

Niklas Medinger

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Education

- Current **Ph.D. Student**, *CISPA - Helmholtz Center for Information Security*, Saarbrücken.
- 05/2022
- 04/2022 **Graduate School**, *Saarland University*, Saarbrücken.
- 10/2020
- 09/2020 **B.Sc. Cybersecurity**, *Saarland University*, Saarbrücken.
- 10/2017 Grade: 1.3

Employment

- 08/2023 **Applied Science Intern**, *Amazon Web Services Inc.*, Santa Clara.
- 11/2023 I was an intern at AWS in the automated reasoning group under the supervision of Dimitra Giannakopoulou and Zvonimir Rakamaric in Santa Clara, California.
- Current **Ph.D. Student**, *CISPA - Helmholtz Center for Information Security*, Saarbrücken.
- 05/2022 I started my PhD under the supervision of Cas Cremers. My research topics include increasing the expressiveness and automation of current state-of-the-art verification techniques as well as the modeling and verification of cryptographic protocols with the Tamarin Prover.
- 09/2020 **Research Assistant**, *CISPA - Helmholtz Center for Information Security*,
- 04/2019 Saarbrücken.
In the research group of Cas Cremers, I created a formal model of the WPA2 Wi-Fi protocol together with Benjamin Kiesel-Reiter and used the Tamarin prover to verify it. This work resulted in a research paper we published at USENIX Security 2020.
- 04/2019 **Research Assistant**, *CISPA - Helmholtz Center for Information Security*,
- 05/2018 Saarbrücken.
I worked in the research group of Michael Backes under Ph.D. student David Pfaff. Topics I worked on include attacks on machine learning models using adversarial patches and bug detection based on similarities in the abstract syntax tree of code.

Publications

- 11/2024 **Impossibility Results for Post-Compromise Security in Real-World Communication Systems**, *Cas Cremers, Niklas Medinger, and Aurora Naska*, Under submission.
- 10/2024 **Keeping Up with the KEMs: Stronger Security Notions for KEMs and automated analysis of KEM-based protocols**, *Cas Cremers, Alexander Dax, and Niklas Medinger*, Appeared in: Proceedings of the 2024 on ACM SIGSAC Conference on Computer and Communications Security (CCS 24).
- 08/2020 **A Formal Analysis of IEEE 802.11's WPA2: Countering the Kracks Caused by Cracking the Counters**, *Cas Cremers, Benjamin Kiesel, and Niklas Medinger*, Appeared in: Proceedings of the 29th USENIX Security Symposium (USENIX 2020).

Teaching Experience

- 04/2025 **Teaching Assistant**, *Saarland University*, Saarbrücken.
- 10/2024 I was a teaching assistant for the second iteration of the *Formal Analysis of Real-World Security Protocols* lecture.
- 06/2024 **Instructor**, *Summer School on real-world crypto and privacy*, Vodice, Croatia.
I was an instructor for a tutorial on the Tamarin Prover at the Summer School on real-world crypto and privacy.
- 10/2022 **Teaching Assistant**, *Saarland University*, Saarbrücken.
- 04/2022 I was a teaching assistant for the first iteration of the *Formal Analysis of Real-World Security Protocols* lecture. My tasks included developing the curriculum, as well as designing and grading exercise sheets, student projects, and exams.
- 05/2020 **Programming Tutor**, *Saarland University*, Saarbrücken.
- 04/2020 I voluntarily helped organize the second programming pre-course for the lecture *Programming II*.
- 10/2019 **Lecturer**, *Saarland University*, Saarbrücken.
- 09/2019 Once more, I voluntarily helped organize the math pre-course of Saarland University. Additionally, I gave one week of lectures to students on the topic of formal proof techniques.
- 10/2019 **Programming Tutor**, *Saarland University*, Saarbrücken.
- 04/2019 I was a tutor for the lecture *Programming II* given by Prof. Dr. Jörg Hoffmann. In the lecture, the students learn the basics of imperative and object-oriented programming.
- 05/2019 **Programming Tutor**, *Saarland University*, Saarbrücken.
- 04/2019 I voluntarily helped creating the first programming pre-course for the lecture *Programming II*. This included creating a curriculum, designing and coding a project for the students, and tutoring the students.
- 04/2019 **Cybersecurity Tutor**, *CISPA - Helmholtz Center for Information Security*,
- 10/2018 Saarbrücken.
I was a tutor for the lecture *Foundations of Cybersecurity I* given by Dr.-Ing. Ben Stock. The lecture serves as an introduction to cryptography, software security, and web security.
- 10/2018 **Math Tutor**, *Saarland University*, Saarbrücken.
- 09/2018 During the semester break, I voluntarily helped organize the math pre-course of Saarland University and tutored its students. The course introduces new computer science students to formal logic.