Angelo Tulumello

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Education

2019–currently enrolled	**PhD in Telecommunications**, *University of Rome Tor Vergata*, Department of Electronic Engineering, Rome.
2016–2019	**Master's Degree in ICT and Internet Engineering**, *University of Rome Tor Vergata*, Rome.
2013–2016	**Bachelor's Degree in Internet Engineering**, *University of Rome Tor Vergata*, Rome.
2013	**Diploma**, *Liceo Scientifico C.Cavour*, Rome.

Master's Degree Thesis

title	*A framework based on Finite State Machines for portable Transport Layer Functions implementation*
supervisors	Giuseppe Bianchi, Salvatore Pontarelli

Bachelor's Degree Thesis

title	*Stateful dataplane and in-switch telemetry: an implementation of a load-driven forwarding SDN application*
supervisors	Giuseppe Bianchi, Marco Bonola

Experience

2020-2022	**Research Engineer**, *Axbryd*, collaboration with NVIDIA.
	Definition of requirements and implementation of stateful extensions to the P4 language. Deployment of stateful use cases on a P4 stateful software switch (bmv2)
2018-2019	**Research Engineer**, *Axbryd*, Fed4FIRE+ and 5GinFIRE Open Calls.
	Execution of performance experiments of FlowBlaze, a DPDK based software implementation of a stateful switch, in Fed4FIRE+ and 5GinFIRE testbeds
2018	**Research Engineer**, *CNIT*, collaboration with RESI.
	Implementation of a machine learning based software for QoE monitoring of video streaming services, with real-time feature extraction and traffic monitoring at high speed in DPDK
2018-2019	**Part-time Researcher**, *CNIT*, 5GPP 5G-Picture Project.
	Design and implementation of a software stateful switch (FlowBlaze) and related use case development.

2017-2018 **Part-time Researcher**, *CNIT*, H2020 SUPERFLUIDITY Project.
Design and implementation of stateful dataplane (OPP) primitives and use cases for Traffic Offloading Functions (TOF) in 5G context.

Teaching Experience

2022-2023 **Lecturer**, *University of Rome Tor Vergata*, Master's Degree in ICT and Internet Engineering, Network and Systems Defense course.
Delivered lessons about Access Networks, Backbone Networks, Enterprise and Cloud Networking technologies and security, including practical laboratories.

2021-2022 **Assistant Lecturer**, *University of Rome Tor Vergata*, Master's Degree in ICT and Internet Engineering, Network and Systems Defense course.
Delivered lessons about Enterprise and Cloud Networking technologies and security (MPLS, BGP/MPLS Virtual Private Networks, VXLAN and eVPN technology), including practical laboratories.

2019-2021 **Assistant Lecturer**, *University of Rome Tor Vergata*, Master's Degree in ICT and Internet Engineering, Enterprise Networks course.
Delivered lessons about Enterprise Networking and advanced Internet protocols and technologies (MPLS, BGP/MPLS Virtual Private Networks), including practical laboratories.

2018-2019 **Assistant Lecturer**, *University of Rome Tor Vergata*, Bachelor's Degree in Internet Engineering, "Laboratorio di Configurazione e Gestione di Reti Locali" (LCGRL) course.
Delivered lessons about basic networking concepts in Linux systems, including practical laboratories.

Languages

Italian **Mother tongue**
English **Good written and spoken**

List of Publications

[1] M. Bonola, R. Bifulco, L. Petrucci, S. Pontarelli, A. Tulumello, and G. Bianchi, "Implementing advanced network functions for datacenters with stateful programmable data planes," in *2017 IEEE International Symposium on Local and Metropolitan Area Networks (LANMAN)*, IEEE, 2017, pp. 1–6.

[2] G. Bianchi, M. Welzl, A. Tulumello, G. Belocchi, M. Faltelli, and S. Pontarelli, "A fully portable tcp implementation using xfsms," in *Proceedings of the ACM SIGCOMM 2018 Conference on Posters and Demos*, 2018, pp. 99–101.

[3] G. Sviridov, M. Bonola, A. Tulumello, P. Giaccone, A. Bianco, and G. Bianchi, "Lodge: Local decisions on global states in programmable data planes," in *2018 4th IEEE Conference on Network Softwarization and Workshops (NetSoft)*, IEEE, 2018, pp. 257–261.

[4] 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*, vol. 16, no. 4, pp. 1507–1521, 2019.

[5] A. Tulumello, G. Belocchi, M. Bonola, S. Pontarelli, and G. Bianchi, "Pushing services to the edge using a stateful programmable dataplane," in *2019 European Conference on Networks and Communications (EuCNC)*, IEEE, 2019, pp. 389–393.

[6] A. Abdelsalam, A. Tulumello, M. Bonola, S. Salsano, and C. Filsfils, "Pushing network programmability to the limits with srv6 usids and p4," in *Proceedings of the 3rd P4 Workshop in Europe*, 2020, pp. 62–64.

[7] V. Bruschi, M. Faltelli, A. Tulumello, S. Pontarelli, F. Quaglia, and G. Bianchi, "Offloading online mapreduce tasks with stateful programmable data planes," in *2020 23rd Conference on Innovation in Clouds, Internet and Networks and Workshops (ICIN)*, IEEE, 2020, pp. 17–22.

[8] A. Tulumello, A. Mayer, M. Bonola, P. Lungaroni, C. Scarpina, S. Salsano, A. Abdelsalam, P. Camarillo, D. Dukes, F. Clad, *et al.*, "Micro sids: A solution for efficient representation of segment ids in srv6 networks," in *2020 16th International Conference on Network and Service Management (CNSM)*, IEEE, 2020, pp. 1–10.

[9] G. Sviridov, M. Bonola, A. Tulumello, P. Giaccone, A. Bianco, and G. Bianchi, "Local decisions on replicated states (loader) in programmable dataplanes: Programming abstraction and experimental evaluation," *Computer Networks*, vol. 184, p. 107 637, 2021.

ITS

Programming	C/C++, Java, Python, LUA, Android, HTML, CSS, PHP, JavaScript
Frameworks	NS3, DPDK, eBPF/XDP, P4
Software	GNS3, Matlab, Microsoft Word, PowerPoint and Excel