Dr. Filippo Berto

Software Engineer

Genéve, Switzerland

berto.f@protonmail.com ◆ me.bertof.net ◆ linkedin.com/in/bertof ◆ gitlab.com/bertof ◆ github.com/bertof ◆ orcid.org/0000-0002-2720-608X

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1 Short Biography

1.1 Current Position

Filippo Berto is a Software Engineer at "Counseil Européen pour la Recherche Nucléaire" (CERN), Switzerland. His research interests are in the areas of **edge-cloud computing**, **distributed systems**, and **cyber security**. In particular, he works in the area of **security assurance**, **5G networks** and **edge-cloud computing**, focusing on **certification techniques** for computing infrastructures, networks and distributed services. In CERN, he focuses on the realization of Large Language Model applications for code development automation and operation, and on the implementation of edge-computing infrastructures for high reliability virtualized PLC applications.

1.2 Brief scholarly and scientific history

Università degli Studi di Milano **Milan, Italy**

Ph.D. in Computer Science Nov 2020 – Oct 2023

- **Honors**: Cum laude.
- **Courses**: Security threats, trends challenges and gaps, Governance, risk and compliance in distributed architectures, Modeling, analysis and optimization of networks, Security certification: from traditional software and cloud system to ML-based services.
- **Thesis**: "Assurance-aware 5G Edge-Cloud Architectures for Intensive data analytics", under the supervision of Prof. Marco Anisetti and Prof. Claudio A. Ardagna [5].
- Efficient **QoS-aware deployment** methodology for distributed services in edge-cloud continuum [12].
- Collaborative and lightweight **assurance methodologies** for advanced **non-functional properties** in **distributed services** [11], [15].
- Assurance techniques based on **transparent monitoring** of **edge-cloud computing** environments and modern infrastructures.

- Development of a **Big Data platform** for collection and analysis of agricultural data using an **automated robotic platform** and **IoT devices** [14].
- **5G core network function** and MEC specification extension and implementation for advanced property verification.
- Implemented monitoring techniques in **5G network functions** for advanced **non-functional verification**, validated on a real test bed network.
- Automatic integration of **assurance techniques** for **Big Data analysis pipelines** in **edge-cloud** environments [10], [13].

Università degli Studi di Padova **Padua, Italy**
Master's Degree in Computer Science (LM-18) Oct 2017 – Apr 2020

- **Grade**: 105/110
- **Courses**: Algorithms & Computability, Innovation Economy, Functional Languages, Formal Programming Languages, Global Computing Languages, Data Mining, Machine Learning, Artificial Intelligence, Cognitive Services, Computer & Network Security, Static Analysis.
- **Thesis**: "Content Popularity in Named Data Networking: Prediction Models And Security Applications", under the supervision of Prof. Mauro Conti
  - Development a cache-poisoning resistant policy for Named Data Networking based on **collaborative distributed monitoring** and **prediction of content popularity** across the network.
- Development of of **memory-exhaustion DoS attack** against Named Data Networking routers and integration of a more resistant alternative **probabilistic data structure** [16].
- Developed a **static analyzer** in **Rust** featuring abstract and concrete interpretation of the "While" language.

Università degli Studi di Padova **Padua, Italy**
Bachelor's Degree in Computer Science (L-31) Oct 2014 – Sep 2017

- **Courses**: Computer Networks, Operating Systems, Mathematical Analysis, Computer Programming, Algebra, Logic, Databases, Algorithms & Data Structures, Statistics, Formal Languages, Operations Research, Software engineering, Mobile Programming, Bioinformatics.
- **Thesis**: "Development of a video streaming platform for remote assistance via wearable devices"
  - Analysis of current standards for **video streaming** and **chat solutions**.
  - Implemented a broker-based message-queue system for **high throughput chat messaging** and **video streaming**.
- **Led a team of seven people** during a year long **software engineering project**, building a **AI personal assistant** using **AWS services**.

