

Matteo Bertrone

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EXPERIENCE

POLYTECHNIC OF TURIN | RESEARCH FELLOW & SOFTWARE ENGINEERING

Jan 2017 – Present | Turin, Italy | (C++, eBPF, Go, Wireshark, Git, Jenkins) | github.com/polycube-network/polycube

- Mentored students, who graduated with excellent votes, by reviewing technical master's thesis work.
- Teaching assistant: led students during laboratory experience of Computer Networks courses, with frontal lessons.
- Improve iptables performance by a factor of 10, developing an eBPF clone using efficient algorithms and optimizations.
- Simplify creation of eBPF network programs, by developing a library with slow path, logging, and ports connection support.
- Implement and design a system daemon (PolyCube), exposing REST API, to deploy and configure eBPF network functions.
- Improve Jenkins testing pipeline execution time by 40%, minimizing dependencies and optimizing test cases.

HUAWEI TECHNOLOGIES | INTERN

Apr 2018 – Jun 2018 | Santa Clara, CA | (C++, eBPF, Go)

- Architect and develop natting module, integrated with eBPF iptables clone, to cooperate with connection tracking.

NEBBIOLO TECHNOLOGIES, INC. (START-UP COMPANY) | CONSULTANT

Feb 2017 – May 2017 | Milpitas, CA | (C++, eBPF, Go)

- Design and implement a 15% faster eBPF based bridging solution, as a substitute of Linux bridge.

PLUMGRID INC. (ACQUIRED BY VMWARE) | INTERN

Sep 2016 – Jan 2017 | Santa Clara, CA | (eBPF, Go) | github.com/iovisor/iovisor-ovn

- 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).

EISWORLD | SOFTWARE DEVELOPER FOR FIAT CHRYSLER AUTOMOBILES

Mar 2014 – May 2014 | Turin, Italy | (C#)

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

PROJECTS

POLYCUBE | CORE DEVELOPER | [GITHUB.COM/POLYCUBE-NETWORK/POLYCUBE](https://github.com/polycube-network/polycube)

Jan 2017 - Present | Open Source framework to build eBPF/XDP network functions

- Work in a 4+ people team, up to 10 including students and external collaborators.
- Responsible for designing and implementing core daemon API and daemon-service interface, CLI and help.
- Develop bridge, router, nat, and DDoS mitigator eBPF functions, compatible with XDP.

EDUCATION

POLYTECHNIC OF TURIN | MASTER'S DEGREE IN COMPUTER ENGINEERING

Oct 2014 - Dec 2016 | Turin, Italy • Cum. GPA: 4.0/4.0

POLYTECHNIC OF TURIN | BSC DEGREE IN COMPUTER ENGINEERING

Oct 2011 - Jul 2014 | Turin, Italy • Cum. GPA: 4.0/4.0

ACTIVITY & AWARDS

- Nov 2016 - Demo - "Coupling the flexibility of ovn with the efficiency of iovisor" - Open vSwitch Conference (San Jose, CA)
- Oct 2010 - Win a bronze medal out of 10k participants at Italian Olympics in Computer Science (Sirmione, Italy)

PUBLICATIONS

- Aug 2018 - Accelerating Linux Security with eBPF iptables - ACM SIGCOMM 2018 Conference Posters and Demos
- Jul 2018 - Toward an eBPF-based clone of iptables - Netdev 0x12, The Technical Conference on Linux Networking
- Jun 2018 - Creating Complex Network Services with eBPF: Experience and Lessons Learned - IEEE HPSR Conference

HOBBIES

- Traveling, experiencing new cultures • Passionate Chef, I love cooking for me and my friends • Photography, help me to see things from different points of view • Play piano and guitar, I love mathematics behind music and harmony.