MARCO CANINI

King Abdullah University
of Science and Technology (KAUST)
Thuwal 23955 Saudi Arabia

ACADEMICS

Associate Professor in Computer Science, ***KAUST***, Saudi Arabia — Jul 2019–Present

Assistant Professor in Computer Science, ***KAUST***, Saudi Arabia — Jul 2016–Jun 2019

- Lecturing courses on Computing Systems and Concurrency, Advanced Distributed and Networked Systems, Blockchain Systems and Cryptocurrencies, Computer Systems Support for AI; advising 10 students.
- My research area is cloud computing, distributed systems and networking. I'm currently interested in designing better systems support for AI/ML and provide practical implementations deployable in the real-world.

Assist. Professor in Large Scale and Cloud Computing, ***Université catholique de Louvain***, Belgium — Nov 2013–Aug 2016

- Lectured courses on Cloud Computing and Computer Systems Security.
- Secured 900K EUR of funding; led a Ph.D. student to be awarded a highly competitive FNRS fellowship.
- Developed adaptive techniques to improve performance predictability of cloud data stores. Designed a transactional, distributed SDN control plane for guaranteed, fault-tolerant consistent network updates. Demonstrated benefits of application-network co-design for boosting performance of the Paxos protocol.

Senior Research Scientist, ***TU Berlin & Deutsche Telekom Innovation Laboratories***, Germany — Sep 2012–Oct 2013

- Designed an architecture and methodology for incremental deployment of software-defined networking.
- Co-advised 2 Ph.D. students; co-lectured undergrad course on networking and grad course on applied networking.

Post-Doctoral Researcher, ***EPFL***, School of Computer and Communication Sciences, Switzerland — Aug 2009–Aug 2012

- Built a system that uses symbolic execution and model checking to check for potential faults in production networked system implementations in federated and heterogeneous settings. Pioneered the testing of OpenFlow controller programs and agents. Released a tool (NICE) as open source. Developed practical schemes to improve the energy efficiency of networked systems without compromising performance.

Ph.D., ***University of Genoa***, Department of Communication, Computer and System Sciences, Italy
and ***University of Cambridge***, Computer Laboratory, UK as visiting Ph.D. student — 2006–2009

- Awards: Full Ph.D. scholarship from the University of Genoa
- Thesis: "Accurate real-time traffic classification at high-speed in IP networks"
- Designed and built a hierarchical traffic classification method for network-based application identification employing machine-learned models on a NetFPGA platform. Created a methodology for deriving application traffic ground truth. Designed a per-flow packet sampling scheme enabling online classification at high-speed.

Laurea, ***University of Genoa***, Department of Communication, Computer and System Sciences, Italy — 1999–2005
(Equivalent to a Master of Science following a Bachelor of Science)

- Score: *110/110 with honors*
- Thesis: "Study, development and analysis of network-processor-based techniques for very high-speed IP traffic generation"

INDUSTRY EXPERIENCE

Microsoft Research, Redmond, WA, USA – Consulting Researcher — May 2018

- Spent one month consulting at MSR on datacenter networking and SDN topics. I also engaged with several researchers and started two collaborations that are ongoing.

stacktile GmbH, Berlin, Germany – Co-founder May 2014–Dec 2017

- Co-led technology transfer of research results through a ~500K Euros EXIST grant acquired from the Federal Ministry of Economics and Technology of the German government.

Telefonica Research, Madrid, Spain – Research Collaborator Nov 2010

- Measured the effects of crosstalk in a VDSL2 testbed in the context of an energy-efficient access network design. Discovered that crosstalk reduction allows for a bonus in performance while saving energy.

Google, Mountain View, CA, USA – Software Engineer Intern Jul 2007–Nov 2007

- Developed a fast method to query the global-scale corporate network monitoring infrastructure and a dashboard application reporting network health and device status information. This tool was used 24/7 by network operators for over 5 years.

Intel Research, Cambridge, UK – Senior Research Intern Feb 2006–Dec 2006

- Led the design and implementation of CoMo, a middleware for network data-mining applications. Created a unified data model capable of abstracting the details of many data sources; introduced a new programming paradigm to make it easier to write applications.

National Inter-University Consortium for Telecommunications, Genoa, Italy – Research Assistant Jun 2005–Dec 2005

- Built a tool to perform highly accurate measurements of packet inter-arrival times on Gigabit-speed links based on the Intel IXP2400 network processor.

PUBLICATIONS[1]

CONFERENCES AND JOURNALS

[1] C. Miao, Y. Xiao, M. Canini, R. Dai, S. Zheng, J. Wang, J. Bu, A. Kuzmanovic, Y. Wang, "TENSOR: Lightweight BGP Non-Stop Routing," in *Proceedings of the 2023 ACM SIGCOMM*, Sep 2023.

[2] A. Ivanov, B. Rothenberger, A. Dethise, M. Canini, T. Hoefler, A. Perrig, "SAGE: Software-based Attestation for GPU Execution," in *Proceedings of the 2023 USENIX Annual Technical Conference (USENIX ATC)*, Jul 2023.

[3] A. M. Abdelmoniem, A. N. Sahu, M. Canini, S. A. Fahmy, "REFL: Resource-Efficient Federated Learning," in *Proceedings of the 18th ACM European Conference on Computer Systems (EuroSys)*, May 2023.

[4] M. Bilal, M. Canini, R. Fonseca, R. Rodrigues, "With Great Freedom Comes Great Opportunity: Rethinking Resource Allocation for Serverless Functions," in *Proceedings of the 18th ACM European Conference on Computer Systems (EuroSys)*, May 2023.

[5] S. Liu, Q. Wang, J. Zhang, W. Wu, Q. Lin, Y. Liu, M. Xu, M. Canini, R. Cheung, J. He, "In-Network Aggregation with Transport Layer Transparency for Distributed Training," in *Proceedings of the 28th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, Mar 2023.

[6] S. Horvath, C.-Y. Ho, L. Horvath, A. N. Sahu, M. Canini, P. Richtárik, "Natural Compression for Distributed Deep Learning," in *Proceedings of Mathematical and Scientific Machine Learning (MSML)*, Aug 2022.

[1] All PDFs available from https://mcanini.github.io/.

[7] Y. Yuan, O. Alama, J. Fei, J. Nelson, D. R. K. Ports, A. Sapio, M. Canini, N. S. Kim, "Unlocking the Power of Inline Floating-Point Operations on Programmable Switches," in *Proceedings of the USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Apr 2022.

[8] W. Reda, M. Canini, D. Kostić, S. Peter, "RDMA is Turing complete, we just did not know it yet!," in *Proceedings of the USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Apr 2022.

[9] M. Canini, I. Salem, L. Schiff, E. M. Schiller, S. Schmid, "Renaissance: A self-stabilizing distributed SDN control plane using in-band communications," in *Journal of Computer and System Sciences*, 127, Feb 2022.