1.3 Contracts and Research Grants

Counseil Européen pour la Recherche Nucléaire (CERN) **Meyrin, Switzerland**
Software Engineer, under the supervision of Fernando Valera Rodriguez Oct 2025 – Present

- Development of techniques, tooling and services based on Large Language Models for the automation of development and testing of PLC code based on SIEMENS' CTRL/CTRL++ code.
- Implementation of a high-reliability edge-computing infrastructure for the deployment of SIEMENS' virtualized PLC systems
- Profiling of virtualized PLCs capabilities on time-sensitive applications
- Implementation of edge-cloud-ready services for the integration of PLC applications

SEcure Service-oriented Architectures Research Lab (SESAR Lab) - Università degli Studi di Milano **Milan, Italy**
Postdoctoral Researcher, under the supervision of Prof. Marco Anisetti Nov 2023 – Sep 2025

- Two-year research grant financed by the MUSA project (PNRR, Mission 4, Component 2, Investment 1.5).
- Lead the design and implementation of a **multi-tenant cloud research platform**, enabling **distributed computing**, **federated learning**, and **Big Data analysis** for **multiple research groups** [3].
- Developed assurance methodologies for **real-time verification** of non-functional properties in **edge-cloud continuum**, extending a **5G core network** [6].
- Integrated **machine learning** techniques in edge-cloud continuum environments, guaranteeing **fairness** and **integrity** properties [1], [4].
- QoS-aware scheduling and **cloud deployment** methodology, integrating applications with services for achieving higher level **guarantees** [9].
- Engineered the complete migration of the **research group's data center** from a VM-based architecture to a scalable, **on-premises Kubernetes cluster**, enhancing **service availability and multi-tenancy**.
- Proposed a methodology for detecting web cache deception vulnerabilities in content distribution networks [7].
- **Mentored** students, 11 Bachelor's and 4 Master's, during their thesis, working on **research activities** inherent to the group's projects.

Security & Privacy Research Group (SPRITZ) - Università degli Studi di Padova **Padua, Italy**
Predoctoral Researcher, under the supervision of Prof. Mauro Conti Apr 2020 – Oct 2020

- Six months research grant financed by the "Securing Smart Building Devices" project of the HIT Research Centre.
- Developed a cache-poisoning resistant **Content Distribution Network** system using Named Data Networking based on **real-time contents classification** and **popularity prediction**.

- Experimentally verified its effectiveness in a **network topology** simulating the major Internet switches in Germany.

2 Teaching, supplementary teaching, and student service activities

2.1 Serminar presentations

He held scientific seminars within national university postgraduate specialization and advanced courses:

- "La gestione tecnica di un incidente informatico", "Il professionista della cybersecurity: aspetti regolamentari e operativi (9ZX)" Specialization course at University of Milan, 29/07/2025

He held scientific seminars within national university Bachelor's and Master's courses:

- "Monitoring Services Using Grafana Stack", "Cloud Computing Technologies" Master's course at University of Milan, Department of Computer Science, 20/05/2025
- "Monitoring of Services in Distributed Cloud-ready Environments", "Cloud Computing Technologies" Master's course at University of Milan, Department of Computer Science, 28/05/2024
- "The Hitchhiker's Guide to Cloud Services Protocols", "Cloud Computing Technologies" Master's course at University of Milan, Department of Computer Science, 21/05/2023

He also held seminars at renowned national and international institutes:

- "Assurance-aware 5G Edge-Cloud Architectures for Intensive Data Analytics", MuseMI at University of Milan, Department of Informatics, 27/02/2024

2.2 Tutoring activities at the university level

He has served as a tutor for the following teachings of the Bachelor's Degree in Security of Information Systems and Networks, Department of Computer Science, University of Milan

- "Computer Networks" (3 CFU, 48 hours): academic year 2022/2023
- "Computer Networks" (1.5 CFU, 24 hours): academic year 2023/2024

Activities include i) preparation of support materials for students (exercises, handouts, further study materials); ii) lectures together with the lecturer in charge of the teaching; iii) participation in the committees of proficiency examinations.

