

ALESSIO SACCO

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I'm currently Assistant Professor at Politecnico di Torino, Italy. I obtained my Ph.D. in Computer Engineering from Politecnico di Torino in 2022, where I also received the Master of Science in 2018. My research interests include architecture and protocols for network management; implementation and design of cloud computing applications; algorithms and protocols for service-based architecture, such as Software Defined Networks (SDN), used in conjunction with Machine Learning algorithms.

EXPERIENCE

01/2023 – CURRENT

ASSISTANT PROFESSOR, POLITECNICO DI TORINO, ITALY

Teaching activity in networking and computing courses. Research on intent-based networking and cognitive networks.

03/2022 – 1/2023

RESEARCH FELLOW, POLITECNICO DI TORINO, ITALY

Researching duties on computer networking, Machine Learning, and network softwarization.

01/2022 – 05/2022

VISITING PROFESSOR, SAINT LOUIS UNIVERSITY, USA

Teaching activity for the course “CSCI 1060 - Scientific Programming” in the Spring semester 2022.

06/2022

PH.D. DEFENSE, POLITECNICO DI TORINO, ITALY

Computer and Control Engineering with the title “Quality and policy assurance in critical distributed systems”. Advisor Marchetto G.

03/2019 – 06/2019

PH.D. VISITING STUDENT, SAINT LOUIS UNIVERSITY, USA

Abroad period during my Ph.D., development of new research activities, which has led to new publications in international journals and conferences.

09/2017 – 03/2018

EXTERNAL RESEARCHER, SAINT LOUIS UNIVERSITY, USA

Thesis work focused on cutting-edge solutions for low-latency systems. The work has been presented as “LiveMicro” to HotEdge ‘19 conference.

INTERNATIONAL ROLES

Member of the Editorial Board:

- *American Journal of Networks and Communications* from 2020 to August 2023 (ISSN 2326-8964)

Associate Editor:

- *IEEE Transactions on Network and Service Management* (ISSN 19324537)

Guest Editor:

- IEEE Transactions on Network and Service Management, Special Issue: "Research Advances Towards Effective and Sustainable Next Generation Networks" (ISSN 19324537)
- Electronics (S: Networks), Special Issue: "New Insight into Network Virtualization and Management" (ISSN 2079-9292)

Funding Member of ComSoc SIG:

- SNO: IEEE Sustainable Network Operations
<https://cnom.committees.comsoc.org/sustainable-network-operations-sno/>
- QSCSIG: IEEE SIG on Qualitative Communication and Semantic communication
<https://mmc.committees.comsoc.org/interest-groups/qscsig/>

General Co-chair:

- MECC 2025, MECC 2024. ACM International Workshop on MetaOS for the Cloud-Edge-IoT Continuum (MECC)
- ENS 2024. IEEE International Workshop on Edge Network Softwarization (ENS)

TPC Co-chair:

- ENS 2025, ENS 2023. IEEE International Workshop on Edge Network Softwarization (ENS)
- AnNet 2025. IEEE/IFIP International Workshop on Analytics for Network and Service Management (AnNet)

Organizing Committee Member:

- HPSR 2026. Workshop Co-chair of IEEE 27th International Conference on High Performance Switching and Routing (IEEE HPSR 2026)
- HPSR 2025. Workshop Co-chair of IEEE 26th International Conference on High Performance Switching and Routing (IEEE HPSR 2025)
- NetSoft 2024. Publication Co-chair of IEEE International Conference on Network Softwarization (IEEE NetSoft 2024)
- NetSoft 2023. Tutorial Co-chair of IEEE International Conference on Network Softwarization (IEEE NetSoft 2023)

TPC Member:

- IEEE NetSoft. IEEE International Conference on Metaverse Computing, Networking and Applications
- IEEE NFV-SDN. IEEE Conference on Network Functions Virtualization and Software-Defined Networking
- IEEE CSCN. IEEE Conference on Standards for Communications and Networking
- IEEE MASS. IEEE International Conference on Mobile Ad-Hoc and Smart Systems
- IEEE MetaCom. IEEE International Conference on Metaverse Computing, Networking and Applications
- 6G-SQSC 2023. IEEE First Workshop on 6G Enablers: Satellite, Qualitative and Semantic Communications, co-located with IEEE ICNP 2023
- TAISEN 2023. IEEE First International Workshop on Trust in AI, Services and Networking, co-located with IEEE ICNP 2023
- SecSoft 2022. 4th International Workshop on Cyber-Security in Software-defined and Virtualized Infrastructures (SecSoft) co-located with NetSoft 2022.
- IFIP Networking 2022 WKSHPS NI. The 4th International Workshop on Network Intelligence Network Intelligence 2022 (NI 2022) in conjunction with IFIP Networking 2022

PROJECTS AND FUNDINGS

- *European-funded Project, MIRANDA*, Monitoring, Investigation and Response to cyber-attacks with an Adaptive digital twiN moDel for Agile services over the computing continuum. WP leader (WP4). 2024-2027
- *Comcast Innovation Fund recipient*, Improving Network Monitoring Mechanisms by Exploiting ``Whiteness'' of Internet Data and Models. 2023
- *European-funded Project, FLUIDOS*, Flexible, scaLable and secUre decentrallizeD Operating System. Task leader (T4.1). 2022-2025
- *European-funded Project, DESIRE*, Distributed Learning for Resilient Virtual Network Management at Scale. Task leader (T1 and T3). 2022