[10] A. N. Sahu, A. Dutta, A. M. Abdelmoniem, T. Banerjee, M. Canini, P. Kalnis, "Rethinking gradient sparsification as total error minimization," in *Proceedings of the Conference on Neural Information Processing Systems (NeurIPS)*, Dec 2021.

[11] J. Kim, I. Jang, W. Reda, J. Im, M. Canini, D. Kostić, Y. Kwon, S. Peter, E. Witchel, "LineFS: Efficient SmartNIC Offload of a Distributed File System with Pipeline Parallelism," in *Proceedings of the 2021 ACM SOSP*, Oct 2021.

[12] Z. Zhou, T. Benson, M. Canini, B. Chandrasekaran, "Tardis: A Fault-Tolerant Design for Network Control Planes," in *Proceedings of the 2021 ACM SOSR*, Oct 2021.

[13] J. Fei, C.-Y. Ho, A. N. Sahu, M. Canini, A. Sapio, "Efficient Sparse Collective Communication and its application to Accelerate Distributed Deep Learning," in *Proceedings of the 2021 ACM SIGCOMM*, Aug 2021.

[14] H. Xu, C.-Y. Ho, A. M. Abdelmoniem, A. Dutta, E. H. Bergou, K. Karatsenidis, M. Canini, P. Kalnis, "GRACE: A Compressed Communication Framework for Distributed Machine Learning," in *Proceedings of the IEEE International Conference on Distributed Computing Systems (ICDCS)*, Jul 2021.

[15] A. Sapio, M. Canini, C.-Y. Ho, J. Nelson, P. Kalnis, C. Kim, A. Krishnamurthy, M. Moshref, D. R. K. Ports, P. Richtárik, "Scaling Distributed Machine Learning with In-Network Aggregation," in *Proceedings of the USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Apr 2021.

[16] A. M. Abdelmoniem, A. Elzanaty, M.-S. Alouini, M. Canini., "An Efficient Statistical-based Gradient Compression Technique for Distributed Training Systems," in *Proceedings of MLSys*, Apr 2021.

[17] Y. Jin, T. Zhou, L. Zhao, Y. Zhu, C. Guo, M. Canini, A. Krishnamurthy, "AutoLRS: Automatic Learning-Rate Schedule by Bayesian Optimization on the Fly," in *Proceedings of ICLR*, May 2021.

[18] A. Dethise, M. Canini, N. Narodytska, "Analyzing Learning-Based Networked Systems with Formal Verification," in *Proceedings of IEEE INFOCOM*, May 2021.

[19] A. M. Abdelmoniem, M. Canini, "DC2: Delay-aware Compression Control for Distributed Machine Learning," in *Proceedings of IEEE INFOCOM*, May 2021.

[20] T. E. Anderson, M. Canini, J. Kim, D. Kostić, Y. Kwon, S. Peter, W. Reda, H. N. Schuh, E. Witchel, "Assise: Performance and Availability via Client-local NVM in a Distributed File System," in *Proceedings of USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, Nov 2020.

[21] M. Bilal, M. Canini, R. Rodrigues., "Finding the Right Cloud Configuration for Analytics Clusters," in *Proceedings of SoCC*, Oct 2020.

[22] M. Bilal, M. Serafini, M. Canini, R. Rodrigues, "Do the Best Cloud Configurations Grow on Trees? An Experimental Evaluation of Black Box Algorithms for Optimizing Cloud Workloads," in Proc. PVLDB Endow. 13(11), Aug 2020.

[23] A. Dutta, E. H. Bergou, A. M. Abdelmoniem, C.-Y. Ho, A. N. Sahu, M. Canini, P. Kalnis, "On the Discrepancy between the Theoretical Analysis and Practical Implementations of Compressed Communication for Distributed Deep Learning," in *Proceedings of AAAI Conference on Artificial Intelligence (AAAI)*, Feb 2020.

[24] P. Marcos, M. Chiesa, C. Dietzel, M. Canini, M. Barcellos, "A Survey on the Current Internet Interconnection Practices," in *SIGCOMM Computer Communication Review 50(1)*, Jan 2020.

[25] H. T. Dang, P. Bressana, H. Wang, K. S. Lee, N. Zilberman, H. Weatherspoon, M. Canini, F. Pedone, R. Soulé, "P4xos: Consensus as a Network Service," in *IEEE/ACM Transactions on Networking*, 28(4), Aug 2020.

[26] A. Shukla, S. J. Saidi, S. Schmid, M. Canini, T. Zinner, A. Feldmann, "Towards Consistent SDNs: A Case for Network State Fuzzing," in *IEEE Transactions on Network and Service Management*.

[27] P. Laffranchini, L. Rodrigues, M. Canini, B. Krishnamurthy, "Measurements as First-class Artifacts," in *Proceedings of IEEE Conference on Computer Communications (INFOCOM)*, Apr 2019.

[28] P. Marcos, M. Chiesa, L. Muller, P. Kathiravelu, C. Dietzel, M. Canini, M. Barcellos, "Dynam-IX: a Dynamic Interconnection eXchange," in *Proceedings of the 14th International Conference on emerging Networking EXperiments and Technologies (ACM CoNEXT)*, Dec 2018.

[29] K. L. Bogdanov, W. Reda, Gerald Q. Maguire Jr., D. Kostić, M. Canini, "Fast and Accurate Load Balancing for Geo-Distributed Storage Systems," in *Proceedings of the 9th ACM Symposium on Cloud Computing (SoCC)*, Oct 2018.

[30] A. Gupta, R. Harrison, M. Canini, N. Feamster, J. Rexford, W. Willinger, "Sonata: Query-Driven Streaming Network Telemetry," in *Proceedings of the 2018 ACM SIGCOMM*, Aug 2018.

[31] M. Canini, I. Salem, L. Schiff, E. M. Schiller, S. Schmid, "Renaissance: A Self-Stabilizing Distributed SDN Control Plane," in *Proceedings of the 38th IEEE International Conference on Distributed Computing Systems (ICDCS)*, Jul 2018.

[32] M. Bilal, H. Alsibyani, M. Canini, "Mitigating Network Side Channel Leakage for Stream Processing Systems in Trusted Execution Environments," in *Proceedings of the 12th ACM International Conference on Distributed and Event-based Systems (ACM DEBS)*, Jun 2018.

[33] M. Kuźniar, P. Perešíni, D. Kostić, M. Canini, "Methodology, Measurement and Analysis of Flow Table Update Characteristics in Hardware OpenFlow Switches," in *Computer Networks*, special issue on Security and Performance of SDN/NFV, 2018.