2.3 Supervisor/cosupervisor of master's and bachelor's theses

He has cosupervised 4 Master's theses, in the area of various topics related to security, assurance evaluation, cloud, microservices and 5G networks.

- Salvatore Rendo. "Monitoring and Anomaly Detection in Distributed Systems: A Scalable Real-Time Solution"
- Giuseppe Lamantea. "Certification of Nix Packages: from software toolchains to Docker compositions"
- Gianluca Lo vecchio. "Data platform Versatility on Kubernetes"
- Marco Cesana. "Application of Intents in a Fully Functional Simulated 5G Testbed"

He has cosupervised 11 Bachelor's theses, in the area of various topics related to security, assurance evaluation, cloud, and microservices.

- Alessandro Cicala. "Continuous verification of non-functional properties in distributed environments"
- Alessandro Corti. "Utilizzo di Terraform per l'automazione di infrastrutture virtuali basate su KubeVirt"
- Alessandro Pinna. "A non-functional property verification framework based on Prometheus"
- Enea Manzi. "Design e sviluppo di una soluzione per la valutazione di sistemi distribuiti"
- Alex Della Bruna. "Design e Sviluppo di un Sistema Distribuito Avanzato per Verifiche di Security Assurance"
- Giulio Pusceddu. "Studio e verifica di scenari di attacco basati su Shellcode"
- Maurizio Merli. "K8s cluster federation with LIQO"
- Matthew Barbier. "Analisi Comparativa di "Large Language Models" per la Generazione di Malware Polimorfico"
- Tiziano Salvi. "Assurance and Edge Computing in 5G Networks: Synergies and Challenges in the Era of Advanced Connection"
- Francesco Minetti. "Studio e sviluppo di un tool per la rilevazione di vulnerabilità di tipo web cache deception"
- Zambelli Michael. "Modelli per verifiche non funzionali di sistemi in cloud"
- Gabriele D'Arrigo. "Apache Hive and Apache Druid Performance testing for MIND"

2.4 Institutional, Organizational and Service Activities

He has participated several times in orientation activities for high school students, e.g. "Academic Open Day".

He has led, as team leader, the University of Padua's cybersecurity team at the national competition CyberChallenge.it 2019.

3 Visiting Periods at International Research Centers

Jun 2023 – Jul 2023 He was invited as a visiting researcher at the Insight SFI Research Centre for Data Analytics, National University of Ireland, Galway Ireland. His research activity, carried out in collaboration with Prof. John Breslin, Dr. Priyanka Verma, Dr. Nitesh Bharot and Dr. Mirco Soderi, focused on the study of techniques for the security and quality assurance of private 5G networks in Industry 4.0.

4 Participation in Research Projects

Has participated/is participating as Principal Contributor in the following research projects:

Catalyst "Incident Co-Pilot" Jan 2024 – Jun 2024
Università degli Studi di Milano
- Designed an **LLM fine-tuning** pipeline for analysis and solution of Telco network errors.
- Collaborated on the development of an **LLM agent** for assisting Telco operators in incident remediation.

"MIND FoodS Hub" Nov 2020 – Mar 2022
Università degli Studi di Milano (POR FESR 2014-2000)
- Developed **edge-cloud continuum** solutions for automatic analysis of agricultural **IoT data**.

Has participated/is participating in the following research projects:

"MUSA - Multilayered Urban Sustainability Action" Jan 2022 – Dec 2025
Università degli Studi di Milano (PNRR, Missione 4, componente 2, investimento 1.5)
- Developed **edge-cloud continuum** solutions integrated into **5G networks** and **MUSA's Cloud Computing platform**.
- Designed **monitoring and assurance methodologies** for edge-cloud applications to improve MUSA's security posture.
- Implemented **QoS-aware deployment solution** for MUSA's hybrid-cloud distributed applications.

