

Academic CV

Personal Data

Name	DI Sophie Rain
Birthday	05 August 1996
Email	sophie.rain@tuwien.ac.at
Homepage	forsyte.at/people/rain
Languages	German (native) English (excellent) French (intermediate) Spanish (elementary)
Interests	various types of sports, languages, travelling



Research Interests

Logic, Security of Blockchain Applications, Game Theory, Automated Reasoning

Academic Qualification

PhD

Since October 2020 student of SecInt Doctoral College at the Institute of Logic and Computation (TU Wien).

- supervised by Laura Kovacs and co-supervised by Matteo Maffei
- working in Laura Kovacs' Automated Reasoning group (Formal Methods)
- focus on verifying game-theoretical security properties of distributed protocols

Bachelor and Master

From October 2014 until June 2020 student of Mathematics at TU Wien.

Bachelor (2014-2018)

- discovered interest in Logic and formal theorem proving in the first semesters
- very good background knowledge on proofs
- graduated with highest distinction

Bachelor Thesis

- in the area of NLP, based on the i2b2 medication extraction challenge

Master (2018-2020)

- focus on computer science: Automated Deduction, Machine Learning, Logic
- also during term abroad at University of Waterloo, Canada
- Summer School on SAT, SMT and AR in Lisbon 2019
- BEST course on IoT, Aalborg, Denmark, August 2019
- ATHENS course on Data Transfer in Paris, November 2019
- graduated with highest distinction

Master Thesis

- on „First-Order Reasoning with Aggregates“, motivated by verification of Smart Contracts
- encoding sums in First-Order logic and reasoning about it
- Institute of Logic and Computation, supervised by Laura Kovacs, in collaboration with Mooly Sagiv from Tel Aviv University

Professional Experience

Since October 2020	University Assistent at TU Wien in the course of my Phd studies
September - December 2021	Applied Science Intern at Amazon Web Services (AWS) using Automated Reasoning to make AWS's services secure
February 2021	IPMA Level D certified Project Manager
October 2019 - August 2020	Process Engineer at BOSCH working in an international agile team in the area of integration testing of BOSCH control unit software, while in parallel finishing my master's degree
2015 - 2019	several long term internships at BOSCH supporting the customer project teams in terms of software testing
Summers 2014, 2012	summer internships at Polymun and TGB
School Year 2012/13	CEO of the Junior Company Hasta la Pasta in High School

Teaching

Summer Term 2022	Master Thesis Co-Supervision of Lea Brugger
Summer Term 2022, Summer Term 2021, Winter Term 2020	Teaching Assistant for Formal Methods in Informatics (mandatory Computer Science Master course)
Summer Term 2017	Tutor for Computer Mathematics (mandatory Mathematics Bachelor course)
Winter Term 2016	Tutor for Introduction to Programming (mandatory Mathematics Bachelor course)

Awards and Stipends

- **Dr. Maria Schaumayer prize** for excellent master theses (October 2021)

- Stipend for **Excellent Students** 2018, 2019, 2020
- **VERBUND Frauenstipendium** 2016 (stipend to support outstanding young women in technical studies)

Selected Publications

S. Rain, Z. Avarikioti, L. Kovacs, M. Maffei, „**Towards Game-Theoretical Security Analysis of Off-Chain Protocols**“, 2022, in review

N. Elad, S. Rain, L. Kovacs, M. Sagiv, N. Immerman, „**Summing up Smart Transitions**“, CAV 2021

S. Rain, „**First-Order Reasoning with Aggregates**“, Master Thesis 2020

Community Service

- Student Volunteer FloC 2022
- Abenteuer Informatik, TU Wien initiative to bring Computer Science to Volksschule (Austrian primary school)
- Student Volunteer CAV 2021
- Voluntary Fire Fighter (Freiwillige Feuerwehr Niederösterreich)

Invitations and Participation

EUGAIN Summer School on Gender Balance in Informatics, Switzerland, June 2022

Winter School and Workshop on Proof Theory, Portugal, December 2021

Dagstuhl Seminar on Rigorous Methods for Smart Contracts, Germany, October 2021