

ALESSANDRO PACINI

Ph.D. Student in Emerging Digital Technologies



EDUCATION

Ph.D. Student in Emerging Digital Technologies

Scuola Superiore Sant'Anna

Oct. 2021 – Ongoing Pisa, Italy

- Research focused on extending current open-source Software Defined architectures over a virtualized and modular closed loop approach.
- Involved in many European projects, such as CLEVER, DESIRE-6G and BRAINE.

M.S. in Computer Science and Networking

University of Pisa and Scuola Superiore Sant'Anna

Oct. 2018 – June 2021 Pisa, Italy

- Experimental thesis: "A scalable and reliable Kafka-based monitoring architecture for Zero Touch Networks"

B.S. in Computer Science

University of Camerino

Sept. 2015 – Oct. 2018 Camerino, Italy

- Experimental thesis: "Comparative study on the energy efficiency of different innovative election models in clustering protocols for heterogeneous WSNs"

EXPERIENCE

Research Internship

Nokia Bell Labs

January 2024 – July 2024 Massy, France

- Research and development in the context of closed-loop automation in Software-Defined Optical Networks.

Extracurricular Internship

Scuola Superiore Sant'Anna

June 2019 – July 2019 Pisa, Italy

- Development of a fault detection and localization app for an SDN controller (ONOS) in optical environment.

TECHNICAL SKILLS

Python Java Javascript

Networking stacks

WAN/MAN/LAN architectures

Parallel computing

Distributed systems

Software Defined Networking

Docker & Orchestration

STRENGTHS

Effective Communication

Strong Organizational Skills

Self-Motivated and Driven

LANGUAGES

Italian
English



AWARDS

Best Demo Award

IEEE NFV-SDN

2022 Chandler, AZ, USA

- Best demo for the paper "Enabling event-based hierarchical synchronization in SDN ONOS clusters", showcasing a reliable synchronization model among SDN architectures exploiting the gRPC protocol.

Research Scholarship Winner

Scuola Superiore Sant'Anna

2020 – 2021 Pisa, Italy

- Research and development of a scalable and fault tolerant data collection and processing framework to be integrated into a Zero-Touch Network.

MAIN PUBLICATIONS

Journal Articles

- Silva, M. F. [Moises Felipe], Sgambelluri, A., Pacini, A., Paolucci, F., Green, A., Mascarenas, D., & Valcarenghi, L. (2023). Confidentiality-preserving machine learning algorithms for soft-failure detection in optical communication networks. *Journal of Optical Communications and Networking*, 15(8), C212–C222. doi:10.1364/JOCN.481690
- Paolucci, F., Sgambelluri, A., Silva, M. F., Pacini, A., Castoldi, P., Valcarenghi, L., & Cugini, F. (2022). Peer-to-peer disaggregated telemetry for autonomic machine-learning-driven transceiver operation. *J. Opt. Commun. Netw.*, 14(8), 606–620. doi:10.1364/JOCN.456666
- Silva, M. F. [Moisés Felipe], Pacini, A., Sgambelluri, A., & Valcarenghi, L. (2022). Learning long-and short-term temporal patterns for ml-driven fault management in optical communication networks. *IEEE Transactions on Network and Service Management*, 1–1. doi:10.1109/TNSM.2022.3146869
- Sgambelluri, A., Pacini, A., Paolucci, F., Castoldi, P., & Valcarenghi, L. (2021). Reliable and scalable kafka-based framework for optical network telemetry. *J. Opt. Commun. Netw.*, 13(10), E42–E52. doi:10.1364/JOCN.424639

Conference Proceedings

- Pacini, A., Sgambelluri, A., Centofanti, C., Marotta, A., Paolini, E., Giorgetti, A., & Valcarenghi, L. (2024). Hierarchical software-defined control for coordinated ran and pon-based transport scaling. In *Noms 2024-2024 ieee network operations and management symposium* (pp. 1–3). doi:10.1109/NOMS59830.2024.10575208
- Pacini, A., Scano, D., Valcarenghi, L., Sgambelluri, A., & Giorgetti, A. (2022). Enabling event-based hierarchical synchronization in sdn onos clusters. In *2022 ieee conference on network function virtualization and software defined networks (nfv-sdn)* (pp. 92–93). doi:10.1109/NFV-SDN56302.2022.9974775
- Silva, M. F. [M. Felipe], Pacini, A., Sgambelluri, A., Valcarenghi, L., & Paolucci, F. (2022). Bringing disaggregated telemetry and ml to the transceiver for autonomic signal adaptation. In *2022 optical fiber communications conference and exhibition (ofc)* (pp. 1–3).
- Valcarenghi, L., Pacini, A., Sgambelluri, A., & Paolucci, F. (2021). A scalable telemetry framework for zero touch optical network management. In *2021 international conference on optical network design and modeling (ondm)* (pp. 1–6). doi:10.23919/ONDM51796.2021.9492488

CERTIFICATIONS



Confluent Fundamentals Accreditation

Scuola Superiore Sant'Anna

-  May 2021  Pisa, Italy
- No expiration.

Cisco Certified Network Associate (CCNA)


University of Camerino

-  Feb 2019  Pisa, Italy
- Recognized as a curricular activity, no final exam.

PROJECTS

CLEVER

Scuola Superiore Sant'Anna

-  Jan. 2023 – Ongo.
- European project
 - The main project idea is to massively use HW acceleration to improve edge sites and applications development. I am involved in every WP of the project, but mainly focusing on both the monitoring and the pre-processing aspects at the edge clusters.



DESIRE-6G

Scuola Superiore Sant'Anna

-  Jan. 2023 – Ongo.
- European project
 - The project is about developing agents coordinating different networks segments, thus achieving new performance-indexes for next-gen mobile networks. My main responsibility is around implementing the monitoring architecture for the project, using both publish-subscribe and orchestration platforms.

BRAINE

Scuola Superiore Sant'Anna

-  Jan. 2021 – Ongo.  Pisa, Italy
- European project
 - I have been involved in many WPs where there is the need to extend an SD-RAN 5G framework with external control loops in high performance distributed scenarios.



5GROWTH

Scuola Superiore Sant'Anna

-  Jan. 2021- Jan. 2022  Pisa, Italy
- European project
 - I have supported the development of a WP where metrics from a 5G testbed had to be sent over a Kafka bus for forecasting purposes..

English Certification, Level B2

Scuola Superiore Sant'Anna

-  2024  Pisa, Italy
- No expiration.