

# MARCO FALTELLI

## CONTACT INFORMATION

### ENEA - Frascati Research Center

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*Google Scholar:* [scholar.google.it/citations?user=joXyxf0AAAAJ&hl](https://scholar.google.it/citations?user=joXyxf0AAAAJ&hl)

## RESEARCH INTERESTS

- High-Performance Computing, Fast Packet Processing, Hardware-Software Co-design, Parallel Computing, Data Center Networks, SmartNIC/FPGA offloading
- Network Drivers, Operative Systems

## EDUCATION

### University of Rome “Tor Vergata”

*PhD in Computer Science, Control and GeoInformation*

*Rome, Italy*

November 2019 - June 2023

*Thesis: Towards resilient and effective network services*

*Advisors: Prof. Giuseppe Bianchi, Prof. Francesco Quaglia*

*Final Evaluation: Laude (top 5% quality)*

*Master’s Degree in Computer Engineering*

October 2017 - October 2019

*Thesis: A state-machine based platform for portable transport protocols*

*Advisors: Prof. Giuseppe Bianchi, Prof. Francesco Quaglia*

*Final Evaluation: 110/110 cum laude*

*Bachelor’s Degree in Computer Engineering*

October 2014 - October 2017

*Final Evaluation: 110/110*

## TECHNICAL STRENGTHS

### Programming Languages

C, C++, Java, Python, Javascript, Linux Kernel, Android, SQL, HTML

### Programming Skills

non-blocking algorithms, code optimization, compilers, profilers, debuggers

### HPC

MPI, OpenMP, RDMA, GPU offloading, HTCondor

### Networking

SDN, NFV, DPDK, eBPF/XDP, Network Drivers, P4

### Software & Tools

IDE, git, Matlab, R, MS Office, LaTeX

### Frameworks & Services

Amazon AWS, ML (Tensorflow, Keras), Big Data (Hadoop, Flink)

### Operative Systems

Linux, Windows 10, OS X

## WORK EXPERIENCE

### ENEA

Researcher

Frascati, Italy

December 2023 - present

- Researcher in the ICT-HPC department

### University of Rome “Tor Vergata”

Technologist

Rome, Italy

March 2023 - December 2023

- Parallel computing and code optimization methods for the National Centre for HPC, Big Data and Quantum Computing - NextgenerationEU project

### Microsoft

Research Intern

Cambridge, United Kingdom

July 2022 - Oct. 2022

- High-performing optimization methods for robots path planning in the Silica project

### NEC Laboratories Europe

Research Intern

Heidelberg, Germany

October 2021 - Dec. 2021

- Acceleration methods for 5G edge computing scenarios

### CNIT

Student Researcher

Rome, Italy

October 2017 - December 2019

- Developer and maintainer for FlowBlaze and XTRA, open source projects for fast and stateful packet processing in hardware. Projects conducted under the H2020-5G PICTURE grant.
- Worked on a railway use-case scenario for ensuring session continuity as part of the H2020-5G PICTURE project.

### University of Rome Tor Vergata

Computer Science tutor

Rome, Italy

Nov. 2020 - March 2021

## AWARDS & HONORS

- Winner of a 2022 **Microsoft Research PhD Fellowship**
- Participation to the 2023 **CERN School of Computing**
- “A Fully Portable TCP Implementation Using XFSMs” has earned the 3rd place in the ACM SIGCOMM 2018 Student Research Competition (Undergraduate class).
- Winner of a scholarship from the Italian Ministry of Education for outstanding student results in 2017.

## PUBLICATIONS

- M. Faltelli, G. Belocchi, F. Quaglia, S. Pontarelli, and G. Bianchi. Metronome: adaptive and precise intermittent packet retrieval in DPDK (extended version). In *IEEE/ACM Transactions on Networking*, Oct. 2022
- M. Faltelli, G. Belocchi, F. Quaglia, S. Pontarelli, and G. Bianchi. Metronome: adaptive and precise intermittent packet retrieval in DPDK. In *ACM CoNEXT 2020*
- G. Bianchi, M. Welzl, A. Tulumello, F. Gringoli, G. Belocchi, M. Faltelli, and S. Pontarelli. XTRA: Towards Portable Transport Layer Functions. *IEEE Transactions on Network and Service Management*, Dec 2019

- V. Bruschi, M. Faltelli, A. Tulumello, S. Pontarelli, F. Quaglia, and G. Bianchi. Offloading online MapReduce tasks with stateful programmable data planes. In *IEEE NETPROC 2020*
- G. Bianchi, M. Faltelli, and V. Bruschi. Back to the Future: Towards Hardware "Netputing" Architectures. In *IEEE MedComNet 2020*
- G. Bianchi, M. Welzl, A. Tulumello, G. Belocchi, M. Faltelli, and S. Pontarelli. A Fully Portable TCP Implementation Using XFSMs. In *ACM SIGCOMM 2018 Posters and Demos*
- M. Spaziani Brunella and M. Faltelli. Exploiting Foreshadow-VMM. Technical report, CNIT, 2019