

基于 SIFT 算法和 Contourlet 变换的图像拼接研究

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摘 要: 利用“回”型采样窗口将邻域分割成四个子域, 并采用自适应量化策略进行梯度直方图和局部区域的划分, 最终建立 96 维的特征点描述符, 进一步提高 SIFT 匹配算法的鲁棒性和实时性. 基于改进的 SIFT 算法, 根据 Contourlet 变换理论提出了一种新的图像融合方法, 主要解决边缘信息和纹理信息的融合问题, 有效地消除色差使融合后的图像更清晰. 实验结果表明, 这种新方法可以加快图像配准中的 SIFT 过程, 增强图像拼接效果.

关键词: 配准; 融合; SIFT; 自适应量化; Contourlet 变换

Image Stitching Based on SIFT Algorithm and Contourlet Transform

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Abstract: In this paper, we use the “back” sampling window to divide the neighborhood into four sub-domains and use the adaptive quantization strategy to divide the gradient histogram and the local area. Finally, we construct 96-dimensional feature point descriptor, and further improve the SIFT matching algorithm Robustness and real-time. Based on the improved SIFT algorithm, this paper proposes a new image fusion method based on Contourlet transform theory, which solves the fusion problem of edge information and texture information, and eliminates chromatic aberration to make the fused image clearer. Experimental results show that this new method can speed up the SIFT process in image registration and enhance the image stitching effect.

Key words: registration; fusion; SIFT; adaptive quantization; Contourlet transform

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