Catalyst "Intent Driven Autonomous Network phase 3" Jan 2023 – Jun 2023
Università degli Studi di Milano
- Focused on the integration of **intent-driven** solutions for the automation of **Telco network management**

"One Health Action Hub": University Task Force for the resilience of territorial ecosystems Jan 2022 – Jan 2021
Università degli Studi di Milano (PSR 2021 - GSA - Linea 6, "Piano sostegno alla ricerca")
- Implemented **Big Data pipelines** to collect and analyze the project's data, integrating assurance techniques.

"Sovereign Edge-Hub" Jan 2021 – Dec 2022
Università degli Studi di Milano (PSR 2021/2022 – GSA – Linea 6)
- Developed a **Big Data Engine** based on open-source projects and focused on the **privacy-preserving** management of personal data.

"H2020 CONCORDIA" - Cyber security cOmpeteNCe fOr Research anD InnovAtion Jan 2020 – Nov 2022
Università degli Studi di Milano (European Union's Horizon 2020 Research and Innovation program)
- Extended the 5G network specification for allowing **transparent monitoring**.
- Defined an assurance framework for **5G networks**, providing real-time **QoS and security** verification.

"Data Governance and Data Protection" Nov 2022 – Jan 2024
Università degli Studi di Milano (SERICS - PE00000014 - NRRP MUR program - NextGenerationEU)
- Developed a **Big Data Engine** for research on privacy-preserving solutions in cloud-ready environments.

Has also participated in the following industrial research projects:

VSIX, the Internet Exchange Point (IXP) operated by the University of Padua Oct 2019 – Oct 2020
Università degli Studi di Padova
- Collected real-time traffic for **content popularity classification and prediction**.
- Integrated the prediction model in a **Content Distribution Network** solution based on **Named Data Networking**.

5 Participation in national and international research centers or groups

He actively collaborates with national and international research groups including academic (e.g. University of Galway in Ireland, Beijing University of Posts and Telecommunications in China) and industrial partners (e.g., recently TIM and Huawei) as well as research groups of the various European projects in which he is involved (see Section 4).

6 Participation to conferences, workshops and seminars

Invited speeches and panels at conferences and workshops:
- Keynote speaker at "IEEE WCNC Workshop on Sustainable and Intelligent Green Internet of Things for 6G and Beyond" on "Assurance for 6G-enabled IoT Networks for Public Safety Infrastructures", 24/03/2025, Pisa, Italy.

- Tutorial speaker at "ITADATA 2024" on "Assessing Cybersecurity of Public Safety Infrastructure", 19/09/2024, Pisa, Italy.
- Tutorial speaker at "2024 IEEE World Forum on Public Safety Technology (WF-PST)" on "Assessing Cybersecurity of Public Safety Infrastructure", 14/05/2024, Washington, USA.
- Workshop speaker at "ITADATA 2023" on "Multi-Layer Assurance Methodology for Big Data Pipelines", 12/09/2023, Naples, Italy.
- Workshop speaker at "ITADATA 2022" on "A 5G-IoT enabled big-data infrastructure for data-driven agronomy", 21/09/2022, Milan, Italy.

He has given the following seminars/presentations within research projects and international events:
- "Distributed and Transparent Monitoring in the MUSA Cloud Platform", "MUSA WP1 Meeting", 12/02/2025, Milan, Italy
- "Certification Methodology and Supporting Platform", "MUSA WP1 Meeting", 26/09/2024, Milan, Italy
- "An Assurance specialized Network Function for the 5G Core Network", "CONCORDIA Open Door 2022", 28/10/2022, Munich, Germany
- "2° online Coffee Work", "Progetto UniversiTIM 2020-23", 15/12/2021, Milan, Italy

He has participated as a speaker at various international conferences and congresses to present his scientific articles, including [3], [7], [13], [14], [15], [16], shown in Section 9.4.