[34] P. Kathiravelu, M. Chiesa, P. de B Marcos, M. Canini, L. Veiga, "Moving Bits with a Fleet of Shared Virtual Routers," in *Proceedings of the IFIP Networking 2018 Conference (NETWORKING)*, May 2018.

[35] M. Chiesa, D. Demmler, M. Canini, M. Schapira, T. Schneider, "SIXPACK: Securing Internet eXchange Points Against Curious onlooKers," in *Proceedings of the 13th International Conference on emerging Networking EXperiments and Technologies (ACM CoNEXT)*, Dec 2017.

[36] G. Antichi, I. Castro, M. Chiesa, E. L. Fernandes, R. Lapeyrade, D. Kopp, J. H. Han, M. Bruyere, C. Dietzel, M. Gusat, A. W. Moore, P. Owezarski, S. Uhlig, M. Canini, "ENDEAVOUR: A Scalable SDN Architecture for Real-World IXPs," in *IEEE Journal on Selected Areas in Communications, 35(11)*, Special issue on Emerging Technologies in Software-driven Communication, Nov 2017.

[37] L. Suresh, P. Bodik, I. Menache, M. Canini, F. Ciucu, "Distributed Resource Management Across Process Boundaries," in *Proceedings of the 8th ACM Symposium on Cloud Computing (SoCC)*, Apr 2017.

[38] M. Bilal, M. Canini, "Towards Automatic Parameter Tuning of Stream Processing Systems," in *Proceedings of the 8th ACM Symposium on Cloud Computing (SoCC)*, Apr 2017.

[39] W. Reda, L. Suresh, S. Braithwaite, M. Canini, D. Kostić, "Rein: Taming Tail Latency in Key Value Stores via Multiget Scheduling," in *Proceedings of the 7th ACM European Conference on Computer Systems (EuroSys)*, Apr 2017.

[40] T. D. Nguyen, M. Chiesa, M. Canini, "Decentralized Consistent Updates in SDN," in *Proceedings of the ACM Symposium on SDN Research (SOSR)*, Apr 2017.

[41] L. Ryzhyk, N. Bjørner, M. Canini, J.-B. Jeannin, C. Schlesinger, D. B. Terry, G. Varghese, "Correct by Construction Networks using Stepwise Refinement," in *Proceedings of the 14th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Mar 2017.

[42] H. T. Dang, M. Canini, F. Pedone, R. Soulé, "Paxos Made Switch-y," in *ACM SIGCOMM Computer Communication Review 46(2)*, Apr 2016.

[43] A. Gupta, R. MacDavid, R. Birkner, M. Canini, N. Feamster, J. Rexford, L. Vanbever, "An Industrial-Scale Software Defined Internet Exchange Point," in *Proceedings of the 13th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Mar 2016. *Community Award*.

[44] P. Perešíni, M. Kuźniar, M. Canini, D. Venzano, D. Kostić, J. Rexford, "Systematically Testing OpenFlow Controller Applications," in *Computer Networks 92(2)*, special issue on Software-Defined Networking, Dec 2015.

[45] L. Suresh, M. Canini, S. Schmid, A. Feldmann, "C3: Cutting Tail Latency in Cloud Data Stores via Adaptive Replica Selection," in *Proceedings of the 12th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, May 2015.

[46] M. Canini, P. Kuznetsov, D. Levin, S. Schmid, "A Distributed and Robust SDN Control Plane for Transactional Network Updates," in *Proceedings of IEEE Conference on Computer Communications (INFOCOM)*, Apr 2015.

[47] H. T. Dang, D. Sciascia, M. Canini, F. Pedone, R. Soule, "NetPaxos: Consensus at Network Speed," in *Proceedings of ACM Sigcomm Symposium on SDN research (SOSR)*, Jun 2015.

[48] D. Levin, M. Canini, S. Schmid, F. Schaffert, A. Feldmann, "Panopticon: Reaping the Benefits of Incremental SDN Deployment in Enterprise Networks," in *Proceedings of the 2014 USENIX Annual Technical Conference (USENIX ATC)*, Jun 2014.

[49] M. Canini, P. Kuznetsov, D. Levin, S. Schmid, "Brief Announcement: Towards Distributed and Reliable Software Defined Networking," in *Proceedings of International Symposium on Distributed Computing (DISC)*, Oct 2013.

[50] M. Kuźniar, P. Perešíni, M. Canini, D. Venzano, D. Kostić, "A SOFT Way for OpenFlow Interoperability Testing," in *Proceedings of the 8th International Conference on emerging Networking EXperiments and Technologies (ACM CoNEXT)*, Dec 2012.

[51] M. Canini, D. Venzano, P. Perešíni, D. Kostić, J. Rexford, "A NICE Way to Test OpenFlow Applications," in *Proceedings of the 9th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Apr 2012.

[52] N. Vasić, D. Novaković, S. Shekhar, P. Bhurat, M. Canini, D. Kostić, "Identifying and Using Energy-Critical Paths," in *Proceedings of the 7th International Conference on emerging Networking EXperiments and Technologies (ACM CoNEXT)*, Dec 2011.

[53] M. Yabandeh, A. Anand, M. Canini, D. Kostić, "Finding Almost-Invariants in Distributed Systems," in *Proceedings of the 30th IEEE Symposium on Reliable Distributed Systems (SRDS)*, Oct 2011.

[54] E. Goma, M. Canini, A. Lopez Toledo, N. Laoutaris, D. Kostić, P. Rodriguez, R. Stanojević, P. Yagüe Valentín, "Insomnia in the Access or How to Curb Access Network Related Energy Consumption," in *Proceedings of the 2011 ACM SIGCOMM*, Aug 2011.

[55] M. Canini, V. Jovanović, D. Venzano, B. Spasojević, O. Crameri, D. Kostić, "Toward Online Testing of Federated and Heterogeneous Distributed Systems," in *Proceedings of the 2011 USENIX Annual Technical Conference (USENIX ATC)*, Jun 2011.

[56] M. Zadnik, M. Canini, "Evolution of Cache Replacement Policies to Track Heavy-Hitter Flows," in *Proceedings of the 12th Passive and Active Measurement Conference*, Mar 2011.

[57] M. Canini, W. Li, M. Zadnik, A. W. Moore, "Experience with High-Speed Automated Application-Identification for Network-Management," in *Proceedings of the 5th ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS)*, Oct 2009.

[58] M. Zadnik, M. Canini, A. W. Moore, D. J. Miller, W. Li, "Tracking Elephant Flows in Internet Backbone Traffic with an FPGA-based Cache," in *Proceedings of the 19th International Conference on Field Programmable Logic and Applications (FPL)*, Aug 2009.

[59] W. Li, M. Canini, A. W. Moore, R. Bolla, "Efficient Application Identification and the Temporal Stability of Classification Schema," *Computer Networks*, vol. 53, no. 6, pp. 790-809, 2009.

