

Advancing the next generation of photonic systems using machine learning

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Abstract

Machine learning techniques are proving to be very useful for design of optical amplifiers, noise characterization of frequency combs, optimization of fiber-optic communications systems, inverse design of photonics components and quantum-noise limited signal detection. In this talk, we will review some of the successful applications of machine learning in photonics, and look into what is next in this emerging field. More specifically, I will focus on the application of machine learning techniques for phase noise characterization of optical frequency combs, and programmable ultra-wideband Raman amplifier. I will also present some initial results on how automatic differentiation can be employed for optimization of frequency combs.