Special Issue

Machine Learning and AI for Security in Optical Communication Systems

Message from the Guest Editors

The exponential advancement of artificial intelligence (AI) and machine learning (ML) is transforming communication systems and networks, creating opportunities for innovation, efficiency, and improved security. This issue explores the role of AI and ML in strengthening security in optical communication networks, focusing on physical layer security (PLS), authentication, identification, monitoring, and responses to emerging attacks. It emphasizes advances from information theory to practical implementation, addressing trustworthiness, integrity, and resilience at the physical layer. Topics include AI/ML-driven authentication, identification, monitoring, and attack detection, as well as strategies to ensure privacy in optical telecommunications and critical infrastructure networks. We encourage authors to submit high-quality, original contributions proposing robust and efficient security mechanisms capable of protecting optical networks from evolving threats, and supporting the design and deployment of secure optical communication systems empowered by Al and ML.

Guest Editors

Dr. Pantea Nadimi Goki

TECIP Institute Scuola Superiore Sant'Anna, 56124 Pisa, Italy

Dr. Giovanni Serafino

 Department of Engineering and Sciences, Faculty of Technological Sciences and Innovation, Universitas Mercatorum, 00186 Rome, Italy

2. M.B.I. srl, 57128 Pisa, Italy

Deadline for manuscript submissions

20 April 2026



Applied Sciences

an Open Access Journal by MDPI

Impact Factor 2.5 CiteScore 5.5



mdpi.com/si/255266

Applied Sciences
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
applisci@mdpi.com

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As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal *Applied Sciences* has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

Editor-in-Chief

Prof. Dr. Giulio Nicola Cerullo

Dipartimento di Fisica, Politecnico di Milano, Piazza L. da Vinci 32, 20133 Milano, Italy

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