7 Professional and service activities

7.1 Revision Activities for Journals

He has carried out reviews of papers submitted to international journals, including recently:
- Elsevier Future Generation Computer Systems
- IEEE ACCESS
- IEEE Internet of Things Magazine
- IEEE Transactions on Cloud Computing
- IEEE Transactions on Consumer Electronics
- IEEE Transactions on Mobile Computing
- IEEE Transactions on Pattern Analysis and Machine Intelligence
- IEEE Transactions on Services Computing
- Mobile Information Systems
- Springer Journal of Ambient Intelligence and Humanized Computing
- Springer Nature Journal of Network and Systems Management
- Journal of King Saud University Computer and Information Sciences

He has obtained the role of *Reviewing Editor* for Springer Nature.

7.2 Revision Activities for Conferences and Workshops

He has carried out reviews of papers submitted to international international conferences, including recently:
- 16th International Conference on Cloud Computing and Services Science (CLOSER 2026), April 2026, Benidorm, Spain
- 15th International Conference on Cloud Computing and Services Science (CLOSER 2025), April 2025, Porto, Portugal
- 40th ACM/SIGAPP Symposium On Applied Computing (SAC 2025)
- 7th International Conference on Attacks and Defenses for Internet-of-Things (ADIoT 2024)
- 2024 IEEE CSR Workshop on Synthetic Data Generation for a Cyber-Physical World (SDGCP)
- 14th International Conference on Cloud Computing and Services Science (CLOSER 2024), May 2024, Angers, France
- IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2024), July 2023, Yokohama, Japan
- IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2023), August 2023, Songdo Incheon, Korea
- 38th International Conference on ICT Systems Security and Privacy Protection (IFIP SEC 2023), June 2023, Poznan, Poland
- 16th International Conference on Signal Image Technology & Internet Based Systems (SITIS 22), October 2022, Dijon, France
- IEEE International Conference on Cloud Computing (IEEE CLOUD 2023), July 2023, Chicago, USA
- 37th ACM/SIGAPP Symposium on Applied Computing (ACM SAC 2022), April 2022, Brno, Czech Republic
- 3rd IEEE Workshop on Artificial Intelligence for HealthCare (AIHC 22), August 2022, Virtual
- IEEE Global Communications Conference (IEEE GLOBECOM 2022), December 2022, Rio de Janeiro, Brazil
- 16th International Conference on Signal Image Technology & Internet Based Systems (SITIS 22), October 2022, Dijon, France
- 21st International Conference on Trust, Security and Privacy in Computing and Communications (IEEE TrustCom 2022), October 2022, Wuhan, China
- IEEE International Conference on Cloud Computing (IEEE CLOUD 2022), July 2022, Barcelona, Spain
- 37th International Conference on ICT Systems Security and Privacy Protection (IFIP SEC 2022), June 2022, Copenhagen, Denmark
- 14th International Conference on Utility and Cloud Computing (UCC 21), December 2021, Leicester, UK
- Theory of Cryptography Conference (TCC 2021), November 2021, Raleigh, USA

- 20th International Conference on Trust, Security and Privacy in Computing and Communications (IEEE TrustCom 2021), October 2021, Shenyang, China
- IEEE International Conference on Cloud Computing (IEEE CLOUD 2021), September 2021, Chicago, IL, USA
- 2nd IEEE Workshop on Artificial Intelligence for HealthCare (AIHC 2021), August 2021, Virtual

7.3 Assignments and organizing activities in international conferences

Worshop Chair of the following international conferences:
- The 4th Italian Conference on Big Data and Data Science, Turin, Italy

Program Committee member of the following international conferences:
- 14th International Conference on Cloud Computing and Services Science, May 2023, Angers, France
- IEEE Cloud Summit 2023, July 2023, Columbia, MD, USA
- 17th International Conference on Signal Image Technology & Internet Based Systems (IEEE SITIS 2023), November 2023, Bangkok, Thailand
- IEEE International Conference on Cloud Computing (IEEE CLOUD 2023), July 2023, Chicago, IL, USA
- IEEE International Conference on Cloud Computing (IEEE CLOUD 2022), July 2022, Barcelona, Spain
- 16th International Conference on Signal Image Technology & Internet Based Systems (IEEE SITIS 2022), October 2022, Dijon, France
- IEEE International Conference on Cloud Computing (IEEE CLOUD 2021), September 2021, Chicago, IL, USA

