Abstract

In various real life applications such as remote sensing and medical image diagnosis image fusion plays imperative role and it is more popular for image processing applications. Because of inadequate nature of practical imaging systems the capture images or acquired images are corrupted from various noise hence fusion of image is an integrated approach where reduction of noise and retaining the original features of image is essential. Image fusion is the process of
extracting meaningful visual information from two or more images and combining them to form one fused image. Discrete Wavelet Transform (DWT) has a wide range of application in fusion of noise images. Previously, real valued wavelet transforms have been used for image fusion. Although this technique has provided improvements over more inhabitant methods, this transform suffers from the shift variance and lack of directionality associated with its wavelet bases. These problems have been overcome by the use of a reversible and discrete complex wavelet transform (the Dual Tree Complex Wavelet Transform DT-CWT). However, the existing structure of this complex wavelet decomposition enforces a very strict choice of filters in order to achieve a necessary quarter shift in coefficient output. This paper therefore introduces an alternative structure to the DT-CWT that is more flexible in its potential choice of filters and can be implemented by the combination of four normally structured wavelet transforms. The use of these more common wavelet transforms enables this method to make use of existing optimized wavelet decomposition and re-composition methods, code and filter choice.

References

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Index Terms

Computer Science
Image Processing
Keywords
Wavelet Transform    Discrete Wavelet Transform (dwt)    Dual-tree Complex Wavelet Image
Transform (dt-cwt)    Fusion