

图形、图像、模式识别

基于HVS特性的自适应 K 近邻均值滤波算法

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摘要 通过充分考虑宿主图像亮度、纹理、边缘等特征, 提出一种改进的图像自适应 K 近邻均值滤波算法。该方法首先利用基于人眼视觉特性的临界噪声阈值来确定噪声点, 然后根据噪声密度自适应调整滤波窗口大小与参与滤波的像素数 K 值, 采用自适应 K 近邻均值滤波对检测出的噪声点进行处理。该算法能有效去除噪声, 并较好地保留图像边缘细节, 仿真实验结果表明, 提出算法比传统中值滤波、均值滤波和 K 近邻均值滤波算法有更好的去噪能力。

关键词 [K近邻均值滤波](#) [人类视觉系统](#) [噪声检测](#) [椒盐噪声](#)

分类号

Image adaptive K -nearest neighbour mean filters based on HVS

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Abstract

An image adaptive K -nearest neighbour filtering algorithm (AKNNMF) is presented by the exploiting of luminance, edge, texture characteristics of the host image. First possible noisy pixels are determined according to the just noticeable difference based on Human Visual System (HVS) masking characteristics, and then the filter window size and the K value is adaptively adjusted by the noise density. Finally, the noisy pixels are removed by the improved adaptive K -nearest neighbour filtering algorithm. It can successfully remove salt and pepper noise as well as preserving image detail. Experimental results show that the presented scheme is superior to standard median filters, mean filters, K -nearest neighbour mean filters.

Key words [K-nearest neighbour filters](#) [human visual system](#) [noise detection](#) [salt and pepper noise](#)

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