Abstract

Image fusion or Pan Sharpening produces high quality fused multispectral image using high spatial resolution Panchromatic (PAN) image and low spatial resolution multispectral (MS) image. The aim is to retain to a large extent both the high frequency spatial component of PAN and high spectral resolution of MS data. There are many approaches (more than 10) for image fusion based on different colour models and spatial transformations, the performances of some of which using the IKONOS-2 PAN and MS images have been evaluated earlier by the authors of this paper. In this paper, the concept of combining different spatial frequency components of the PAN and intensity images and merging with hue and saturation components is attempted on all the 10 approaches of image fusion. The technique of merging of high spatial frequency of PAN and low spatial frequency component of intensity images is described. The results of the statistical analysis show that there is marked improvement in retention of the spectral information albeit at slight loss of spatial correlation in pan-sharpening. The high level of retention of spectral information is especially significant in view of expected better classification accuracy.
Pan-sharpening based on Merged Product of Spatial Frequency Components of PAN and Intensity Images

References

Pan-sharpening based on Merged Product of Spatial Frequency Components of PAN and Intensity Images

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Index Terms

Computer Science  Image Processing

Keywords

Image fusion  pan sharpening  spectral merging  spatial merging  IKONOS-2  image filtering.