Neural Network-Enhanced Photonic Circuit Design

ID: 2018-048

Executive Statement:

A groundbreaking invention that leverages neural networks to dramatically improve the efficiency and effectiveness of photonic circuit design.

Technology Overview:

This technology integrates neural networks with photonic integrated circuit design to significantly reduce simulation times from days to seconds, making it possible to solve inverse problems efficiently. It includes a user-friendly simulation toolbox that combines deep learning solvers with existing software packages, promoting accessibility and collaboration in photonics development.

Key Advantages:

- Drastically reduces simulation time from approximately two days to mere seconds
- Enables efficient solving of inverse problems in circuit design
- Integrates with existing software packages for a comprehensive design toolbox
- Designed to be user-friendly for both novice and experienced engineers
- Potential for open-source availability, expanding access to the technology

Problems Addressed:

- Lengthy simulation times for photonic circuits
- Complexity and inaccessibility of traditional photonic circuit design methods
- Economic and academic barriers to advanced optical engineering

Market Applications:

- Photonic integrated circuit design and simulation
- Optical engineering education and research
- Commercial photonics product development
- Collaborative engineering projects requiring fast and effective simulation tools