Julian Pritzi

PhD student at
Technical University of Munich

Email: julian.pritzi@tum.de
Homepage: https://julianpritzi.com/
GitHub: https://github.com/julianpritzi

Research Interests

My research interests lie at the intersection of trustworthy system design and formal methods, with a focus on high-assurance system security, hardware-software co-design, and RISC-V architectures.

I am particularly interested in the use of formal specifications to analyze and develop correct-by-construction system components. In particular, my current work applies these principles to establish provable security at the hardware-software interface by synthesizing correct and secure silicon Roots of Trust (RoT).

Education

Ph.D. in Computer Science (2025 — **present**)
School of Computation, Information and Technology
Technical University of Munich, DE
Thesis: Formally Verified Secure Systems
Advisor: Prof. Dr. Pramod Bhatotia

M.Sc. in Computer Science (2022 — 2024)
School of Computation, Information and Technology
Technical University of Munich, DE
Thesis: Formal Verification of Heterogeneous Cache Coherence Protocols for CXL

B.Sc. in Computer Science (2019 — 2022)
School of Computation, Information and Technology
Technical University of Munich, DE
Thesis: An In-Hardware Cycle-Accurate Benchmarking Tool for Security-Critical Operations

Diploma di maturità tecnica (2019)
Technologische Fachoberschule 'Max Valier', IT
Project: Backend for Club Management App

Honors and Awards

Competitive Programming (Olimpiadi Italiane di Informatica):
- 10th Place National (2017)
- 2nd Place Regional (2017)
- 5th Place Regional (2016)
- 1st Place Regional Team (2018 & 2019)

Employment

AVANTI, May 2018 and June 2017 — August 2017
Software Development Intern
Holzland Fuchs GmbH, Latsch, IT

Publications (and Open-source Software)

1. Wallet: Confidential Serverless Computing
   Patrick Sabanic, Masanori Misono, Teofil Bodea, Julian Pritzi, Michael Hackl, Dimitrios Stavrakakis, Pramod Bhatotia
   USENIX NSDI 2026
   [Code]

2. vCXLGen: Automated Synthesis and Verification of CXL Bridges for Heterogeneous Architectures
   Anatole Lefort, Julian Pritzi, Nicolò Carpentieri, David Schall, Simon Dittrich, Soham Chakraborty, Nicolai Oswald, Pramod Bhatotia
   ASPLOS 2026

3. C3: CXL Coherence Controllers for Heterogeneous Architectures
   Anatole Lefort, David Schall, Nicolò Carpentieri, Julian Pritzi, Nicolai Oswald, Pramod Bhatotia
   IEEE HPCA 2026

4. Recipe: Hardware-Accelerated Replication Protocols
   Dimitra Giantsidi, Emmanouil Giortamis, Julian Pritzi, Maurice Bailleu, Manos Kapritsos, Pramod Bhatotia
   ACM/IFIP Middleware 2025
   [Code]

5. TNIC: A Trusted NIC Architecture
   Dimitra Giantsidi, Julian Pritzi, Felix Gust, Antonios Katsarakis, Atsushi Koshiba and Pramod Bhatotia
   ASPLOS 2025
   [Code]

6. A Dynamic Priority-aware Coherent Cache Architecture for Reactive Real-Time Systems
   Denis Hoornaert, Julian Pritzi, Andrea Bastoni, and Marco Caccamo
   RTNS 2024
   [Code]

7. Trusted Heterogeneous Disaggregated Architectures.
   Atsushi Koshiba, Felix Gust, Julian Pritzi, Anjo Vahldiek-Oberwagner, Nuno Santos, and Pramod Bhatotia
   ACM APSys 2023

Teaching

Introduction to Software Engineering (EIST): Spring 2025

Practical Lab: Advanced Systems Programming in C/Rust: Spring 2023, Spring 2024

Supervised Theses

1. Formal Verification of SHA-3: Proof Techniques for Symmetric Cryptography
   (Primarly supervised by an industry collaborator at CRYSPEN) Tristan Schwieren, MSc Thesis, Spring 2025

References

Prof. Dr. Pramod Bhatotia
Full Professor and Chair
TU Munich, Germany
Email: pramod.bhatotia@cit.tum.de
Relationship: PhD Advisor

Prof. Dr. Nuno Santos
Associate Professor
INESC-ID, Instituto Superior Técnico, University of Lisbon, Lisbon, Portugal
Email: nuno.m.santos@tecnico.ulisboa.pt
Relationship: Collaborator