Rodrigo Otoni
Curriculum Vitae
Last Update in November 2024

Personal Details

Full Name Rodrigo Benedito Otoni   *E-Mail* otonir@usi.ch   *Profiles* ⬤ 🅖 🅺 🛈

Summary

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$^+$ specifications, and process algebras, as well as smart contracts and other blockchain technologies.

Work Experience

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$^+$ specifications

Education

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)

Academic Roles

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
    BSc Course: Systems Project and Analysis (2016)

Undergraduate Research Assistant
Universidade Federal de Sergipe, Brazil
    Project: Exploring Optimisation Algorithms in Requirements Engineering
    Advisor: Prof. Leila Silva

Student Supervision

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$^+$

Community Service

- 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

Awards and Funding

- Recipient of a seed grant from the Hasler Foundation for a 1-year project (12/2024–11/2025)
  Project: Automated Probabilistic Reasoning for Quantum Networks
  Role: Principal Investigator
  Amount: CHF 49,740

- 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)

- Recipient of a Science without Borders scholarship from the Brazilian government (2014/15)
  Arrangement: visiting student for 1 year at the University of York, UK
  Amount: GBP 23,440

Languages

- Portuguese: native speaker (Brazilian citizen)

- English: fluent (Toefl iBT 113/120)

- Italian: basic (CEFR A2)

Publications

9. *Automatisierte Garantierte Blockchain-Technologie Verifizierung*
   R. Otoni
   GI Ausgezeichnete Informatikdissertationen 2023 (Band 24), 2024

8. *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

7. *CHC Model Validation with Proof Guarantees*
   R. Otoni, M. Blicha, P. Eugster, and N. Sharygina
   18th International Conference on integrated Formal Methods (iFM'23)
   Best paper award candidate

6. *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)

5. *Symbolic Model Checking for TLA^+ Made Faster*
   R. Otoni, I. Konnov, J. Kukovec, P. Eugster, and N. Sharygina
   29th International Conference on Tools and Algorithms for the Construction and Analysis
   of Systems (TACAS'23)

4. *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

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)