Integrated Photonic Deep Neural Networks for Sub-Nanosecond Image Classification

F Aflatouni[1]

[1] *University of Pennsylvania, 200 S. 33rd Street, Philadelphia PA, USA*
Contact Email: firooz@seas.upenn.edu

Photonic deep neural networks perform fast classification through computation by propagation and low-loss optical interconnects. Here, a review of our work on the integrated end-to-end photonic neural network for image classification achieving a classification time of 570 ps is presented. Our monolithically integrated trainable optical nonlinear activation function for scalable silicon photonic deep networks is discussed and techniques ensuring robustness in analog deep networks are presented.