[60] M. Canini, D. Fay, D. J. Miller, A. W. Moore, R. Bolla, "Per Flow Packet Sampling for High-Speed Network Monitoring," in *Proceedings of the First International Conference on Communication Systems and NETworks (COMSNETS)*, Jan 2009.

[61] R. Bolla, M. Canini, R. Rapuzzi, M. Sciuto, "On the Double-Faced Nature of P2P Traffic," in *Proceedings of the Sixteenth Euromicro Conference on Parallel, Distributed and Network-Based Processing (PDP)*, Feb 2008.

WORKSHOPS

[1] J. Xin, I. Ilin, S. Zhang, M. Canini, P. Richtarik, "Kimad: Adaptive Gradient Compression with Bandwidth Awareness," in *Proceedings of DistributedDL*, Dec 2023.

[2] M. Ruggeri, A. Dethise, M. Canini, "On Detecting Biased Predictions with Post-hoc Explanation Methods," in *Proceedings of SAFE*, Dec 2023.

[3] N. Alballa, M. Canini, "A First Look at the Impact of Distillation Hyper-Parameters in Federated Knowledge Distillation," in *Proceedings of EuroMLSys*, May 2023.

[4] A. M. Abdelmoniem, C.-Y. Ho, P. Papageorgiou, M. Canini, "Empirical Analysis of Federated Learning in Heterogeneous Environments," in *Proceedings of EuroMLSys*, Apr 2022.

[5] A. M. Abdelmoniem, M. Canini, "Towards Mitigating Device Heterogeneity in Federated Learning via Adaptive Model Quantization," in *Proceedings of EuroMLSys*, Apr 2021.

[6] R. R. Gajjala, S. Banchhor, A. M. Abdelmoniem, A. Dutta, M. Canini, P. Kalnis, "Huffman Coding Based Encoding Techniques for Fast Distributed Deep Learning," in *Proceedings of DistributedML*, Dec 2020.

[7] A. Dethise, M. Canini, S. Kandula, "Cracking Open the Black Box: What Observations Can Tell Us About Reinforcement Learning Agents," in *Proceedings of the 2nd ACM SIGCOMM Workshop on NetAI (NetAI)*, Aug 2019.

[8] A. Dethise, M. Chiesa, M. Canini, "Prelude: Ensuring Inter-Domain Loop-Freedom in SDN-Enabled Networks," in *Proceedings of the 2nd Asia-Pacific Workshop on Networking (APNet)*, Aug 2018.

[9] Y. Alowayed, M. Canini, P. Marcos, M. Chiesa, M. Barcellos, "Picking a Partner: A Fair Blockchain Based Scoring Protocol for Autonomous Systems," in *Proceedings of the Applied Networking Research Workshop (ANRW)*, Jul 2018.

[10] A. Sapio, I. Abdelaziz, A. Aldilaijan, M. Canini, P. Kalnis, "In-Network Computation is a Dumb Idea Whose Time Has Come," in *Proceedings of the ACM SIGCOMM Workshop on Hot Topics in Networks (HotNets)*, Nov 2017.

[11] M. Canini, J. Crowcroft, "Learning Reproducibility with a Yearly Networking Contest," in *Proceedings of the ACM SIGCOMM Reproducibility Workshop*, Aug 2017.

[12] A. Gupta, R. Birkner, M. Canini, N. Feamster, C. Mac-Stoker, W. Willinger., "Network Monitoring as a Streaming Analytics Problem," in *Proceedings of the ACM SIGCOMM Workshop on Hot Topics in Networks (HotNets)*, Nov 2016.

[13] T. D. Nguyen, M. Chiesa, M. Canini, "Towards Decentralized Fast Consistent Updates," in *Proceedings of the ACM, IRTF & ISOC Applied Networking Research Workshop (ANRW)*, Jul 2016.

[14] L. Schiff, S. Schmid, M. Canini, "Ground Control to Major Faults: Towards a Fault Tolerant and Adaptive SDN Control Network," in *Proceedings of the 2nd Workshop on Dependability Issues on SDN, NFV (DISN)*, Jun 2016.

[15] Y. Liu, Y. Li, M. Canini, Y. Wang, J. Yuan, "Scheduling Multi-flow Network Updates in Software-Defined NFV Systems," in *Proceedings of the INFOCOM Workshop on Software-Driven Flexible and Agile Networking (SWFAN)*, Apr 2016.

[16] P. Perešíni, M. Kuźniar, M. Canini, D. Kostić, "ESPRES: Transparent SDN Update Scheduling," in *Proceedings of the ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)*, Aug 2014.

[17] M. Canini, P. Kuznetsov, D. Levin, S. Schmid, "Software Transactional Networking: Concurrent and Consistent Policy Composition," in *Proceedings of the ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)*, Aug 2013.

[18] M. Reitblatt, M. Canini, A. Guha, N. Foster, "FatTire: Declarative Fault Tolerance for Software-Defined Networks," in *Proceedings of the ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)*, Aug 2013.

[19] P. Perešíni, M. Kuźniar, N. Vasić, M. Canini, D. Kostić, "OF.CPP: Consistent Packet Processing for OpenFlow," in *Proceedings of the ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)*, Aug 2013.

[20] M. Kuźniar, M. Canini, D. Kostić, "OFTEN Testing OpenFlow Networks," in *Proceedings of the 1st European Workshop on Software Defined Networks (EWSDN)*, Oct 2012.

[21] M. Canini, D. Kostić, J. Rexford, D. Venzano, "Automating the Testing of OpenFlow Applications," in *Proceedings of the 1st International Workshop on Rigorous Protocol Engineering (WRiPE)*, Oct 2011.

[22] M. Zadnik, M. Canini, "Evaluation and Design of Cache Replacement Policies under Flooding Attacks," in *Proceedings of the 2nd International Workshop on TRaffic Analysis and Classification (TRAC)*, Jul 2011.

[23] M. Canini, D. Novaković, V. Jovanović, D. Kostić, "Fault Prediction in Distributed Systems Gone Wild," in *Proceedings of the 4th ACM SIGOPS/SIGACT Workshop on Large Scale Distributed Systems and Middleware (LADIS)*, Jul 2010.

[24] M. Canini, W. Li, A. W. Moore, R. Bolla, "GTVS: Boosting the Collection of Application Traffic Ground Truth," in *Proceedings of the First International Workshop on Traffic Monitoring and Analysis (TMA)*, May 2009.

[25] R. Bolla, M. Canini, R. Rapuzzi, M. Sciuto, "Characterizing the network behavior of P2P traffic," in *Proceedings of the Fourth International Telecommunication Networking Workshop on QoS in Multiservice IP Networks (IT-NEWS)*, Feb 2008.

