



# Rodrigo Otoni

*Curriculum Vitae*

*Last Update in February 2025*

## Personal Details

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*Full Name* Rodrigo Benedito Otoni

*E-Mail* otonir@usi.ch

*Profiles*



## Summary

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Postdoctoral researcher at the Università della Svizzera italiana, Switzerland, working on approaches for automated reasoning in the contexts of verification, synthesis, and certification. Experienced with model checking, SMT and CHC solving, TLA<sup>+</sup> specifications, and process algebras, as well as smart contracts and other blockchain technologies.

## Work Experience

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### Postdoctoral Researcher

Nov. 2023 - Present

*Università della Svizzera italiana, Switzerland*

Arrangement: 50% with Prof. Patrick Eugster's group and with Prof. Laura Pozzi's group

### Research Engineer

Sep. 2021 - Dec. 2022

*Informal Systems, Switzerland*

Arrangement: 6 months as a full-time intern followed by 10 months as a part-time contractor, working with Dr. Igor Konnov's group on SMT-based symbolic model checking of TLA<sup>+</sup> specifications

## Education

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### PhD in Informatics

Dec. 2018 - Oct. 2023

*Università della Svizzera italiana, Switzerland*

Dissertation: Automated Verification of Blockchain Technologies with Correctness Guarantees

Advisors: Prof. Patrick Eugster and Prof. Natasha Sharygina

External Panel: Prof. Arie Gurfinkel (U. of Waterloo) and Dr. Shuvendu Lahiri (Microsoft Research)

Additional Information: dissertation selected as the best of 2023 by the Faculty of Informatics

### MSc in Computer Science

Aug. 2016 - Jul. 2018

*Universidade Federal de Pernambuco, Brazil*

Dissertation: A Strategy for Local Analysis of Determinism

Advisors: Prof. Augusto Sampaio and Prof. Ana Cavalcanti

### BSc in Computer Science

Feb. 2012 - Jun. 2016

*Universidade Federal de Sergipe, Brazil*

Thesis: A Verification Strategy for Control Systems Implementations in Safety-Critical Java

Advisors: Prof. Ana Cavalcanti and Prof. Leila Silva

Additional Information: visiting student at the University of York, UK, for one year (2014/15)

## Languages

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- Portuguese: native speaker (Brazilian citizen)
- English: fluent (Toefl iBT 113/120)
- Italian: basic (CEFR A2)

## Academic Roles

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### Teaching Assistant

*Università della Svizzera italiana, Switzerland*

Feb. 2019 - Jun. 2023

MSc Course: Distributed Systems (2019/20, 2020/21, 2022/23)

BSc Course: Software Atelier 2 (2018/19, 2019/20, 2020/21)

BSc Course: Data Management (2021/22, 2022/23)

*Universidade Federal de Pernambuco, Brazil*

Aug. 2016 - Nov. 2016

BSc Course: Systems Project and Analysis (2016)

### Undergraduate Research Assistant

Aug. 2013 - Jul. 2014

*Universidade Federal de Sergipe, Brazil*

Project: Exploring Optimisation Algorithms in Requirements Engineering

Advisor: Prof. Leila Silva

## Student Supervision

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### Bachelor Theses

*Università della Svizzera italiana, Switzerland*

Student: Manuele Jelmini (2024)

Thesis: Scalable Synthesis of Approximate Circuits via Novel SMT Bit-Vectors Encoding

*Constructor University, Germany*

Student: Fedor Gromov (2023)

Thesis: Embedding SMT Proofs into CHC Solving

### Internship Projects

*Università della Svizzera italiana, Switzerland*

Student: Lorenzo Spada (2024)

Topic: Improved Synthesis of Approximate Circuits via QBF Solving

*Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*

Student: Rahil Doshi (2023)

Topic: Symbolic Model Checking for TLA<sup>+</sup>

## Funding

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- Recipient of a fellowship grant from the Swiss National Science Foundation  
Project: Unbounded and Certified Model Checking for TLA<sup>+</sup>  
Role: Principal Investigator  
Amount: CHF 108,600
- Recipient of a seed grant from the Hasler Foundation  
Project: Automated Probabilistic Reasoning for Quantum Networks  
Role: Principal Investigator  
Amount: CHF 49,740
- Recipient of a Science without Borders scholarship from the Brazilian government  
Arrangement: visiting student for one year at the University of York, UK  
Amount: GBP 23,440

