Alessandro Pacini

Curriculum Vitae

TeCIP Institute,
Scuola Superiore Sant'Anna
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alepacox

Educational Background

2021

PhD in Emerging Digital Technologies
Telecommunications, Computer Engineering, and Photonics Institute (TeCIP) - Scuola Superiore Sant'Anna, Pisa, Italy.

2018 – 2021

MSc in Computer Science and Networking
Joint degree from Scuola Superiore Sant'Anna & University of Pisa, Pisa, Italy.

2015 – 2018

BSc in Computer Science
University of Camerino, Camerino, Italy.

Theses

PhD Thesis

TITLE A flexible and modular approach towards Zero Touch Networks

Research focused on finding efficient ways for reusing and migrating current generation of networks to a Zero-Touch paradigm. The basic idea is to extend Software-Defined based scenarios with new functionalities, so that they can be integrated with closed-loop decision frameworks.

ADVISORS Prof. Valcarenghi Luca, Dr. Sgambelluri Andrea & Dr. Giorgetti Alessio

MSc Thesis

TITLE A scalable and reliable Kafka-based monitoring architecture for Zero Touch Networks

A monitoring architecture has been developed using Apache Kafka to continuously monitor an optical network. By using the publish-subscribe architecture offered by this framework, plug-n-play modules have been designed, able to read and process network monitored data at runtime.

ADVISORS Prof. Valcarenghi Luca & Dr. Sgambelluri Andrea

BSc Thesis

TITLE Comparative study on the energy efficiency of different innovative election models in clustering protocols for heterogeneous WSNs

ADVISORS Prof. Mostarda Leonardo & Dr. Micheletti Matteo

Research Projects

BRAINE

January 2021 - Ongoing

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.
TeCIP Institute - Scuola Superiore Sant'Anna, Pisa, Italy.

Funding agency: EU Horizon programme

PROXIMITY-CARE

October 2021 - Ongoing

The project aims to improve socio-health services in the rural areas of the province of Lucca. I developed a navigable map to identify possible intervention areas by taking into account both current health and connectivity services.
TeCIP Institute - Scuola Superiore Sant'Anna, Pisa, Italy.

Funding agency: Fondazione Cassa di Risparmio di Lucca

5G-SOSIA

September 2020 - Ongoing

The aim of the project is to exploit 5G capabilities to decrease the first aid time. I developed an application that connects to smart-band devices and sends patient live data to a data-center for further elaborations.
TeCIP Institute - Scuola Superiore Sant'Anna, Pisa, Italy.

Funding agency: Tuscany region

5GROWTH

January 2021 - January 2022

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.
TeCIP Institute - Scuola Superiore Sant'Anna, Pisa, Italy.

Funding agency: EU Horizon programme

Extracurricular Internship

June 2019 - July 2019

Development of a fault detection and localization app for an SDN controlller (ONOS) in optical environment.
TeCIP Institute - Scuola Superiore Sant'Anna, Pisa, Italy.

Advisor: Dr. Giorgetti Alessio

Awards

Undergraduate Research Scholarship

September 2021 - September 2022

Research and development of a scalable and fault tolerant data collection and processing framework to be integrated into a Zero-Touch Network.
TeCIP Institute - Scuola Superiore Sant'Anna, Pisa, Italy.

Advisor: Prof. Valcarenghi Luca

Research Interests

- Zero-Touch Networks
- Closed-loop automation
- Next-generation monitoring techniques
- Distributed and scalable networking architectures

Memberships

International IEEE Student Member *October 2022*

IEEE Communications Society Student Member *October 2022*

Teaching Experience

March 2022 Lecture for PhD students in Health Science, Technology and Management
TeCIP Institute - Scuola Superiore Sant'Anna, Pisa, Italy.

February 2022 Lecture for Seasonal School students about next-gen monitoring platforms
TeCIP Institute - Scuola Superiore Sant'Anna, Pisa, Italy.

Languages

Italian Native

English Professional working proficiency

Skills

Programming Python, Java, Javascript

Knowledge Networking stacks, WAN/MAN/LAN architectures, Parallel computing, Distributed systems, Software Defined Networking, Container & Orchestration

Other Skills Communication, Organization, Motivator, Hard-working

Participation In Events

March 2022 IEEE International Conference on Pervasive Computing and Communications (PerCom), Pisa, Italy.

May 2021 Kafka Summit Europe 2021, Remote.

Event Organization

March 2022 International Workshop on Telemedicine and E-health Evolution in the New Era of Social Distancing (Telmed), Pisa, Italy.

Other Certificates

May 2021 Confluent Fundamentals Accreditation, *Confluent*

February 2019 Cisco Certified Network Associate (CCNA 1-2-3-4), *Cisco Systems*

February 2012 B1 Preliminary in English, *University of Cambridge*

Publications

A. Sgambelluri, A. Pacini, F. Paolucci, P. Castoldi, and L. Valcarenghi, "Reliable and scalable kafka-based framework for optical network telemetry," *J. Opt. Commun. Netw.*, vol. 13, pp. E42–E52, Oct 2021.

F. Paolucci, A. Sgambelluri, M. F. Silva, A. Pacini, P. Castoldi, L. Valcarenghi, and F. Cugini, "Peer-to-peer disaggregated telemetry for autonomic machine-learning-driven transceiver operation," *J. Opt. Commun. Netw.*, vol. 14, pp. 606–620, Aug 2022.

L. Valcarenghi, A. Pacini, A. Sgambelluri, and F. Paolucci, "A scalable telemetry framework for zero touch optical network management," in *2021 International Conference on Optical Network Design and Modeling (ONDM)*, pp. 1–6, 2021.

L. Valcarenghi, A. Pacini, J. C. Borromeo, S. Fichera, M. Gagliardi, D. Amram, and V. Lionetti, "A framework to support social distancing management based on 5g and accelerated edge cloud," in *2021 IEEE International Mediterranean Conference on Communications and Networking (MeditCom)*, pp. 94–99, 2021.

S. Calabrò, R. Gagliardi, F. Marcantoni, M. Micheletti, A. Pacini, and A. Piermarteri, "Tailoring micro-solar systems to heterogeneous wireless sensor networks," in *Web, Artificial Intelligence and Network Applications* (L. Barolli, M. Takizawa, F. Xhafa, and T. Enokido, eds.), (Cham), pp. 724–733, Springer International Publishing, 2019.

M. F. Silva, A. Pacini, A. Sgambelluri, and L. Valcarenghi, "Learning long-and short-term temporal patterns for ml-driven fault management in optical communication networks," *IEEE Transactions on Network and Service Management*, pp. 1–1, 2022.

L. Valcarenghi, A. Pacini, J. Borromeo, S. Fichera, M. Gagliardi, D. Amram, and V. Lionetti, "Managing physical distancing through 5g and accelerated edge cloud," *IEEE Access*, pp. 1–1, 2022.

M. F. Silva, A. Pacini, A. Sgambelluri, L. Valcarenghi, and F. Paolucci, "Bringing disaggregated telemetry and ml to the transceiver for autonomic signal adaptation," in *2022 Optical Fiber Communications Conference and Exhibition (OFC)*, pp. 1–3, 2022.

References

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