[26] R. Bolla, R. Bruschi, M. Canini, M. Repetto, "A High Performance IP Traffic Generation Tool Based on the Intel IXP2400 Network Processor," in *Proceedings of the 2005 Tyrrhenian International Workshop on Digital Communications (TIWDC)*, Jun 2005.

OTHER REFEREED PUBLICATIONS: MAGAZINES, EXTENDED ABSTRACTS, POSTERS, DEMOS

[1] S. Horvath, C.-Y. Ho, L. Horvath, A. N. Sahu, M. Canini, P. Richtárik, "IntML: Natural Compression for Distributed Deep Learning," in *ACM SOSP Workshop on AI Systems*, Oct 2019.

[2] P. Marcos, M. Chiesa, L. Müller, P. Kathiravelu, C. Dietzel, M. Canini, M. Barcellos, "Dynam-IX: a Dynamic Interconnection eXchange," in *ACM SIGCOMM*, Aug 2018.

[3] K. L. Bogdanov, W. Reda, G. Q. Maguire Jr., D. Kostić, M. Canini, "Kurma: Geo-Distributed Load Balancer for Back-End Storage Systems," in *ACM SOSP*, Oct 2017.

[4] A. Sapio, I. Abdelaziz, M. Canini, P. Kalnis, "DAIET: A System for Data Aggregation Inside the Network," in *ACM SoCC*, Sep 2017.

[5] A. Dethise, M. Chiesa, M. Canini, "Privacy-Preserving Detection of Inter-Domain SDN Rules Overlaps," in *ACM SIGCOMM*, Aug 2017.

[6] M. Canini, I. Salem, L. Schiff, E. M. Schiller, S. Schmid, "A Self-Organizing Distributed and In-Band SDN Control Plane," in *IEEE ICDCS*, Jun 2017.

[7] A. Shukla, S. J. Saidi, M. Canini, S. Schmid, A. Feldmann, "Towards meticulous data plane monitoring," in *EuroSys Doctoral Workshop*, Apr 2017.

[8] M. Chiesa, D. Demmler, M. Canini, M. Schapira, T. Schneider, Poster: "Towards Securing Internet eXchange Points Against Curious onlooKers," in *Proceedings of the ACM, IRTF & ISOC Applied Networking Research Workshop (ANRW)*, Jul 2016.

[9] M. Bilal, M. Canini, "Automagic Configuration Optimization for Big Data Processing Systems," in *EuroSys Doctoral Workshop*, Apr 2016.

[10] W. Reda, L. Suresh, M. Canini, S. Braithwaite, Poster: "BRB: BetteR Batch Scheduling to Reduce Tail Latencies in Cloud Data Stores," in *Proceedings of the 2015 ACM SIGCOMM*, Aug 2015.

[11] L. Schiff, S. Schmid, M. Canini, Demo: "Medieval: Towards A Self-Stabilizing, Plug & Play, In-Band SDN Control Network," in *Proceedings of ACM SIGCOMM Symposium on SDN research (SOSR)*, Jun 2015.

[12] M. Canini, A. Feldmann, D. Levin, F. Schaffert, S. Schmid, "Deploying software-defined networks," in *IEEE Computer*, vol. 47, no. 11, Nov 2014 (Invited paper).

[13] N. Laurent, S. Vissicchio, M. Canini, Poster: "SDLoad: An extensible framework for SDN workload generation," in *Proceedings of the ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)*, Aug 2014.

[14] M. Canini, R. Jungers, "The Software-Defined Network Revolution," in *ERCIM News 97,* Apr 2014.

[15] P. Perešíni, M. Kuźniar, M. Canini, D. Kostić, "ESPRES: Easy Scheduling and Prioritization for SDN," in *Proceedings of Open Networking Summit (ONS)*, Mar 2014.

[16] M. Canini, D. De Cicco, P. Kuznetsov, D. Levin, S. Schmid, S. Vissicchio, Poster: "STN: A Robust and Distributed SDN Control Plane," in *Proceedings of Open Networking Summit (ONS)*, Mar 2014.

[17] D. Levin, M. Canini, S. Schmid, A. Feldmann, Demo: "Incremental SDN Deployment in Enterprise Networks," in *Proceedings of the 2013 ACM SIGCOMM*, Aug 2013. *Winner of the ACM Student Research Competition.*

[18] M. Kuźniar, P. Perešíni, N. Vasić, M. Canini, D. Kostić, Poster: "Automatic Failure Recovery for Software-Defined Networks," in *Proceedings of the ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)*, Aug 2013.

[19] D. Levin, M. Canini, S. Schmid, A. Feldmann, Talk and Invited Demo: "Toward Transitional SDN Deployment in Enterprise Networks," in *Open Networking Summit (ONS)*, Apr 2013.

[20] M. Canini, D. Kostić, Poster: "Systematic Software Testing Meets Networking," in *Open Networking Summit (ONS) 2013*, Apr 2013.

[21] P. Perešíni, M. Canini, Poster: "Is Your OpenFlow Application Correct?" in *Proceedings of the 2011 ACM CoNEXT Student Workshop*, Dec 2011.

[22] M. Canini, V. Jovanović, D. Venzano, D. Novaković, D. Kostić, Demo: "Online Testing of Federated, Heterogeneous Distributed Systems," in *Proceedings of the 2011 ACM SIGCOMM*, Aug 2011.

[23] M. Zadnik, M. Canini, Poster: "Evolution of Cache Replacement Policies to Track Heavy-hitter Flows," in *Proceedings of the 6th ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS)*, Oct 2010.

[24] V. Jovanović, M. Canini, G. Kumar, B. Spasojević, O. Crameri, D. Kostić, Poster: "DiCE: Predicting Faults in Heterogeneous, Federated Distributed Systems," in *Proceedings of the 9th USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, Oct 2010.

[25] M. Canini, W. Li, A. W. Moore, Poster: "Toward the Identification of Anonymous Web Proxies," in *Proceedings of the 2009 PAM Student Workshop*, Apr 2009.

[26] W. Li, A. W. Moore, M. Canini, Poster: "Classifying HTTP Traffic in the New Age," in *Proceedings of the 2008 ACM SIGCOMM*, Aug 2008.

BOOK CHAPTERS

[1] M. Canini, R. Rapuzzi, R. Bolla, "Experiences with the Collection of Application Ground Truth Data," in *RECIPE: Robust and Efficient traffic Classification of IP nEtworks*, A. Pescape and C. Sansone, Eds. Napoli: Fridericiana Editrice Universitaria, ISBN: 978-88-833-8081-5, Jul 2009.

NON REFEREED ARTICLES

[1] M. Canini, R. Bolla, "From Ground Truth Collection to On-line Traffic Classification" in *Italian Networking Workshop*, Jan 2009.

