基于多维空间阶跃约束的噪声图像预均衡方法

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摘 要：为解决多尺度噪声图像平滑易导致图像边缘轮廓以及重要细节特征丢失的问题，提出了一种基于多维空间阶跃约束的噪声图像预均衡方法．该方法首先对噪声图像多尺度几何空间分析，将非线性扩散方程引入多尺度变换域去噪，并利用非线性约束准则对多尺度空间噪声进行预均衡抑制，将去噪问题化归为目标函数的最优化约束解，以最大程度保证噪声对边缘轮廓的干扰最小，在有效去噪的同时更多地保留了图像的边缘信息和细节特征．实验结果表明，无论在主观视觉效果还是峰值信噪比等方面均验证了该方法的有效性．

关键词：图像去噪；多尺度；均衡；扩散模型，非线性约束
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Pre-equalization Algorithm for Noise Image Based on Multidimensional Space and Step Constraint

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Abstract: In order to solve the problem that the multi scale image noise smoothing easily lead to the loss of image edge details and important problem, a multidimensional space based on a step constrained noise image pre equalization algorithm is proposed. Analysis of the algorithm for noise image multiscale geometric space, will introduce multiscale transform domain denoising of nonlinear diffusion equations, and the multi-scale space noise suppression using pre equilibrium constrained nonlinear criterion, the denoising problem is transformed into constrained optimization solution of objective function, to maximize the noise interference on the edges, in the effective denoising and retain more edge information and details of images. The experimental results show that, in both the subjective visual effect and peak signal to noise ratio has proved the validity of the algorithm.

Key words: image denoising; multi-scale; equalization; diffusion model; nonlinear constrained

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