



Effect of N-dimensional data sharpening on scene classification

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(Received: 5 December, 2008; in final form 12 September, 2009)

Abstract: Fusion of multispectral image with a hyperspectral image generates a composite image which preserves the spatial quality from the high resolution (MS) data and the spectral characteristics from the hyperspectral data. Despite the potential use of hyperspectral data to enhance the spectral information in the merged product, hyperspectral data has not been exploited to its extensive level. In fact, the fusion of multispectral data with hyperspectral data poses impasse due to large volume which in turn contribute to complexities in further processing. The objective of the present study was to analyse the Hyperion data for classification and feature extraction processes. High resolution IKONOS data has been fused with Hyperion using three merging algorithms i.e. Gram-Schmidt, Principal Component and Colour Normalised transform. The outcomes of the spectral evaluation confirm that the CNT spectral sharpening is better in preserving the spectral properties in the fused product. Classification accuracy incurred for the GST and the PCT fused product is higher than IKONOS data. The results of classification for the CNT fused product are badly affected due to the spectral artifacts.

Keywords: Image Fusion, Gram-Schmidt Transform (GST), Principal Component Transform (PCT), Colour Normalised Transform (CNT), Hyperspectral.