Optical Networks and Systems Symposium

Co-Chairs

- Jerzy Domżał, AGH University of Science and Technology, Poland. <jerzy.domzal@agh.edu.pl>
- Nicola Andriolli, National Research Council of Italy, Italy. <nicola.andriolli@ieiit.cnr.it>

Scope and Motivation

Within the next decade, we will enter a new era in which hundreds of billions of things, connected vehicles, robots, drones, and humans will generate Zettabytes of digital information. All this vast information needs to be transported, stored, and processed in an efficient way. In particular, an increasing number of applications require reliable end-to-end transmission with guaranteed and deterministic throughput and bounded latency. For lower latency, data will be stored closer to the users, hence metropolitan and edge optical networks will grow considerably faster than long-haul fiber networks. Moreover, this hyperconnected world will not only increase the dependence on the network infrastructure but also expand the threat surface.

Therefore, it is getting more important to better safeguard our network infrastructure against data leakage and unexpected service outages. Smart optical connectivity will be the foundation of this new digital world with highly desired features including high resilience, intrinsic security, scalability, upgradability, and environmental friendliness. Such programmable network infrastructure will be the nervous system that the digital society, industry, and economy will heavily rely upon. Delivering the required end-to-end performance while satisfying cost, energy and technology constraints of this network infrastructure presents a formidable research challenge. Optical network automation, dimensioning, interoperability, are key to achieve operators' business goals and supporting new complex services.

Finally, the expected traffic growth and the tight latency constraints dictated by new 6G services will also require a substantial evolution not only of the legacy radio-access networks but also of the architecture and the technology of the underlying mobile transport and access networks. Optics and electrooptical systems will be enablers for not only mobile 6G speeds but also novel optical interconnect technologies for future advanced antenna systems impacting transport and access network architectures. Integration of free-space optical communication technologies to the emerging 5G-and-beyond wireless networks in various indoor (e.g., data centers), terrestrial (e.g., mobile networks), space (e.g., inter-satellite, ground-to-satellite and deep space communication), and underwater settings (e.g., underwater sensing) will be a crucial challenge.

The Optical Networks and Systems Symposium aims to bring together researchers, practitioners, and technologists in this exciting era for the network infrastructure of the future hyperconnected world. Paper acceptance decisions will be based on novelty of the work, quality of the results, and clarity of the presentation.

Topics of Interest

The Optical Networks and Systems Symposium intends to showcase the latest developments in all research areas related to optical networks and systems. The Symposium cordially invites original contributions in, but not limited to, the following topical areas and others not explicitly listed but closely related:

- Optical wireless and fiber systems & networks for 5G and beyond
- Optical access systems & networks in support of cost-effective edge compute deployment
- Optical network architectures, design, and performance evaluation
- Elastic, flexible rate, and flexi-grid optical networks
- Space division multiplexing and multi-band optical networks
- Cross-layer design of optical networks
- Artificial intelligence and machine learning for optical systems & networks
- Energy-efficient optical networks
- Systems & networks for open and disaggregated optical transport
- Physical-layer-aware open and disaggregated optical networks
- Optical network testbeds and experiments
- Experimental data-driven optical networking
- Data analytics for optical networks
- Optical network control and management
- Digital twin in optical networks and streaming telemetry
- Software-defined optical networks including programmability, control, automation, and disaggregation
- Virtualization and slicing in optical networks
- Quantum optical systems and networks
- Coexistence of quantum and classical optical systems and networks
- Optical network security
- Optical network survivability and availability
- Optical network for inter- and intra-datacenter connectivity
- Optical interconnects for datacenters & high-performance computing
- Coding, modulation, and signal processing for optical systems
- Optical and wireless network convergence and mobile x-haul
- Radio-over-fiber
- Free-space optical (FSO) communications and networks
- Intersatellite and space-based optical systems & networking
- Visible light communications and networks
- Camera communications
- Optical wireless channel characterization
- Reliability and security of optical wireless communications
- Modulation and coding for optical wireless systems
- Multiple access techniques for optical wireless systems
- Visible light positioning
- Ultraviolet communications and networks
- Underwater optical communications
- Optical wireless vehicular networks

Important Note

The authors of selected papers from this Symposium will be invited to submit an extended version of their work for possible publication in a Special Issue of the Journal of Optical Communications and Networking (JOCN), jointly published by Optica Publishing Group and IEEE.

Biographies of the Co-Chairs

Jerzy Domżał received the M.S., Ph.D. and Ph.D. Hab. degrees in Telecommunications from AGH University of Science and Technology, Kraków, Poland in 2003, 2009, and 2016 respectively. Now, he is an Associate Professor and Director of Institute of Telecommunications at AGH University of Science and Technology. He is especially interested in IP networks and services for Future Internet. He worked on network congestion control and traffic engineering issues in several European Projects. Currently, he is involved in a few research projects, e.g., related to flow-based services for Future Internet. He has served as TPC member for IEEE GLOBECOM (2010-2023), IEEE ICC (2010-2023). He was a session co-chair of the Next-Generation Networking & Internet Symposium at Globecom 2020 and a Local Organizing Committee Chair of the ITC'2012 conference. In 2010 and in 2013, he received scholarships for distinguished young researchers from Minister of Science and Higher Education in Poland. In 2015, he received a science award from POLITYKA magazine, which is the most recognized science award for young scientists in Poland. He is the co-author of over 100 technical papers (including over 20 articles published in journals from the JCR list), two patents, seven patent applications and three books. International trainings: Spain, Barcelona, Universitat Politecnica de Catalunya, April 2005; Spain, Madrid, Universidad Autonoma de Madrid, March 2009, Stanford University, USA, May-June 2012.

Nicola Andriolli received the Laurea degree in telecommunications engineering from the University of Pisa in 2002, and the Diploma and Ph.D. degrees from Scuola Superiore Sant'Anna, Pisa, in 2003 and 2006, respectively. He was a Visiting Student at DTU, Copenhagen, Denmark and a Guest Researcher at NICT, Tokyo, Japan. Since 2007 he has been an Assistant Professor at Scuola Superiore Sant'Anna, since 2019 he is a Researcher of the National Research Council of Italy at the Institute of Electronics, Information Engineering and Telecommunications (CNR-IEIIT). He has a background in the design and the performance analysis of optical circuit-switched and packet-switched networks and nodes. His research interests include photonic integration technologies for telecom, datacom and computing applications. He has been working in the field of optical processing and optical interconnection network architectures and scheduling, and more recently has been investigating integrated transceivers, comb sources, and architectures and subsystems for photonic neural networks. He has authored more than 200 publications in international journals and conferences, contributed to one IETF RFC, and filed 11 patents. He has been a TPC Member in several international conferences (ICC, GLOBECOM, ECOC, EuCNC, IPR, PSC), he served as an Associate Editor of IEEE Access between 2019 and 2022, and he is an Associate Editor of IEEE Photonics Journal.

How to Submit a Paper

All papers for technical symposia should be submitted via EDAS. Full instructions on how to submit papers and important deadlines are posted at https://globecom2023.ieee-globecom.org/