

Matteo Franzil

matteo.franzil.com | github.com/mfranzil

PROFESSIONAL PROFILE

Skilled young researcher with theoretical and technical experience in network management, monitoring, and security. Highly motivated and resourceful, is capable of working independently with minimal supervision and in a team. Works well under pressure, and excels at time management, problem solving, multitasking, and organization. He is also a proficient communicator and teacher, with a passion for sharing knowledge and learning from others.

RESEARCH INTERESTS AND KNOWLEDGE AREAS

- Network Monitoring and Observability
- Virtualization and Containerization
- Edge and Cloud Infrastructures
- Cloud Orchestration
- Cyber and Network Security
- Software-Defined Networking
- Machine and Deep Learning
- Network Configuration and Automation

EDUCATION

- **PhD in Information Engineering and Computer Science** Nov 2024 — ongoing
Trento (TN)
University of Trento
 - Research area: Opportunistic Monitoring for Cloud-to-Edge Environments
 - Grant funded by Fondazione Bruno Kessler
- **Master's Degree in Computer Science** Sep 2020 — Oct 2022
Trento (TN)
University of Trento
 - Areas: Systems and Networks, Cloud Computing, Cyber Security
 - Mark: 110L/110
- **Bachelor's Degree in Computer Science** Sep 2017 — Jul 2020
Trento (TN)
University of Trento

EXPERIENCE

- **Researcher** Mar 2022 — Nov 2023
Trento (TN)
Fondazione Bruno Kessler
 - **PhD Student** (Nov 2024 —)
See Education section for details
 - **Researcher** (Mar 2022 — Oct 2024)
 - **Intern** (Mar 2022 — Jul 2022)
- **Teaching Assistant** Oct 2020 — ongoing
Trento (TN)
University of Trento

Course	Type	Link	A.Y.	Years
Operating Systems	English, Undergraduate	Website	from 2024–2025	2
Databases	English, Undergraduate	Website	from 2024–2025	2
Cloud Computing	English, Graduate	Website	from 2022–2023	4
Probability	Italian, Undergraduate	Website	2020–2021 to 2022–2023	3
Programming 1	Italian, Undergraduate	Website	2020–2021 to 2023–2024	3

LANGUAGES

- **Italian: Mother tongue**
- **English: Cambridge Level 3 Certificate — C2**
- **French: A2**
- **Spanish: A2**

MAIN WORKS

- **Exploiting Kubernetes Image Pull for Denying Availability of Clusters** 2025
L. A. Dias Knob, M. Franzil, D. Siracusa
in Transactions on Dependable and Secure Computing
Keywords: Kubernetes, APIs, Denial-of-Service attacks, containerd
DOI 10.1109/TDSC.2025.3641311
- **Sharpening Kubernetes Audit Logs with Context Awareness** 2025
M. Franzil, V. Armani, L. A. Dias Knob, D. Siracusa
in Computer Networks
Keywords: Kubernetes, audit logs, context awareness, security
DOI 10.1016/j.comnet.2025.111890
- **Carbon-Aware Spatio-Temporal Workload Shifting in Edge-Cloud Environments: A Review and Novel Algorithm** 2025
N. Asadov, V. Coroamă, M. Franzil, S. Galantino, M. Finkbeiner
in Sustainability
Keywords: Scheduling, energy efficiency, edge computing, cloud computing
DOI 10.3390/su17146433
- **Work-in-Progress: A Sidecar Proxy for Usable and Performance-Adaptable End-to-End Protection of Communications in Cloud Native Applications** 2024
S. Berlato, M. Rizzi, M. Franzil, S. Cretti, P. De Matteis, R. Carbone
in 1st Workshop on Operating Systems and Virtualization Security (OSVS 2024)
Keywords: Sidecar proxies, end-to-end encryption, cloud native
DOI 10.1109/eurospw61312.2024.00086
- **Real-Time Monitoring of the QUIC Protocol** Oct 2022
Master's Degree Thesis
Keywords: QUIC, programmable data planes, eBPF, XDP, end-host monitoring
DOI <https://matteo.franzil.com/etc/pdf/master-thesis.pdf>

MAIN SUPERVISED THESES

- **Empowering End-Host Monitoring through Connection-Tracking Insights** 2025
Edoardo Mich – Master's Degree Thesis
Keywords: eBPF, end-host monitoring
- **Prompt-based Generation of Kubernetes Manifests** 2025
Ulises Emiliano Sosa – Master's Degree Thesis
Keywords: Kubernetes, Large Language Models, DevOps
- **Evaluating Large Language Models for Automatic Dockerfile Generation** 2025
Enrico Carnelos – Master's Degree Thesis
Keywords: Docker, Large Language Models, DevOps
- **Cloud Infrastructure Management for Online Development Environments** 2025
Nicola Lovo – Bachelor's Degree Thesis
Keywords: Kubernetes, cloud infrastructure
- **LogGraphModel: Improving log visualization in Kubernetes** 2025
Marco Zani – Bachelor's Degree Thesis
Keywords: Kubernetes, log visualization
- **Monitoring the Monitor: Analysis of eBPF's Behavior in Virtualised Environments** 2024
Matteo Rizzi – Master's Degree Thesis
Keywords: eBPF, XDP, virtualization, monitoring

LATEST SEMINARS AND PRESENTATIONS

- **Sharpening Kubernetes Audit Logs with Context Awareness** Jan 2025
INW 2025, Moena (Italy)
Speaker at the Italian Networking Workshop

- **Introduction to Research** Apr 2024
Fondazione Bruno Kessler, Trento (Italy)
Seminar on the basics of research, aimed at new interns and junior researchers
- **AI and Research** Dec 2023
Fondazione Bruno Kessler, Trento (Italy)
Seminar on the use of AI to aid research tasks, with a focus on the state of the art in AI search tools

LATEST PROJECTS AND GRANTS

- **FLUIDOS: Flexible, scalable and secure decentralizeD Operating System** 2023 — 2024
Task Leader of T6.3, “Cost-effective and energy-aware infrastructure”.
Exploration of machine learning techniques for predicting energy demand of edge computing tasks.
🔗 <https://cordis.europa.eu/project/id/101070473>
- **Fast and Scalable Shortest Path Recovery for Multi-Domain Segment Routing Networks** 2022 — 2023
Efficient shortest path recovery algorithms for Segment Routing deployments
Project funded by Cisco Systems Inc.

TECHNICAL SKILLS

Network and system administration

Linux network stack (iptables, eBPF)
Bash scripting, Ansible, Terraform
Hardware and software deployment and maintenance
LAN design and management

Cloud and Virtualization

Docker, Kubernetes
Azure, Google Cloud Platform, AWS, OpenStack
Proxmox, MaaS, VMWare/ESXi, Hyper-V
Ansible, Terraform, Falco, Prometheus, Grafana

Development

Python: NetworkX, OpenCV, Numpy, TensorFlow
HTML, CSS, JavaScript
Python-, Java-, PHP- and JS-based frameworks

Cyber Security

Metasploit, Nmap, Wireshark, OpenVAS, Nessus
Fortinet/FortiOS, Juniper, Cisco platforms

Other

LaTeX, Databases and SQL (PostgreSQL, MySQL)
Rust, Lua, Lisp, Go, R, C, C++

OTHER SKILLS

Multimedia skills

Photography, photo editing
Graphics design and editing
Video editing and post-production

Miscellaneous

Computer assembly and repair
Event management and organization