STEFANO BERLATO

Computer Scientist, PhD

Researcher@Fondazione Bruno Kessler.
Keen on applied cryptography, cybersecurity, and cloud native.
Football coach, fantasy reader, and D&D master.

(this is a curated selection of my research activities; please refer to my website for more details)

Contact Links

Skills

Things I Researched

Applied cryptography · identity and access management · end-to-end data protection · cloud native applications · distributed ledger technologies · cooperative, connected and automated mobility · Android · reverse engineering

Things I Worked With

Java, Kotlin, and C++ programming (Rust is next) · LaTeX · cryptography · blockchain technologies · cloud native applications, containers, and microservices · anti-debugging protections

Things I Did and Learned

Academic and applied research in computer science security · design secure communication protocols for cloud-edge applications based on advanced cryptographic primitives such as ABE · conduct threat modeling and risk assessment · collaborate in European research projects

Write, present, and review scientific articles in conferences and peer-reviewed journals · prepare and deliver lectures and seminars at university courses, grading and exam preparation · develop educational materials and conduct training seminars

Supervise and mentor BSc and MSc students on thesis projects · guide junior researchers in academic and practical research

Languages

Italian (mother tongue), English (C1)

Experience

Researcher
(Nov 2023 > on going)

Fondazione Bruno Kessler (FBK), Trento (Italy)

Research on applied cryptography and access control for securing cloud native applications

Research Assistant
(Oct 2018 > Oct 2020)

Fondazione Bruno Kessler (FBK), Trento (Italy)

Research activities on cloud, mobile, and automotive security. Design and implementation of protections against reverse enginnering for Java and Android

Android Reverse Engineering
(Jul > Oct 2018)

2ASPIRE, Trento (Italy)

Investigation of anti-tampering and anti-debugging protections against malicious reverse engineering

Javascript Libraries Development
(Jun > Sep 2016)

Heas srl, Schio (Italy)

Design of two plugins for the commercial webbased SCADA platform ATVISE® through web technologies.

Education

University of Genoa and Fondazione Bruno Kessler (FBK) - 2020 > 2023

PhD in Security, Risk and Vulnerability, Cybersecurity and Reliable Artificial Intelligence curriculum (cum laude)

University of Trento - 2017 > 2019

Master degree in Computer Science, ICT Innovation and Security&Privacy curriculum (110 cum laude)

University of Trento - 2014 > 2017

Bachelor degree in Computer Science (110 cum laude)

Publications

Stefano Berlato, Matteo Rizzi, Matteo Franzil, Silvio Cretti, Pietro De Matteis, Roberto Carbone. **Work-in-Progress: A Sidecar Proxy for Usable and Performance-Adaptable End-to-End Protection of Communications in Cloud Native Applications** in *1st Workshop on Operating Systems and Virtualization Security (OSVS 2024)*

Stefano Berlato, Silvio Cretti, Domenico Siracusa, and Silvio Ranise. **Multi-Objective Microservice Orchestration: Balancing Security and Performance in CCAM** in *27th Conference on Innovation in Clouds, Internet and Networks (ICIN 2024)*

Davide Pizzolotto, Stefano Berlato, and Mariano Ceccato. **Mitigating Debugger-based Attacks to Java Applications with Self-Debugging** in *ACM Trans. Softw. Eng. Methodol (TOSEM)*

Stefano Berlato, Marco Centenaro, Silvio Ranise. **Smart Card-Based Identity Management Protocols for V2V and V2I Communications in CCAM: a Systematic Literature Review** in *IEEE Transactions on Intelligent Transportation Systems (T-ITS)*

Stefano Berlato, Roberto Carbone, Silvio Ranise, Adam J. Lee. **Formal Modelling and Automated Trade-Off Analysis of Enforcement Architectures for Cryptographic Access Control in the Cloud** in *ACM Transactions on Privacy and Security (TOPS)*

Andreas Heider-Aviet, Danny Roswin Ollik, Stefano Berlato, Silvio Ranise, Roberto Carbone, Van Thanh Le, Nabil El Ioini, Claus Pahl, Hamid R. Barzegar. **Blockchain Based RAN Data Sharing** in *IEEE International Conference on Smart Data Services 2021 (SMDS 2021)*

Stefano Berlato, Mariano Ceccato. **A Large-Scale Study on the Adoption of Anti-Debugging and Anti-Tampering Protections in Android Apps** in *Journal of Information Security and Applications (JISA)*

Editorial Work and Community Service

- reviewing activity: 35+ papers for conferences and Q1 journals (e.g., IEEE TIFS, IEEE T-ITS)
- part of the organizing committee for TAC 24

Teaching Activities

University of Trento - 2024 > on going

Teaching Assistant for the master courses “Advanced Programming of Cryptographic Methods” and “Cryptographic Protocols for Secure Networks and Applications”

University of Genoa - 2023 > on going

Teacher at the "Cybersecurity and Critical Infrastructure Protection" specialization course

University of Trento - 2020 > 2024

Teaching Assistant for the bachelor course "Programming 101"

Supervised Theses

Marco Soldera, *bachelor in Computer Science at the University of Trento (2024)*. **A Risk Assessment Methodology for VSNF Placement in Cloud Native Applications**

Simone Brunello, *bachelor in Computer Science at the University of Trento (2024)*. **Cryptographic Access Control for Balancing Trust, Protection, and Performance**

Ion Andy Ditu, *bachelor in Computer Science at the University of Trento (2024)*. **Leveraging Trusted Execution Environment for Efficient Revocation and Security in Cryptographic Access Control**

Alessandro Colombo, *bachelor in Computer Science at the University of Trento (2024)*. **Attribute Based Encryption for Advanced Data Protection in IoT with MQTT**

Software Projects

- Kotlin Multiplatform for OpenABE
  github.com/StefanoBerlato/kotlin-multiplatform-openabe
- CryptoAC (Cryptographic Access Control)
  github.com/stfbk/CryptoAC
- ACE (AC state-change rule extraction procedurE)
  aleph.fbk.eu/tools/ACE
- ACME (Access Control Mechanisms Evaluator)
  aleph.fbk.eu/tools/ACME