

Matteo Bertrone

SOFTWARE ENGINEER · RESEARCH ASSISTANT AT POLYTECHNIC OF TURIN

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Objective

Energetic Software Engineer with 2+ years experience in developing robust software. Create impact on community by open sourcing PolyCube. Increase firewall performance by 10X, with bpf-based iptables clone. Speedup creation of network functions by designing a library for developers. An Enthusiastic and Proactive Team Player.

Work Experience

Polytechnic of Turin

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

- Speedup creation of eBPF network programs, by developing a library oriented to developers.
- Implement and design a framework (PolyCube), to deploy custom network services on local/remote hosts.

Turin, Italy

Jan. 2017 - PRESENT

Huawei Technologies

INTERN (C++, eBPF, Go)

- Improve firewall performance +10/20%, by introducing on-the-fly data path recompilation.
- Mitigate DDoS attacks, by dynamically offloading drop rules with XDP.

Santa Clara, CA, U.S.A.

May. 2018 - Jun. 2018

PLUMgrid INC. (Acquired by VMware)

INTERN (eBPF, Go)

- Extend OpenStack networking backend, by architecting and implementing an eBPF based network plugin.
- Increase visibility by open sourcing under iovisor community, and presenting at OvS Fall conference 2016 (San Jose, CA).

Santa Clara, CA, U.S.A.

Sep. 2016 - Jan. 2017

Freelance

SEO FOR A SERVICE COMPANY (GOOGLE SEARCH CONSOLE, ANALYTICS, ADS, FACEBOOK ADS, HTML, CSS)

- Increase organic traffic +600% (+14k unique users/year), by improving contents, mobile responsiveness, site speed.
- Improve local visibility with remarketing campaigns, and targeted advertisement.

Turin, Italy

Jan 2016 - Dec 2018

EiSWORLD

SOFTWARE DEVELOPER FOR FIAT CHRYSLER AUTOMOBILES (C#)

- Improve issue tracking and debugging on dealers network, by developing network analysis and diagnostic tool for FCA.

Turin, Italy

Mar. 2014 - May. 2014

Projects & Open Source

PolyCube

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

- Responsible for designing and implementing core daemon REST API and daemon-service interface.
- Provide value to open source library, by developing bridge, router, nat, and DDoS mitigator functions.

github.com/polycube-network

Jan. 2017 - PRESENT

bpf-iptables

CORE DEVELOPER - BPF-IPTABLES PROVIDES IPTABLES FIREWALL FUNCTIONALITIES WITH XDP AND eBPF

- Improve performance by a factor of 10X, adapting matching algorithms to fit with eBPF architecture.

github.com/mbertrone/bpf-iptables

Feb. 2018 - 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

Teaching

Polytechnic of Turin

TEACHING ASSISTANT - COURSES: COMPUTER NETWORKS - COMPUTER NETWORKS TECHNOLOGIES AND SERVICES

- Led students during laboratory experience with frontal lessons and practical assistance.
- Mentored students, who graduated with excellent votes, by reviewing master's thesis projects.

Turin, Italy

Jan 2018 - Dec 2018

Skills

Programming

C, C++, Go, eBPF, C#, SQL, Bash, Java (order of proficiency)

Others

OOP, REST APIs, Git, Linux

Soft skills

Communication, Problem-solving, Empathy, Collaboration, Open-mindedness

Languages

Italian (native), English (fluent)

Honors & Awards

2010 **Bronze medal**, out of 10k participants, at Italian Olympics in Computer Science

Sirmione, Italy

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

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

Education

Polytechnic of Turin

MASTER'S DEGREE, COMPUTER ENGINEERING

Turin, Italy

2014 - 2016

Polytechnic of Turin

BSC DEGREE, COMPUTER ENGINEERING

Turin, Italy

2011 - 2014