SELECTED PRESENTATIONS

- **Scaling Deep Learning and Data Center Applications with Programmable Networks**
  Italian Networking Workshop (INW), *Invited keynote* — Ponte di Legno, Italy, Jan 2023
- **Programmable Networks for Distributed Deep Learning: Advances and Perspectives**
  3rd DistributedML Workshop, *Invited keynote* — Rome, Italy, Dec 2022
- **Co-Design of Network with Distributed Computation / AI System**
  Huawei Strategy and Technology Workshop, *Invited talk* — Virtual, Sep 2022
- **In-Network Computation is a Dumb Idea Whose Time Has Come**
  ACM Symposium on SDN Research (SOSR), *Invited keynote* — San Jose, CA, USA, Apr 2019
- **Scaling Distributed Machine Learning with In-Network Aggregation**
  University of Sydney, *Invited seminar* — Sydney, Australia, Mar 2019
- **Securely Processing Streaming Data in the Cloud**
  Cybersecurity: Future Challenges and Network Defenses 2018 Workshop, *Invited talk* — Riyadh, Saudi Arabia, Mar 2018
- **NetPaxos: Consensus at Network Speed**
  Dagstuhl Seminar on Network Latency Control in Data Centres, *Invited talk* — Schloss Dagstuhl, Germany, Jul 2016

- **Towards a Flexible Software-Defined Network Ecosystem**
  MAKI Scientific Workshop 2016 Robust Communication in Software-Defined and Mobile Networks Software, *Invited talk* Darmstadt, Germany, Apr 2016
- **SDN is dead. Long live SDX!**
  Software Defined Infrastructure / Software Defined Exchange Workshop. Organized by the NSF "Looking Beyond the Internet" Planning Group, *Invited keynote* Washington D.C., USA, Feb 2016
- **SDN Research Directions - Interesting problems to invest time in**
  FORTH Summer School on Software Defined Networks, *Invited lecture* Crete, Greece, Jul 2015
- **C3: Cutting Tail Latency in Cloud Data Stores via Adaptive Replica Selection**
  Università della Svizzera italiana, *Invited seminar* Lugano, Switzerland, Jun 2015

KEY TECHNICAL SKILLS

Systems building

- Extensive experience and understanding in building networked and distributed systems. My work covered many aspects related to measurement & analysis, modeling & simulation, and design & implementation of practical systems
- Advanced applied knowledge of verification and testing techniques for system validation including model checking and symbolic execution

Networking

- Advanced knowledge of major network protocols including IP, TCP, UDP, OSPF, BGP, DNS, HTTP
- In-depth experience with SDN and OpenFlow

Programming

- Proficient in C, C++, C# (.Net), Java, PHP, Ruby, Python; good working knowledge of R, Matlab and Javascript
- Expert in systems programming; advanced knowledge of data analytics (Hadoop, Spark), Web application, network processor and database programming; familiar with Linux kernel programming

TEACHING EXPERIENCE

King Abdullah University of Science and Technology, Computer Science Program

- Developed and lectured CS 230 "Computer Systems Security" Summer 2020
- Developed and lectured CS 290/4E "Computer Systems Support for AI" Fall 2019 & 2021
- Lectured CS 240 "Computing Systems and Concurrency" Fall 2017-19 & 2021-23
- Developed and lectured CS 345 "Advanced Distributed and Networked Systems" Spring 2017 & 2019 & 2021
- Developed and lectured CS 394B "Blockchain Systems and Cryptocurrencies" Spring 2018

Université catholique de Louvain, Polytechnic Engineering School

- Lectured INGI2347 "Computer System Security" Spring 2014 & 2015 & 2016
- Developed and lectured INGI2145 "Cloud Computing" Fall 2014 & 2015

TU Berlin, Electrical Engineering and Computer Science

- Co-lectured "Network Protocols and Architectures" Fall 2012
- Co-lectured "Router Lab" Spring 2013

EPFL, School of Computer and Communication Sciences

- Guest-lectured "Advanced Computer Networks and Distributed Systems" graduate course Fall 2011

- Guest-lectured "Operating Systems" undergraduate course Spring 2010
- Supervised groups of graduate students along their course and semester projects

CNOSFAP Liguria, Center for Continuing Education

- Originated and taught the course "Technologies and Applications for the World Wide Web" Fall 2002

RESEARCH FUNDING

- **"Training a LLM with a Split-Learning-like Method" – 2023**
  KAUST-SDAIA AI Grant Program
  PI: Marco Canini, Co-PI: Zuhair Khayyat
  53K USD
- **"Distilling the Cloud: Unlocking Decentralized Accelerators for Efficient Stream Processing" – 2023**
  KAUST Competitive Research Grants (CRG) Program
  PI: Suhaib Fahmy, Co-PI: Marco Canini, Gustavo Alonso and Zsolt Istvan
  768K USD
- **"Knowledge Distribution Networks" – 2022**
  KAUST Competitive Research Grants (CRG) Program
  PI: Marco Canini, Co-PI: Marco Chiesa
  400K USD
- **"Scaling Distributed Machine Learning using Programmable Networks" – 2021**
  KAUST Competitive Research Grants (CRG) Program
  PI: Marco Canini, Co-PI: Panos Kalnis and Arvind Krishnamurthy
  1.05M USD
- **"Algorithmic, Systems and Privacy Aspects of Split Learning" – 2020**
  KAUST AI Initiative seed funding
  PI: Marco Canini, joint with Panos Kalnis and Peter Richtarik
  100K USD
- **"Training Machines to Recognize Viable Protein-Protein Docking" – 2020**
  KAUST AI Initiative seed funding
  PI: Marco Canini, joint with Luigi Cavallo and Panos Kalnis
  95K USD
- **"In-Network Computing" – 2019**
  Huawei in-kind gift award
  PI: Marco Canini
  128K USD
- **KICP grant in support of KAUST Research Workshop on Optimization and Big Data – 2018**
  KAUST Industry Collaboration Program (KICP)
  PI: Marco Canini, joint with Peter Richtarik
  10K USD
- **KAUST Research Workshop on Optimization and Big Data – 2017-2018**
  KAUST Office of Sponsored Research Conference Support Grant URF/1/3347-01
  PI: Marco Canini, joint with Peter Richtarik
  79K USD
- **"ENDEAVOUR: Towards a flexible software-defined network ecosystem" – 2015**
  European Commission, H2020 Research & Innovation Action
  750K Euros, total budget ~4.3M Euros (6 partners, 36 months)

- **“Scalable and robust, distributed SDN controller” – 2014**
  Huawei Technologies Ltd.
  115K Euros (individual grant agreement)
- **“Dynamic and verifiable programmable network systems” – 2014**
  Research council of the Université catholique de Louvain
  50K Euros
- **Google Summer of Code (GSoC) – 2014**
  Google supported one student to work on the Frenetic SDN project
- **“UNIFY: Unifying Cloud and Carrier Networks” – 2013**
  European Commission, FP7-ICT
  ~6.5M Euros (16 partners, 30 months)

SUPERVISION

Ph.D. students

Achref Rebai (KAUST), (Start date: MS Jan 2023).

