Abstract

The fast development of digital image processing leads to the growth of feature extraction of images which leads to the development of Image fusion. Image fusion is defined as the process of combining two or more different images into a new single image retaining important features from each image with extended information content. There are two approaches to image fusion, namely Spatial Fusion and Transform fusion. In Spatial fusion, the pixel values from the source images are directly summed up and taken average to form the pixel of the composite image at that location. Transform fusion uses transform for representing the source images at multi scale. The most common widely used transform for image fusion at multi scale is Wavelet Transform since it minimizes structural distortions. But, wavelet transform suffers from lack of shift invariance & poor directionality and these disadvantages are overcome by Stationary Wavelet Transform and Dual Tree Wavelet Transform. The conventional convolution-based implementation of the discrete wavelet transform has high computational and memory requirements. Lifting Wavelets has been developed to overcome these drawbacks. The Multi-Wavelet Transform of image signals produces a non-redundant image representation, which provides better spatial and spectral localization of image formation than discrete wavelet transform. And there are three levels of image fusion namely Pixel level, Area level and region level. This paper evaluates the performance of all levels of multi focused image fusion of using
Discrete Wavelet Transform, Stationary Wavelet Transform, Lifting Wavelet Transform, Multi Wavelet Transform, Dual Tree Discrete Wavelet Transform and Dual Tree Complex Wavelet transform in terms of various performance measures.

Reference


Index Terms

Computer Science

Image Processing

Key words

Image Fusion

Discrete Wavelet Transform

Stationary Wavelet Transform

Lifting Wavelet Transform

Multi Wavelet Transform

Dual Tree Discrete Wavelet Transform and Dual Tree Complex Wavelet transform