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基于NSCT域I^{2}CM的图像融合方法

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Technique for image fusion based on non-subsampled contourlet transform domain improved ICM

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- 摘要
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摘要 针对多传感器图像融合问题, 提出一种基于非下采样轮廓波变换域改进型交叉视觉皮层模型的图像融合方法. 首先, 采用非下采样轮廓波变换对源图像进行多尺度、多方向稀疏分解; 然后对经典交叉视觉皮层模型进行改进, 改进后的模型不仅待定参数更少, 而且可以自适应地确定迭代次数; 最后利用其实现对各子图像的融合并进行非下采样轮廓波逆变换获得最终融合图像. 实验结果验证了该方法的有效性.

关键词: 图像融合 非下采样轮廓波变换 交叉视觉皮层模型 赋时矩阵

Abstract: To overcome the multi-sensor image fusion problem, a technique for image fusion based on Non-Subsampled Contourlet Transform (NSCT) domain improved Intersecting Cortical Model (ICM) has been proposed. To begin with, multi-scale and multi-directional sparse decompositions of source images are performed by NSCT. Then, the basic ICM is improved to be I^{2}CM, which has not only fewer parameters, but the ability to determine the iteration times adaptively. Finally, the fusion scheme of sub-images is carried out by I^{2}CM and the final fused image can be obtained by utilizing inverse NSCT to all fused sub-images. Experimental results show that the technique proposed has good performance.

Key words: image fusion non-subsampled contourlet transform intersecting cortical model time matrix

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