Publicity Chair of the following international conferences:
- 2025 IEEE CSR Workshop on Synthetic Data Generation for a Cyber-Physical World (SDGCP)
- The 3rd Italian Conference on Big Data and Data Science (ITADATA), September 2024, Pisa, Italy
- The 2nd Italian Conference on Big Data and Data Science (ITADATA), September 2023, Naples, Italy

7.4 Technology transfer

Has contributed/is contributing to the following technology transfer activities:
- From November 2020 collaborates with Moon Cloud Srl, spin-off of Università degli Studi di Milano focused on the monitoring and verification of security aspects of IT systems.
- From November 2020 collaborates with TIM S.p.A. under the affiliation with Università degli Studi di Milano, sharing research results and proof of concepts in the field of 5G networks and edge-cloud computing solutions.

7.5 Participation in conferences and summer schools

He participated in the "Challenges in building Billion Users Cloud Applications" (BUCA) summer school in 2022, organized by senior Google engineers and focused on distributed cloud architectures and development methodologies for highly reliable and scalable systems with consumer applications.

8 Honors and Awards

Best Innovation & Future Techco award **Copenhagen, Denmark**
Issued by *TM Forum* Jul 2023
- The Catalyst project, "Intent Driven Autonomous Network phase 3", in recognition of its pioneering contributions to the field of **Intent Driven Autonomous Networks**.

9 Scientific Publications

9.1 Description of the research activity

The research activity focused on distributed software architectures based on Edge Cloud Continuum infrastructures. In particular, the research focused on Quality and Security Assurance methodologies with the aim of verifying non-functional properties at the architecture and infrastructure level. More specifically, it has/is investigating Security Assurance techniques and its applications for the design and evaluation of distributed systems, focusing mainly on i) architectures for Cloud, Edge, IoT platforms, and 5G networks; ii) assurance and certification techniques for software and services in distributed environments; iii) advanced network protocols for efficient content distribution; iv) Big Data platforms and data analysis pipelines .
Given the increasing prevalence of distributed services in Cloud platforms and their deployment in Edge nodes closer to the user or data source, there is a growing demand for verifiable or certified Cloud Edge Continuum systems. Its research aims at developing methodologies and solutions to ensure advanced functional properties in these systems, such as reliability, privacy and security. For this reason, it is applying assurance solutions on all levels of these infrastructures, from hardware, down to applications, networks and clusters. In order to improve Contend Distribution Network (CDN), developed a methodology for distributed and collaborative verification and certification of Information Centric Networks [11], [15] and a more secure alternative to the main Named Data Networking (NDN) data structure [16]. In the area of 5G networks, he worked on extending core network protocols

to ensure better monitoring and service inspectability capabilities and integrated assurance and certification solutions, verifying their feasibility in a test bed with MEC capabilities for deploying services in Edge Continuum [12]. Developed a methodology for the assurance of analytics processes in Big Data for distributed workflows in the Edge Cloud Continuum [10], [13], then applied it to the MIND FoodS Hub project infrastructure, automating the security and quality verification of the produced analyses [14]. Worked on defining a method for deploying services in the Edge Cloud Continuum by providing quality of service guarantees by integrating the peculiarities of available data centers [9]. Demonstrated the effectiveness of Web Cache Deception attacks against a variety of CDN and web cache services [7]. Participated in the definition, design and implementation of the Edge Cloud Computing architecture of the MUSA project [3]. More recently, he is working on integrating LLM-based solutions for managing complex system configurations to simplify and improve the work of field operators. In this area, it is exploring Federated Learning systems to ensure privacy and scalability on a large scale.

9.2 Publications Details

His research activity has touched several contiguous areas for applied methodologies as described in Section 9.1 and has produced publications in prestigious journals (3 Q1 journals according to Scimago) distributed over the research areas addressed.