## Awards

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- Distinguished paper award at TACAS'25  
Paper: Unsatisfiability Proofs for Horn Solving

- Nominated by the Università della Svizzera italiana for the GI Dissertation Prize 2023 (joint PhD dissertation prize of the German, Austrian, and Swiss informatics societies)
- Best paper award candidate at iFM'23  
Paper: CHC Model Validation with Proof Guarantees

## Community Service

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- Reviewer for the International Journal on Software Tools for Technology Transfer (STTT)
- Program committee member for the FMCAD'24 Student Forum
- Sub-reviewer for TACAS'25, CAV'24, FM'24, LPAR'24, SAT'24, FMCAD'23, SPIN'23, TACAS'23, CAV'22, FMCAD'22, OOPSLA'22, TACAS'22, CAV'21, FMCAD'21, TACAS'21, VSTTE'21, CAV'20, FMCAD'20, LPAR'20, MARS'20, SAT'20, TACAS'20, FORTE'19

## Publications

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### Journal Papers

3. *Validation of CHC Satisfiability with ATHENA*  
**R. Otoni**, M. Blichla, P. Eugster, and N. Sharygina  
Formal Aspects of Computing (FAC), Just Accepted, 2025
2. *An Algebraic Language for Specifying Quantum Networks*  
A. Buckley, P. Chuprikov, **R. Otoni**, R. Soulé, R. Rand, and P. Eugster  
Proceedings of the ACM on Programming Languages (PACMPL), 8(PLDI), 2024
1. *A Solicitous Approach to Smart Contract Verification*  
**R. Otoni**, M. Marescotti, L. Alt, P. Eugster, A. Hyvärinen, and N. Sharygina  
ACM Transactions on Privacy and Security (TOPS), 26(2), 2023

### Conference Papers

7. *Unsatisfiability Proofs for Horn Solving*  
**R. Otoni**, M. Blichla, M. Rivera, P. Eugster, J. Kofron, and N. Sharygina  
31st Int. Conf. on Tools and Algs. for the Construction and Analysis of Systems (TACAS'25)  
Distinguished paper award 🏆  
(To appear)
6. *Monomorphism-Based CGRA Mapping via Space and Time Decoupling*  
C. Tirelli, **R. Otoni**, and L. Pozzi  
28th Design, Automation and Test in Europe Conference (DATE'25)  
(To appear)
5. *CHC Model Validation with Proof Guarantees*  
**R. Otoni**, M. Blichla, P. Eugster, and N. Sharygina  
18th International Conference on integrated Formal Methods (iFM'23)  
Best paper award candidate 🏆
4. *Symbolic Model Checking for TLA<sup>+</sup> Made Faster*  
**R. Otoni**, I. Konnov, J. Kukovec, P. Eugster, and N. Sharygina  
29th Int. Conf. on Tools and Algs. for the Construction and Analysis of Systems (TACAS'23)

3. *Theory-Specific Proof Steps Witnessing Correctness of SMT Executions*  
**R. Otoni**, M. Blicha, P. Eugster, A. Hyvärinen, and N. Sharygina  
 58th ACM/IEEE Design Automation Conference (DAC'21)
2. *Accurate Smart Contract Verification Through Direct Modelling*  
 M. Marescotti, **R. Otoni**, L. Alt, P. Eugster, A. Hyvärinen, and N. Sharygina  
 9th International Symposium on Leveraging Applications of Formal Methods (ISoLA'20)
1. *Local Analysis of Determinism for CSP*  
**R. Otoni**, A. Cavalcanti, and A. Sampaio  
 20th Brazilian Symposium on Formal Methods (SBMF'17)

## Other Papers

2. *Automatisierte Garantierte Blockchain-Technologie Verifizierung*  
**R. Otoni**  
 GI Ausgezeichnete Informatikdissertationen 2023 (Band 24), 2024
1. *Towards an Algebraic Specification of Quantum Networks*  
 A. Buckley, P. Chuprikov, **R. Otoni**, R. Rand, R. Soulé, and P. Eugster  
 1st Workshop on Quantum Networks and Distributed Quantum Computing (QuNet'23)