

ABSTRACT

This project report presents a power-constrained contrast enhancement algorithm for organic light-emitting diode display based on multiscale retinex (MSR). In general, MSR, which is the key component of the proposed algorithm, consists of power controllable log operation and sub band-wise gain control. First, we decompose an input image to MSRs of different sub-bands, and compute a proper gain for each MSR. Second, we apply a coarse-to-fine power control mechanism, which recomputes the MSRs and gains. This step iterates until the target power saving is accurately accomplished. With video sequences, the contrast levels of adjacent images are determined consistently using temporal coherence in order to avoid flickering artifacts. Finally, we present several optimization skills for real-time processing. Experimental results show that the proposed algorithm provides better visual quality than previous methods, and a consistent power-saving ratio without flickering artifacts, even for video sequences.