Tongzhou Gu (KAUST), (Start date: MS Aug 2022).

Juyi Lin (KAUST), (Start date: MS Aug 2022).

Norah Alballa (KAUST), (Start date: PhD Jan 2022).

Mohamed Aljahdali (KAUST), (Start date: MS Aug 2021 / PhD Jan 2023).

Jihao Xin (KAUST), (Start date: MS Aug 2021 / PhD Jan 2023).

Selma Kharrat (KAUST), (Start date: MS Jan 2021 / PhD Aug 2022).

Chen-Yu Ho (KAUST): Improving the Efficiency of Distributed Deep Learning (Start date: MS Aug 2018 / PhD Aug 2019; Expected Graduation: Aug 2023).

Arnaud Dethise (KAUST): Toward Reliable ML-Based Networked Systems (Start date: Aug 2017; Graduated: Mar 2023; First position: Research Scientist at Nokia Bella Labs).

Muhammad Bilal (Université catholique de Louvain and IST, U. de Lisboa, with Rodrigo Rodrigues): Efficient Data Analytics in Cloud Environments (Start date: Sep 2015; Graduated: 2021/22; First position: Senior Engineer at Unbabel).

Waleed Reda (Université catholique de Louvain and KTH Royal Institute of Technology, with Dejan Kostić): Improving Performance and Availability of Large-Scale Distributed Storage Systems (Start date: Sep 2014; Graduated: 2021/22; First position: Postdoctoral Researcher at Microsoft Research).

Lalith Suresh (with Anja Feldmann): On predictable performance for distributed systems (Start date: Sep 2012; Graduated: 2016 at TU Berlin; First position: Postdoctoral Researcher at VMware Research). In the German system, I did not fund the student but I served as a primary advisor de-facto.

Dan Levin (with Anja Feldmann): Toward Principled Enterprise Network Management (Start date: I started advising him in Sep 2012; Graduated: 2014 at TU Berlin; First position: Co-founder and CEO of Stacktile GmbH). In the German system, I did not fund the student but I served as a primary advisor de-facto.

MS students

Omar Zawawi, CS, Resource-efficient data pre-processing for deep learning (Start date: Aug 2021; Graduated: Spring 2023 at KAUST; Current position: Software Engineer at Mozn).

Fatimah Zohra, CS, Improving the robustness of deep learning (Start date: Aug 2019; Graduated: Fall 2020 at KAUST; Current position: PhD student in IVUL – Prof. Ghanem at KAUST).

Atal N. Sahu, CS; Rethinking gradient sparsification as total error minimization (Start date: Mar 2019; Graduated: Fall 2020 at KAUST; Current position: Data Scientist at Regology).

Yousef S. Alowayed, CS; Picking a Partner: A Fair Blockchain Based Scoring Protocol for Autonomous Systems (Start date: 2017; Graduated: Fall 2018 at KAUST; Current position: Software Engineer at Google).

Hassan M. Alsibyani, CS; Enhancing Network Data Obliviousness in Trusted Execution Environment based Stream Processing Systems (Start date: 2016; Graduated: Spring 2018 at KAUST; Current position: Technical Lead at Wasphi).

Postdocs

Mubarak Ojewale (KAUST): May 2023

Ahmed M. Abdelmoniem Sayed (KAUST): Mar 2019–Feb 2020; Next position: promotion to Research Scientist

Amedeo Sapio (KAUST): Jul 2018–Feb 2019; Next position: Software Engineer at Cisco

Marco Chiesa (Université catholique de Louvain): Aug 2015–Dec 2017; Next position: Assistant Professor at KTH Royal Institute of Technology

Thanh Dang Nguyen (Université catholique de Louvain): Feb 2015–Jul 2016; Next position: Research Engineer at University of Chicago

Research Staff

Amandio R. Faustino (KAUST, Research Software Engineer): Jan 2023

Ahmed M. Abdelmoniem Sayed (KAUST, Research Scientist): Mar 2020–Dec 2021; Next position: Assistant Professor at QMUL

Omar Alama (KAUST, Research Software Engineer): Sep 2020–Oct 2021; Next position: Teaching Assitant/Lecturer at KAU

PROFESSIONAL SERVICE

Ph.D. Defense Committee

Ioannis Zografopoulos (KAUST)	10 Jul 2023
Arnaud Dethise (KAUST)	22 Mar 2023
Samuel Horvath (KAUST)	27 Jun 2022
Arsany Gurguis (EPFL)	1 Jun 2022
Muhammad Bilal (Université catholique de Louvain and IST, U. de Lisboa)	16 Dec 2021 (private) & 31 May 2022 (public)
Waleed Reda (Université catholique de Louvain and KTH Royal Institute of Technology)	16 Nov 2021 (private) & 30 May (public) 2022
Benjamin Rothenberger (ETH Zurich)	19 May 2022
Huynh Tu Dang (Università della Svizzera italiana)	31 Jan 2019
Ibrahim Hosny Mohamed Abdelaziz (KAUST)	17 May 2018
Zuhair Yarub Khayyat (KAUST)	16 May 2017
Razen Mohammad Al-Harbi (KAUST)	27 Oct 2016
Lalith Suresh (TU Berlin) – I advised this student with Anja Feldmann	27 Jun 2016

Maciej Kuźniar (EPFL) 6 Jun 2016
Peter Perešíni (EPFL) 6 Jun 2016
Dan Levin (TU Berlin) – I advised this student with Anja Feldmann 7 Jul 2014
Gregory Detal (Université catholique de Louvain) 13 Jan 2014
Christoph Paasch (Université catholique de Louvain) 8 Sep 2014

Organization

APSys'24, Program Chair Aug 2024
CoNEXT'23, Workshop Chair Dec 2023
SIGCOMM'21 TUTORIAL: Network-Accelerated Distributed Deep Learning, Organizer Aug 2021
NetAI'19 at SIGCOMM'19, General Chair Aug 2019
NetPL'19 at SIGCOMM'19, General Chair Aug 2019
NetAI'18 at SIGCOMM'18, Program Co-Chair Jul 2018
ICDCS'18, Cloud Computing & Data Centers Area Co-Chair Jul 2018
NetPL'18 at POPL'18, Organizer and Program Co-Chair Jan 2018
ITC 29, Future Internet Architectures Area Co-Chair Sep 2017
NetPL'17 at SIGCOMM'17, Organizer and Program Co-Chair Aug 2017
EuroSys'17 Doctoral Workshop, Program Co-Chair Apr 2017
SOSR'17 Demo and Poster Session, Program Co-Chair Apr 2017
SIGCOMM'16 Poster Session, Program Co-Chair Aug 2016
NetPL'16 at SIGCOMM'16, Organizer and Program Co-Chair Aug 2016
NetPL'15 at ECOOP'15, Organizer and Program Co-Chair Jul 2015
In addition to organizing NetPL, I raised ~7K EUR from sponsors.
Workshop on Distributed Cloud Computing (DCC'15), Program Co-Chair Jun 2015

