Image De-noising Using Quadtree-Based Nonlocal Means With Locally Adaptive Principal Component Analysis

In this letter, we present an efficient image denoising method combining quadtree-based nonlocal means (NLM) and locally adaptive principal component analysis. It exploits nonlocal multiscale self-similarity better, by creating sub-patches of different sizes using quadtree decomposition on each patch. To achieve spatially uniform denoising, we propose a local noise variance estimator combined with denoiser based on locally adaptive principal component analysis. Experimental results demonstrate that our proposed method achieves very competitive denoising performance compared with state-of-the-art denoising methods, even obtaining better visual perception at high noise levels.