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Learning in Holographic Convolutional Neural Nets

Tuesday, 6 September 2022 09:30 (35 minutes)

We show how the array of convolutional adaptive interconnections needed for deep
learning can be physically implemented and learned in an all-optical multistage dynamic holographically-interconnected architecture using thick Fourier-plane dynamic holographic photorefractive crystals.
This optical architecture is self-aligned, phase-calibrated, and aberration compensated by using photorefractive phase conjugate mirrors to record the dynamic-holographic Fourier-plane interconnections in each layer.

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Session Classification: Signal processing and photonics

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