

Announcing a Special Issue of the  
*IEEE/Optica Publishing Group*  
*Journal of Lightwave Technology* on:

## PHOTONIC COMPUTING

### Scope

With the further advancement of integrated photonics beyond datacom applications, photonic computing is now on the rise to address performance requirements in emerging computing applications, such as machine learning and artificial intelligence (AI) systems. By communicating, storing, and processing data in the optical domain, photonic computing has the potential to provide very high footprint efficiencies in the hundreds of TMAC/s/mm<sup>2</sup> with energy efficiencies of sub-fJ/MAC. This special issue focuses on the interdisciplinary field of photonic computing while featuring state-of-the-art research in both academia and industry on various emerging computing systems using photonic devices and circuits for optical communications and information processing, as well as, enabling technologies from the material level to the architecture level. In addition, novel computation techniques using machine learning for the design optimization of optical networks and photonic devices will be featured. The scope of this special issue includes, but is not limited to, the following:

- Information processing using integrated photonic circuits
- Neuromorphic photonics
- Programmable photonic circuits
- Enabling technologies for photonic neuromorphic computing systems
- Devices and circuits for photonic spiking neural networks
- Non-volatile photonic memory technologies
- In-memory photonic computing
- Co-integration of electronics and photonic computing systems
- Physics-inspired optical computing
- Innovative applications of photonic computing
- Computational techniques for photonic inverse design

A portion of this issue will feature extended versions of the accepted papers presented at the 2023 IEEE Photonics Society Summer Topicals Meeting (SUM 2023) in Sicily, Italy, on July 17-19, 2023.

On behalf of the Guest Editors and the Editor-in-Chief, we encourage you to submit your work for inclusion in this special issue. Accepted papers will appear in the September/October 2024 hardcopy issue with accepted papers posted online within one week of author final file upload. Mandatory page charges of \$260.00 per page are enforced for original contributions in excess of 7 pages and invited papers in excess of 10 pages. Tutorial presenters will be invited to write articles that are up to 16 pages in length. The same mandatory fees apply to each tutorial paper in excess of 16 pages.

Submissions by IEEE Author Portal website only: <https://iee.atyponrex.com/journal/ieee-jlt>

Manuscript Type: "Photonic Computing"

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The Guest Editors for this issue are: **Paolo Bardella** (Politecnico di Torino, Italy), **Chaoran Huang** (The Chinese University of Hong Kong, Hong Kong, SAR China), **Miltiadis Moralis**-Pegios (Aristotle University, Greece), **Mahdi Nikdast** (Colorado State University, USA), **Bassem Tossoun** (Hewlett Packard Enterprise, USA), and **Angelina Totovic** (Celestial AI, USA / Greece).

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