pages 304–317, 2018
8. E. Filiot, N. Mazzocchi and J.-F. Raskin. Decidable Weighted Expressions with Presburger Combinators in FCT17 proceedings, pages 243–256, 2017

International journals with review committee

9. 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
10. 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

Research communications

Paper presentations

- 32sd International conference CONCUR, online August 23rd -27th, 2021
- 31st International Conference CONCUR, online September 1st-4th, 2020
- 39th IARCS Annual Conference FSTTCS, Mumbai December 11th-13th, 2019
- 22nd International Symposium DLT, Tokyo September 10th-14th, 2018
- 21st International Symposium FCT, Bordeaux September 11th-13th, 2017

Workshop talks

- 7th Highlights of Logic, Games, and Automata, Warsaw 17th-20th, 2019
- 6th Highlights of Logic, Games, and Automata, Berlin Berlin, 18th-21st, 2018
- 2nd Winter School in Engineering and Computer Science, Jerusalem December 17th-21st, 2017
- 5th Highlights of Logic, Games, and Automata, London September 12th-15th, 2017

Invited Seminars

- IST Austria, Klosterneuburg September 2021
- Colorado Boulder University, online April 2020
- IST Austria, Klosterneuburg February 2018

Professional activity

Reviews

Conference: FSTTCS18, LICS20, FSTTCS21(conflict of interests), LICS22
Journal: Logical Methods in Computer science, volume 16

Grant writing

Postdoctoral fellowship	HE-MSCA-PF of the European Commission. Submitted The objective of the Marie Skłodowska-Curie Actions grants is to support researchers' careers and foster outstanding research. It is awarded based on the excellence of the research proposal, the magnitude of its impact, and the feasibility of the work plan.	9/2022
Doctoral fellowship	FRIA-B1-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.	9/2016

Responsibilities

•	SVN administrator of my research team at ULB	2017-2020
•	Organization of the regular team seminars at ULB	2017-2020
•	Conference organizer of RP19 (13 th International Conference on Reachability Problems) Administrator of the EasyChair submissions and manager of the welcome packs budget. URL: https://sites.uclouvain.be/rp2019/organizers.html	9/2019

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 awarded the badge “available” by the CAV22 artifact committee. DOI: 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 learner based on singular value decomposition of Hankel matrix used to solve some PAutomaC 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	

Teaching

Teaching assistant

•	<u>Formal Verification</u> at ULB 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.	Spring 2017, 2018, 2019, 2020
•	<u>Embedded systems</u> at ULB Full-semester, 25-30 graduated students Teaching practicals on computer. Introduction to model-checkers Lustre, JKind, UPPAAL tiga and Prism.	Spring 2018, 2019
•	<u>Fundamental computer science</u> at ULB Full-semester, 60-70 undergraduate students Managing and grading a C++ project on SAT solver (MiniSAT)	Spring 2018

Teaching instructor

- Foundation of Model Checking at ISTA (half-semester). Spring 2023
I submitted this new lecture to the IST graduate school with the support of (expected)
Krishnendu Chatterjee.

Students Advising

- Mentor of the intern *Pavol Kebis* at ISTA. 7/2022 – today
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 the writing of the conference paper (RV22), and
preparation for future submission.
- Consultant of the Ph.D. student *Kyveli Doveri* at IMDEA Software Institute 3/2021 – 12/2021
Collaboration in the writing of the conference paper (CAV22)

Miscellaneous

Language: French (native), English (professional)
Citizenship: French / EU

Referees

1. <i>Thomas Anton Henzinger</i>		2. <i>Pierre Ganty</i>	
job title	Professor / President of ISTA	job title	Associate Research Professor
mail	IST Austria Am Campus 1 3400 Klosterneuburg AUSTRIA	mail	IMDEA Software Institute Campus Montegancedo UPM 28223 Pozuelo de Alarcón SPAIN
email	tah@ist.ac.at	email	pierre.ganty@imdea.org