Source Google Scholar
h-index: 7
Total number of citations: 86
Google Scholar Profile https://scholar.google.com/citations?user=8IkjOZEAAAAJ&hl=it

Source Scopus
h-index: 5
Total number of citations: 57
Scopus Profile https://www.scopus.com/authid/detail.uri?authorId=57216288254

Data updated in June 2025.

9.3 Summary of Publications

The research activity resulted in several publications, listed in Section 9.4, and classified as follows:
- 3 publications on international journals: [6], [10], [11] of which
  - 3 with SJR Q1
- 13 publications in proceedings of international conferences and workshops: [1], [3], [4], [7], [9], [12], [13], [14], [15], [16]
- 3 Book chapters: [2], [8]
- 1 Doctoral Thesis: [5]

9.4 List of Publications

[1] M. Anisetti, C. A. Ardagna, F. Berto, and A. D. Bruna, "ML Assurance in 6G-Enabled Edge-Cloud Continuum Workflows," in *2025 IEEE Wireless Communications and Networking Conference (WCNC)*, Mar. 2025, pp. 1–6. doi: 10.1109/WCNC61545.2025.10978637.

[2] C. A. Ardagna, E. Damiani, and F. Berto, "Script Language Security," *Encyclopedia of Cryptography, Security and Privacy*. Springer, Cham, pp. 2177–2179, 2025. doi: 10.1007/978-3-030-71522-9_657.

[3] M. Anisetti *et al.*, "MUSA: A Platform for Data-Intensive Services in Edge-Cloud Continuum," in *Advanced Information Networking and Applications*, L. Barolli, Ed., Cham: Springer Nature Switzerland, Apr. 2024, pp. 327–337. doi: 10.1007/978-3-031-57931-8_32.

[4] S. Maghool, P. Ceravolo, and F. Berto, "A Novel Assurance Procedure for Fair Data Augmentation in Machine Learning," in *Proc. of AIEB 2024: Workshop on Implementing AI Ethics through a Behavioural Lens*, Santiago de Compostela, Spain: CEUR-WS, Apr. 2024, pp. 25–36. [Online]. Available: https://hdl.handle.net/2434/1159100

[5] F. Berto, "Assurance-aware 5G Edge-Cloud Architectures for Intensive Data Analytics," Milan, 2024. Accessed: Apr. 25, 2024. [Online]. Available: https://hdl.handle.net/2434/1021895

[6] F. Berto, C. A. Ardagna, M. Banzi, and M. Anisetti, "Assurance in Advanced 5G Edge Continuum," *IEEE Access*, vol. 12, pp. 178659–178671, 2024, doi: 10.1109/ACCESS.2024.3503437.

[7] F. Berto, F. Minetti, C. Ardagna, and M. Anisetti, "A Methodology for Web Cache Deception Vulnerability Discovery," in *Proceedings of the 14th International Conference on Cloud Computing and Services Science - CLOSER*, SciTePress, 2024, pp. 231–238. doi: 10.5220/0012692000003711.

[8] C. A. Ardagna, E. Damiani, and F. Berto, "Script Language Security," *Encyclopedia of Cryptography, Security and Privacy*. Springer Berlin Heidelberg, Berlin, Heidelberg, pp. 1–3, Sep. 2023. doi: 10.1007/978-3-642-27739-9_657-2.

[9] M. Anisetti, F. Berto, and R. Bondaruc, "QoS-Aware Deployment of Service Compositions in 5G-Empowered Edge-Cloud Continuum," in *2023 IEEE 16th International Conference on Cloud Computing (CLOUD)*, IEEE, Jul. 2023, pp. 471–478. doi: 10.1109/CLOUD60044.2023.00063.

[10] M. Anisetti, C. A. Ardagna, and F. Berto, "An assurance process for Big Data trustworthiness," *Future Generation Computer Systems*, vol. 146, pp. 34–46, 2023, doi: 10.1016/j.future.2023.04.003.

