Abstract

The Image fusion is a data fusion innovation which keeps images as main research substance which refers to the strategies that integrate multi-images of the same scene from multiple image sensor data or integrate multi images of the same scene at different times from single image sensor. In this paper we describes a novel image fusion method, is suitable for pan-sharpening of multispectral (MS) bands which are based on multi-resolution analysis. The low-resolution MS bands are sharpened by injecting high-pass directional details extracted from the high-resolution panchromatic (Pan) image by means of the Wavelet and Curvelet transform, which is a non-separable MRA, whose basis function are directional edges with progressively increasing resolution. We introduce a new method based on the Wavelet and Curvelet transform using Neural Network which represents edges better than wavelets in this paper. Therefore, edges play a fundamental role in image understanding and one important way to enhance spatial resolution is to enhance the edges. Wavelet and Curvelet-based image fusion method provides richer information in the spatial and spectral domains simultaneously.


**Index Terms**

Computer Science  
Image Processing

**Keywords**

Edge Detection  
Wavelet and Curvelet Transform  
Neuro-Fuzzy (ANFIS)  
Support Vector Machine (SVM)