Sebastian Holler
CV

✉ sebastian.holler@mpi-sp.com
⌂ hn-rg.github.io/members/holler/

Education

since 02/2023   **CASA Graduate School of Computer Science**, *Member of the CASA Graduate School of Computer Science at Ruhr University Bochum (RUB), Fast-Track PhD.*

01/22 - 01/23   **Saarbrücken Graduate School of Computer Science**, *Member of the Graduate School of Computer Science at Saarland University, PhD Preparation/M.Sc.*

2018 - 2021   **Saarland University**, *Saarbrücken, B.Sc. in Computer Science (25.12.2021)*, Grade 1.3
Minor in Physics. Focus on Concurrency, Programming Languages and Logic.

- **B.Sc. Thesis:** "*Sound Ethereum Bytecode Dependency Analysis*," under supervision of **Prof. Holger Hermanns** and **Dr. Clara Schneidewind (MPI-SP)**, Grade 1.0

Research Interests

Formal Methods, Programming Languages, Blockchain, Security

Research Experiences

since 02/2023   **PhD Candidate**, MPI-SP, PhD Candidate in the Heinz Nixdorf Research Group for Cryptocurrencies and Smart Contracts
Supervised by **Dr. Clara Schneidewind** and **Prof. Gilles Barthe**

- CASA (Cluster of Excellence) Project: "Preventing Front-running Attacks on Dapps"
- Sound Design and Verification of Cross-Chain Protocols and Languages

02/22 - 01/23   **PhD Preparation Phase**, CISPA, As part of the Saarbrücken Graduate School of Computer Science, Advised by **Prof. Bernd Finkbeiner**

06/22 - 01/23   **Guest Researcher**, MPI-SP (remote), Continuation of Bachelor Thesis Research on Formal Verification of Smart Contracts, Advised by **Dr. Clara Schneidewind**

Conference Papers

2024   Federico Badaloni, Sebastian Holler, Chrysoula Oikonomou, Pedro Moreno-Sanchez, Clara Schneidewind "BitMLx: Secure Cross-chain Smart Contracts For Bitcoin-style Cryptocurrencies," **CSF**, Santa Cruz, CA, USA

2023   Sebastian Holler, Clara Schneidewind, Sebastian Biewer. "HoRStify: Sound Security Analysis of Smart Contracts," **CSF**, Dubrovnik, Croatia, (*Short paper version presented at* **LPAR**, *Manizales, Colombia*), *Preliminary version presented at* **FCS '22**, *Haifa, Israel*)

Invited Talks

2024   "Frontrunning beyond MEV," Ethereum Enterprise Alliance, Security Levels Working Group

2023   "Sound Security Analysis of Smart Contracts." IMDEA Software Institute, Madrid, Spain

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Academic & Voluntary Service

Boards   **Early Career Researcher Board**, *Spokesperson*, CASA (Cluster of Excellence)
Management Board, *ECR Representative*, CASA (Cluster of Excellence)
Security Levels Working Group, *Member*, Ethereum Enterprise Alliance
CS-Bachelor's Honors Program, *Spokesperson (19/20)*, Saarland University
Student Council, *Head Boy (16/17), Deputy Head Boy (17/18), District Student Council Delegee (16-18)*, Gymnasium Nidda

Organizing   **Anniversary Symposium**, *General Chair & Host*, Organization of 10-years Anniversary Symposium of student-led Mathematics Preparatory Course, Saarland University

	ICPC NWERC '25, *(Co-)Head of Sponsoring*, Organization of Qualification Contest (*500+ participants*) for Competitive Programming World Finals, KIT, Karlsruhe
	University Competitive Programming Team, *Coach*, RUB, Bochum
	ECR Connect, *Program Chair*, Biannual Networking and Collaboration Event for Young Researchers, RUB, Bochum
	FFMOP, *Volunteer ('20+'23)*, Max Ophüls Filmfestival, Saarbrücken, Saarland
Reviewer	**IEEE ICBC '25, FMBC '25, ACM DeFi '24, IEEE TDSC†, IEEE T-IFS†, FM '24***, (*†Journal, *external*)
	Federal Computer Science Competition, *1st & 2nd Round Proofreader (2023)*
Thesis	**Yan Farba**, *Supervisor, Smart Contract Verification with Commutativity Constraints (B.Sc.)*

Teaching Experiences

Semester	At Ruhr University Bochum
Winter 2024	**Guest Lecturer**, Proofs are Programs, Formally Verified Security & Cryptocurrencies and Smart Contracts group
Summer 2024	**Guest Lecturer**, Functional Programming, Formally Verified Security & Cryptocurrencies and Smart Contracts group
Summer 2023	**Teaching Assistant**, Proofs are Programs, Formally Verified Security & Cryptocurrencies and Smart Contracts group

	At Saarland University
2023-2024	**Consultant and Event-Planning**, Mathematics Preparatory Course for Computer Scientists, Computer Science department
Summer 2022	**Lead Organizer**, Mathematics Preparatory Course for Computer Scientists, Computer Science department
Summer 2022	**Student TA**, Concurrent Programming, Dependable Systems and Software Chair
Winter 2021	**Organizer and Instructor**, Didactic Seminar for Student TAs in Programming 1, Programming Systems Lab
Summer 2021	**Organizer**, Mathematics Preparatory Course for Computer Scientists, Computer Science department
Winter 2020	**Organizer and Instructor**, Didactic Seminar for Re-exam Student TAs in Programming 1, Reactive Systems Group
Winter 2020	**Supervision Student TA**, Programming 1, Reactive Systems Group
Summer 2020	**Coach, Lecturer and Student TA Advisor**, Mathematics Preparatory Course for Computer Scientists, Computer Science department
Winter 2019	**Student TA**, Programming 1, Dependable Systems and Software Chair
Winter 2018	**Re-Exam Student TA**, Programming 1, Programming Systems Lab

Honors & Awards

01/22 - 01/23	**Member of the Graduate School of Computer Science**, *Saarland University.*, Scholarship awarded to potential upcoming PhD students after completing their Bachelor's degree
2019 - 2021	**Member of the Bachelor's Honors Program**, *Saarland University Computer Science Faculty*
2018	**German Physical Society high-school award**, *DPG* awarded to the best physics students in high-school