Image Fusion Using Transform Algorithms with Segmentation

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ABSTRACT

Image fusion has wide areas of applications, such as computer-aided piloting system, medical imaging, reconstruction of defocused images, and safety inspection. The importance is gaining popularity. A good fused image is obtained by finding the important features of the source images and combining them appropriately. The suitable fusion algorithms might be different for different sources of sensors. For defocused images, edge detection is used for preprocessing. Hence the important features and regions with apparent activity are extracted. Transforms are performed on the regions that contain less variation. Coefficients can then be extracted and fused. The reconstructed image can be obtained by applying an inverse transform. For computer-aided piloting system and medical imaging, redundant wavelet transform is applied and local energy feature is then selected. The main concern is to discriminate features in brightness variation. In such way, the fused image clearly explains the features in the source images. The effectiveness and performance will be demonstrated in the simulation results.

Keywords : image fusion ; edge detection ; DCT ; DWT ; RWT

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