

Matteo Bertrone

SOFTWARE ENGINEER · RESEARCH ASSISTANT AT POLYTECHNIC OF TURIN

24, Corso Duca degli Abruzzi, Turin, Italy 10129

☎ (+39) 334 798-6923 | ✉ m.bertrone@gmail.com | 🏠 mbertrone.github.io | 📷 mbertrone | 🌐 bertrone



“Everyone thinks of changing the world, but no one thinks of changing himself” - Leo Tolstoy

Summary

I'm research assistant at Department of Control and Computer Engineering of Polytechnic of Turin, Italy, where I'm working on network programmability, SDN and cloud computing, eXpress Data Path (XDP) and eBPF. I deal with distributed programming, APIs design, concurrency, and performance optimization. I love to code, but I also love to share ideas and feedback with my team, not only technical ones.

Work Experience

Polytechnic of Turin

RESEARCH FELLOW & SOFTWARE ENGINEER (C++, eBPF, Go)

Turin, Italy

Jan. 2017 - PRESENT

- Core developer of Polycube, an eBPF-based framework for networking.
- Implemented and designed a system daemon, exposing REST API, able to deploy services, configure them, show current configuration and status, create virtual topologies, and connect them to Docker, namespaces, VMs, NICs. Implemented a CLI to interact with the daemon.
- Developed services (bridge, router, load balancer, nat), exploiting eBPF to be loaded and optimized at runtime, without modifying Linux kernel.
- Designed and developed a clone of iptables firewall, exploiting efficient algorithms and XDP optimizations, leading up to 10x performance gain.

Huawei Technologies

INTERN (C++, eBPF, Go)

Santa Clara, CA, U.S.A.

May. 2018 - Jun. 2018

- Developed Polycube framework and services. Architected natting module and improved design of iptables clone.

Nebbiolo Technologies, INC. (Start-up company)

CONSULTANT (C++, eBPF, Go)

Milpitas, CA, U.S.A.

Feb. 2017 - May. 2017

- Designed and deployed a lightweight bridging networking solution, as a substitute of Linux bridge.

PLUMgrid INC. (Acquired by VMware)

INTERN (eBPF, Go)

Santa Clara, CA, U.S.A.

Sep. 2016 - Jan. 2017

- Developed a networking provider for OpenStack. Increased visibility by publishing it under iovisor community repository.

EiSWORLD

SOFTWARE DEVELOPER (C#)

Turin, Italy

Mar. 2014 - May. 2014

- Developed a network analysis and diagnostic tool for Fiat Chrysler Automobiles, used to debug and detect issues on dealers network.

Projects & Open Source

PolyCube

CORE DEVELOPER - POLYCUBE IS AN OPEN SOURCE FRAMEWORK TO BUILD VIRTUAL NETWORK FUNCTIONS WITH XDP AND eBPF

github.com/polycube-network

Jan. 2017 - PRESENT

iovisor-ovn

MAIN DEVELOPER - IOVISOR-OVN PROVIDES AN EFFICIENT DATA PLANE REPLACEMENT FOR OPENSTACK NETWORKING.

github.com/iovisor/iovisor-ovn

Sep. 2016 - Jan. 2017

Publications

Accelerating Linux Security with eBPF iptables

ACM SIGCOMM 2018 CONFERENCE POSTERS AND DEMOS

Budapest, Hungary

20-25 August 2018

Toward an eBPF-based clone of iptables

NETDEV 0X12, THE TECHNICAL CONFERENCE ON LINUX NETWORKING

Montréal, Canada

11-13 July 2018

Creating Complex Network Services with eBPF: Experience and Lessons Learned

IEEE INTERNATIONAL CONFERENCE ON HIGH PERFORMANCE SWITCHING AND ROUTING

Bucharest, Romania

17-20 June 2018

Presentation

Open vSwitch Fall Conference

DEMO - COUPLING THE FLEXIBILITY OF OVN WITH THE EFFICIENCY OF IOVISOR: ARCHITECTURE AND DEMO

San Jose, CA, U.S.A.

Nov. 2016

Education

Polytechnic of Turin

MASTER'S DEGREE, COMPUTER ENGINEERING, 110/110

Turin, Italy

2014 - 2016

Polytechnic of Turin

BSC DEGREE, COMPUTER ENGINEERING, 110/110

Turin, Italy

2011 - 2014