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Abstract for an Invited Paper
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Using Machine Learning to Design Integrated Photonics Circuits

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In this talk I will describe some novel machine learning techniques for designing optical devices and circuits. As an example, I will show an artificial neural network (ANN) design framework for devices that can be used as building blocks in integrated photonic circuits. Once trained, the ANNs decrease the computational cost relative to traditional design methodologies by more than 4 orders of magnitude. To illustrate the power of our new design paradigm, I will present forward and inverse design tools enabled by the ANN and demonstrate parameter extraction from fabricated devices.