动态取样机制耦合卡通成分估算的图像修复算法

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摘　要：〖JP+1〗提出动态取样机制耦合卡通成分估算的图像修复算法.首先，引入各向异性扩散机制，获取图像的卡通分量，再引入高斯低通滤波器，改进了拉普拉斯算子，并联合卡通分量，建立等照度线检测模型，用以计算填充优先项；然后，建立动态取样机制，替代静态取样，从而提高样本的择取准确度及修复效率；最后，基于卡通分量，建立最优候选块匹配距离，测量目标块和候选块的相似度，完成图像修复.实验结果显示：与当前修复算法相比，在面对复杂纹理结构图像修复时，该修复算法有效抑制了模糊效应，拥有更佳的视觉效果与更高的修复效率.〖JP〗

关键词：图像修复；动态取样；卡通成分；各向异性扩散；最优候选块匹配距离；等照度线

Image Inpainting Algorithm Based on Dynamic Sampling Mechanism and Cartoon Component Estimation

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Abstract：An image inpainting algorithm based on improved Laplace operator and cartoon component was proposed in this paper. First, by solving the anisotropic diffusion equation, the cartoon component of the image is obtained. The Gauss low pass filter is coupled with the Laplace operator to generate an improved Laplace operator, the improved Laplace operator combined with the cartoon component, the detection equation of the illumination line is established. Then, dynamic sampling mechanism is used to set up the sample area in order to improve the efficiency of the algorithm. Finally, the normalized root mean square function is established to measure the similarity between the target block and the candidate block, and to complete the image restoration. The experimental results show that: compared with the control group, this algorithm had better visual effect and effectively reduces the blurring effect in inpainting of the complex texture image.

Key words：image inpainting; dynamic sampling; cartoon component; anisotropic diffusion; optimal candidate block matching distance; equal illumination line

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