[11] M. Anisetti, C. A. Ardagna, F. Berto, and E. Damiani, "A Security Certification Scheme for Information-Centric Networks," *IEEE Transactions on Network and Service Management*, vol. 19, no. 3, pp. 2397–2408, Sep. 2022, doi: 10.1109/TNSM.2022.3165144.

[12] M. Anisetti, F. Berto, and M. Banzi, "Orchestration of data-intensive pipeline in 5G-enabled Edge Continuum," in *2022 IEEE World Congress on Services (SERVICES)*, Jul. 2022, pp. 2–10. doi: 10.1109/SERVICES55459.2022.00025.

[13] M. Anisetti, N. Bena, F. Berto, and G. Jeon, "A DevSecOps-based Assurance Process for Big Data Analytics," in *2022 IEEE International Conference on Web Services (ICWS)*, Barcelona, Spain: IEEE, Jul. 2022, pp. 1–10. doi: 10.1109/ICWS55610.2022.00017.

[14] F. Berto *et al.*, "A 5G-IoT enabled Big Data infrastructure for data-driven agronomy," in *2022 IEEE Globecom Workshops (GC Wkshps)*, IEEE, 2022, pp. 588–594. doi: 10.1109/GCWkshps56602.2022.10008727.

[15] M. Anisetti, C. A. Ardagna, F. Berto, and E. Damiani, "Security Certification Scheme for Content-centric Networks," in *2021 IEEE International Conference on Services Computing (SCC)*, IEEE, Sep. 2021, pp. 203–212. doi: 10.1109/SCC53864.2021.00033.

[16] F. Berto, L. Calderoni, M. Conti, and E. Losiouk, "Spatial bloom filter in named data networking: a memory efficient solution," in *Proceedings of the 35th Annual ACM Symposium on Applied Computing*, Brno Czech Republic: Association for Computing Machinery, Mar. 2020, pp. 274–277. doi: 10.1145/3341105.3374074.

10 Leadership and Activities

CINI - Consorzio Interuniversitario Nazionale per l'Informatica **Italy**
Member and of the "Data Science" and "Cybersecurity" national laboratories Apr 2018 – Present

- Part of the **organizing committee** of ITADATA, the **international conference** of the "Data Science" lab, and the associated national **data science competition**, ITADATA Hack.
- Participated to national events and competitions of the cybersecurity national lab.

mhackeroni (national inter-university cybersecurity team) **Italy**
Member Apr 2018 – Present

- Participated in several **international cybersecurity competitions**, including **DEFCON**, **HITCON**, **ENOWARS**, **MidnightSun CTF**, **Google CTF**, **Facebook CTF**, **Hack-a-Sat**, **CSAW CTF**, **VolgaCTF**, **Plaid CTF**.

NoPwnIntended (University of Padua's cybersecurity team) **Padua, Italy**
Member Apr 2018 – Present

- Participated in several **international cybersecurity competitions**.
- Led the university team to the **national selection competition** of CyberChallenge.

11 Skills, Languages, Interests

- **Languages**: Italian (Native speaker), English (Proficient speaker - B2 Certificate).
- **Programming**: Rust, Python, Go, Haskell, C, C++, JavaScript, Typescript, Java, Scala, LaTeX.
- **Data Analytics and ML**: Numpy, Pandas, Polars, Plotly, Torch, Sklearn, Spark.
- **Cybersecurity**: Certification, Security Assurance, Network analysis, Static Analysis, Web exploitation, Security Assessment.
- **Web Development**: Axum, Tonic, React, Node.js, FastAPI, GRPC, GraphQL.
- **Tools**: Linux, Git, Docker, DevOps, Kubernetes, Nix, Jupyter Notebook, OpenAPI, Protobuf, ZeroMQ, Cloud Providers (AWS, GCP).
- **Teaching**: Computer networks, Programming languages, Application monitoring, Cloud computing infrastructures, Code versioning systems.
- **Interests**: Video games, Music and video production, Cybersecurity Competitions, Reading books, Embedded development, NixOS package maintainer, Flight simulators.

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