SELECTED PUBLICATIONS

- Antonino, Alessio Sacco, and Guido Marchetto. "LLNeT: An Intent-Driven Approach to Instructing Softwarized Network Devices Using a Small Language Model." *IEEE Transactions on Network and Service Management*, vol. 22 no. 4, pp. 3403-3418, June 2025.
- Lorenzo Pappone, Alessio Sacco, and Flavio Esposito. "Mutant: Learning Congestion Control from Existing Protocols via Online Reinforcement Learning." *22nd USENIX Symposium on Networked Systems Design and Implementation (NSDI)*. April 2025.
- Antonino Angi, Alessio Sacco, Flavio Esposito, Guido Marchetto and Alex Clemm. "NAIL: A Network Management Architecture for Deploying Intent into Programmable Switches" in *IEEE Communications Magazine*, vol. 62, no. 6, pp. 28-34, November 2023.
- Ons Aouedi, Alessio Sacco, Kandaraj Piamrat and Guido Marchetto. "Handling Privacy-Sensitive Medical Data With Federated Learning: Challenges and Future Directions" in *IEEE Journal of Biomedical and Health Informatics (J-BHI)*, vol. 27, no. 2, pp. 790-803, June 2022.
- Alessio Sacco, Flavio Esposito, Guido Marchetto and Paolo Montuschi. "A Self-Learning Strategy for Task Offloading in UAV Networks" in *IEEE Transactions on Vehicular Technology (Tvt)*, vol. 71, no. 4, pp. 4301-4311, April 2022.
- Alessio Sacco, Matteo Flocco, Flavio Esposito and Guido Marchetto. "Owl: Congestion Control with Partially Invisible Networks via Reinforcement Learning" in *Proc. 2021 IEEE International Conference on Computer Communications (IEEE INFOCOM)*, 10-13 May 2021, Online Event.
- Alessio Sacco, Flavio Esposito, Guido Marchetto and Paolo Montuschi. "Sustainable Task Offloading in UAV Networks via Multi-Agent Reinforcement Learning" in *IEEE Transactions on Vehicular Technology (Tvt)*, vol. 7, no. 5, pp. 5003-5015, April 2021.
- Alessio Sacco, Matteo Flocco, Flavio Esposito and Guido Marchetto. "Supporting Sustainable Virtual Network Mutations with Mystique" in *IEEE Transactions on Network and Service Management (TNSM)*, vol.18, no.3, pp. 2714-2727, February 2021.
- Alessio Sacco, Flavio Esposito, Guido Marchetto, Grant Kolar, and Kate Schwetye. "On Edge Computing for Remote Pathology Consultations and Computations" in *IEEE Journal of Biomedical and Health Informatics (J-BHI)*, 24 (9), 2523 – 2534, July 2020.

REVIEWER ACTIVITIES

I served as Reviewer in a large number of journals, such as IEEE International Conference on Computer Communications (INFOCOM), IEEE/ACM Transaction on Networking (ToN), IEEE Transactions on Network and Service Management (TNSM), IEEE Transactions on Vehicular Technology (TVT), IEEE Communications Magazine (Com Mag), IEEE Transactions on Emerging Topics in Computing (TETC), IEEE Transactions on Wireless Communications (TWC), Future Generation Computer Systems (FGCS), Elsevier Computer Communication, Elsevier Computer Networks, ACM Computer Communication Review (CCR), Internet Technology Letters (ITL). In addition to the conferences where I served as TPC member, I was also involved as reviewer in other workshops and conferences, such as Workshop on Serverless Computing (WoSC), Security and Communication Networks, IEEE Conference on Fog and Mobile Edge Computing (FMEC), IEEE Workshop on Advances in Slicing for Softwarized Infrastructures (S4SI).

INTERNATIONAL CONFERENCES ACTIVITIES

I took part to several international meetings and conferences, including IEEE INFOCOM 2021, ACM SIGCOMM 2021, IEEE ICC 2021, IEEE International Conference on Cloud Networking (Cloudnet 2019 and Cloudnet 2020), ACM CoNEXT 2019 and CoNEXT 2020, IEEE International Workshop on Factory Communication Systems (WFCS 2020), IEEE CCNC 2023, IEEE Mediterranean Communication and Computer Networking Conference (MedComNet 2020), Pathology Informatics Summit (PI Summit 2019), IEEE Conference on Network Softwarization (NetSoft 2019, NetSoft 2020, NetSoft 2022), USENIX Workshop on Hot Topics in Edge Computing (HotEdge 2019).

AWARDS

Best paper awards:

- Mohammad Amir Salari, Abhinav Kumar, Federico Rinaudi, Reza Tourani, Alessio Sacco, Flavio Esposito, "Privacy Analysis of Oblivious DNS over HTTPS: a Website Fingerprinting Study" in 55th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN 2025). IEEE.

Quality Award at the completion of second and third year of the PhD career from Politecnico di Torino.

Best dissertation Award from Politecnico di Torino.

SKILLS AND INTERESTS

- Network Softwarization and Virtualization
- Machine Learning Algorithms
- Network Protocols
- Edge and Cloud Computing
- Distributed and Consensus Protocols
- Formal Methods and Verification