Deep Learning with Specialized Training for Fast Computer Generated Holography

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Abstract: We recently introduced a new algorithm for computer-generated holography based on unsupervised deep learning. The algorithm yields high fidelity holograms in a few milliseconds, outperforming alternate methods that require many iterations and longer computation times. Here, we demonstrate that substantial gains in performance can be obtained by training the CNN with custom datasets selected to be specific to an application. Simulation results validate our approach with up to 20 percent more accuracy in holograms.