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Kernel-based fourth-order diffusion for image noise removal.


Summary: The fourth-order partial differential equations have good performance on noise smoothing and edge preservation without creating blocky effects on smooth regions. However, for low signal-to-noise ratio images, the discrimination between edges and noise is a challenging problem. A novel kernel-based fourth-order diffusion is proposed in this paper. It introduces a kernelized gradient operator in the fourth-order diffusion process, which leads to more effective noise removal capability. Experiment results show that this method outperforms several previous anisotropic diffusion methods for noise removal and edge preservation.

Keywords: diffusion; image filter; kernel method; noise removal; anisotropic

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