

Sebastian Holler

CV

✉ sebastian.holler@mpi-sp.com

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
- 2010 - 2018 **Gymnasium des Wetteraukreises**, Nidda, Germany, Abitur, Grade 1.1
Major in Physics and Mathematics

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
- 08/25 - 11/25 **Research Visit**, Cornell (Ithaca, NY), Research visit during PhD, Advised by **Prof. Andrew Myers**
- 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

- 2026 Pascal Winkler, Jens-Rene Giesen, Oussama Draissi, Federico Badaloni, Sebastian Holler, Clara Schneidewind, Lucas Davi. "\$2B Lessons: Brigade as a Defense Against Real-World DeFi Bridge Exploits," **ACNS**, Stony Brook, NY, USA
- 2025 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

Academic & Voluntary Service

- Boards **Early Career Researcher Board**, Spokesperson (24/25), CASA (Cluster of Excellence)
Management Board, ECR Representative (24/25), CASA (Cluster of Excellence)
Security Levels Working Group, Member (24/25), 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 **ICPC NWERC '25 + '26**, (*Co-Head of Sponsoring*), Organization of Qualification Contest (*600 participants*) for Competitive Programming World Finals, KIT, Karlsruhe
- 1st SCDGI Summer School**, *General Chair (2026)*, Organization of the 1st Summer School on Security and Governance of Collective Digital Infrastructures (SGCDI), MPI-SP, Bochum
- University Competitive Programming Team**, *Coach (since '24)*, RUB, Bochum
- Anniversary Symposium**, *General Chair & Host (2024)*, Organization of 10-years Anniversary Symposium of student-led Mathematics Preparatory Course, Saarland University
- ECR Connect**, *Program Chair (24/25)*, Biannual Networking and Collaboration Event for Young Researchers, RUB, Bochum
- FFMOP**, *Volunteer ('20+'23)*, Max Ophüls Filmfestival, Saarbrücken, Saarland
- Reviewer **FMBC '25+'26**, **IEEE ICBC '25**, **ACM DeFi '24+'25**, **IEEE TOSEM[†]**, **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 2025 **Guest Lecturer**, Functional Programming, Foundations of Information Security and Trust & Cryptocurrencies and Smart Contracts group
- 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