Program Committee

APNet 2024
EuroSys 2024
NeurIPS 2023
FL-ICML 2023
NSDI 2023
APNet 2023
EuroDW 2023
SIGCOMM 2022
OSDI 2022
APSys 2022
APNet 2022
EuroSys 2022
CoNEXT 2021
SoCC 2021
ICNP 2021
USENIX ATC 2021
NetAI 2020
EuroSys 2020
ASPLOS 2020
P4 and Programmable Forwarding Summit 2020
SIGCOMM 2019
NetAI 2019
CFI 2019
ASPLOS 2019

SOSR	2019
Workshop on AI in Networks (WAIN)	2018
OPODIS	2018
Workshop on In-Network Computing (NetCompute)	2018
Workshop on Self-Driving Networks (SelfDN)	2018
SIGCOMM	2018
Asia-Pacific Workshop on Networking (APNet)	2018
NSDI	2018
CCGrid	2018
IC2E	2018
SIGCOMM	2017
Asia-Pacific Workshop on Networking (APNet)	2017
Workshop on Security and Dependability of Multi-Domain Infrastructures	2017
ICCCN	2017
EuroSys	2017
SOSR	2017
INFOCOM	2017
Workshop on High Performance Computing for Big Data (HPC4BD)	2016
OPODIS	2016
CoNEXT	2016
SOSR	2016
EuroSys	2016
Workshop on Software-Driven Flexible and Agile Networking (SFWAN)	2016
INFOCOM (Distinguished TPC member)	2015
CoNEXT	2015
INFOCOM (Distinguished TPC member)	2015
Workshop on Interconnection Network Architectures: On-Chip, Multi-Chip (INA-OCMC)	2015
Workshop on High Performance Computing for Big Data (HPC4BD)	2015
IEEE Conference on NFV and SDN (IEEE NFV-SDN)	2015
ACM Workshop on Hot Topics in Networks (HotNets)	2014
ACM SIGCOMM Workshop on Hot Topics in Software Defined (HotSDN)	2014
INFOCOM	2014
Workshop on Distributed Cloud Computing (DCC)	2014
European Workshop on SDN (EWSDN)	2014
Workshop on SDN and NFV for Flexible Network Management (SDNFlex)	2014
HPI Cloud Symposium, Operating The Cloud (OpC)	2014
ACM SIGCOMM Workshop on Hot Topics in Software Defined (HotSDN)	2013
Workshop on Distributed Cloud Computing (DCC)	2013
High Performance and Programmable Networking (HPPN)	2013
International Conference on Computer Communications and Networks (ICCCN)	2013
European Workshop on SDN (EWSDN)	2013
GLOBECOM Workshop Software-Defined Networking on Optics (SDN-Optics)	2013
ACM SIGCOMM Workshop on Hot Topics in Software Defined (HotSDN)	2012
International Conference on Computer Communications and Networks (ICCCN)	2012
International Conference on Internet and Distributed Computing Systems (IDCS)	2012
European Workshop on SDN (EWSDN)	2012
CoNEXT Student Workshop	2012

Session Chair

CoNEXT	2023
EuroSys	2020
APNet	2018
EuroSys	2016
SOSR	2016
CoNEXT	2015
ACM SIGCOMM Workshop on Hot Topics in Software Defined (HotSDN)	2014
ACM SIGCOMM Workshop on Hot Topics in Software Defined (HotSDN)	2013
ACM SIGCOMM Workshop on Hot Topics in Software Defined (HotSDN)	2012

Panels

N2Women Workshop	2017
CoNEXT Student Workshop	2015
CoNEXT Student Workshop	2012

Refereeing and Reviewing

IEEE Transactions on Mobile Computing	2022
IEEE Transactions on Network and Service Management	2022
ACM Transactions on Computer Systems	2018
IEEE/ACM Transactions on Networking	2015-17
SIGCOMM, External Reviewer	2014
ACM Computer Communications Review	2008–2014
IEEE Transactions on Dependable and Secure Computing	2014
IEEE Journal on Selected Areas in Communications	2014
IEEE Transactions on Reliability	2014
IEEE Transactions on Network and Service Management	2014
Computer Networks	2014
Knowledge and Information Systems (KAIS)	2012
CoNEXT, External Reviewer	2010
IEEE Network	2010
Telecommunication Systems Journal	2010
COMSNETS, External Reviewer	2011
IPCCC, External Reviewer	2011

Reviewer for Funding Agencies

European Research Council (ERC)	2019
Portuguese National Innovation Agency (ANI)	2019
Swiss National Science Foundation	2017
Fundação para a Ciência e a Tecnologia, the Portuguese public funding agency for R&D	2016
CONFINE EU project, 2nd Open Call, Expert Reviewer	2014

Association Membership

ACM, Association for Computing Machinery	since 2007
USENIX, the Advanced Computing Systems Association	since 2010
IEEE, Institute of Electrical and Electronics Engineers	since 2011
USENIX Campus Representative at the Université catholique de Louvain	since 2013
USENIX Campus Representative at KAUST	since 2016

ORGANIZATIONAL/ADMINISTRATIVE EXPERIENCE

- Admission committee of Erasmus Mundus Joint Doctoral program on Distributed Computing (EMJD-DC).
- Invited and hosted Stefan Schmid (senior research scientist at TU Berlin) as visiting Prof. at Université catholique de Louvain and organized course on Network Algorithms and Distributed Computing.
- Originated and managed a paper reading group at TU Berlin.
- Devised an interview process and interviewed candidates for a research software engineer position at EPFL.
- Managed a seminar series for the EPFL systems group.

PATENTS

- "Efficient Gradient Compression For Fast Distributed Training." International patent application PCT/IB2021/055814, Jun 2021
- "A Method and Device for Predicting Faults in an IT System." International patent application PCT/EP2011/062031, Jul 2010
- "A method and a system for energy consumption saving in wireless access networks." US patent application P126108, Aug 2011
- "A method and device for incremental deployment of software-defined networking into an enterprise network." EP2787698B1 European Patent Office, Jan 2014, Granted Jan 2020
- "Storage and replication in distributed computing environments." US10248708B2, Aug 2016, Granted Apr 2019

LANGUAGES

Native Italian; fluent English; beginner French