Matteo **Bertrone**

SOFTWARE ENGINEER · RESEARCH ASSISTANT AT POLYTECHNIC OF TURIN

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"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 Politecnico di Torino, Italy, where I developed Polycube, an open source framework to provide fast, in-kernel, virtualized network functions. I love to code, but I also love to share ideas and feedback with my team, not only technical ones.

I'm working on network programmability, SDN and could computing, eXpress Data Path (XDP) and eBPF. I deal with distributed programming, APIs design, concurrency and performance optimization. I spent some time visiting and collaborating with tech companies in silicon valley, as part of my research work.

Work Experience

Polytechnic of Turin   *Turin, Italy*
RESEARCH FELLOW & SOFTWARE ENGINEER   *Sep. 2017 - PRESENT*
- Core developer of PolyCube: I am part of design and development process of the framework from the very beginning.
- Implemented virtual network services (bridge, router, nat, loadbalancer). Resolved technical challenges due to technology used.
- Managed to create a clone of iptables firewall, exploiting efficient algorithms and XDP optimizations, leading up to 10x performance gain.

Polytechnic of Turin   *Turin, Italy*
RESEARCH SCHOLAR   *Jan. 2017 - Aug. 2017*
- Developed a networking provider for OpenStack (iovisor-ovn). Increased visibility by publishing it under IOVisor community.

Huawei Technologies   *Santa Clara, CA, U.S.A.*
INTERN   *May. 2018 - Jun. 2018*
- Development of PolyCube, as collaboration with Polytechnic of Turin.

Nebbiolo Technologies, INC. (Start-up company)   *Milpitas, CA, U.S.A.*
CONSULTANT   *Feb. 2017 - May. 2017*
- Design and deploy of a lightweight bridging networking solution, as substitute of Linux bridge.

PLUMgrid INC. (Acquired by VMware)   *Santa Clara, CA, U.S.A.*
INTERN   *Sep. 2016 - Jan. 2017*
- Developed networking modules, that can be interconnected to provide networking for OpenStack.
- Overcome language limitations, and achieved an efficient solution without modifying Linux kernel.

EiSWORLD   *Turin, Italy*
SOFTWARE DEVELOPER   *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   *https://polycube.network*
POLYCUBE IS AN OPEN SOURCE FRAMEWORK TO BUILD FAST NETWORK FUNCTIONS WITH XDP AND eBPF   *Jan. 2017 - PRESENT*
- I'm core developer of Polycube, major contribution to design and implement the framework.
- Created a framework for both users and developers. Users can deploy services and connect them together, developers can customize and implement optimized services using eBPF and XDP and the abstraction layer provided by the framework.

Skills

Programming	C/C++, eBPF, Go, C#, JAVA, LaTeX
Tools	Linux, Git
Languages	Italian, English

Education

Polytechnic of Turin   *Turin, Italy*
MASTER'S DEGREE, COMPUTER ENGINEERING, 110/110   *2014 - 2016*

Polytechnic of Turin   *Turin, Italy*
BSC DEGREE, COMPUTER ENGINEERING, 110/110   *2011 - 2014*