



An image fusion method based on object-oriented classification of panchromatic image

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Current image fusion techniques in remote sensing mostly are pixel-based, and the quality of each synthetic image is seriously impacted by the ratio of the spatial resolutions of input multispectral (MS) and panchromatic (PAN) images. As the ratio increases, the quality generally reduces. This is mainly due to the existence of MS mixed sub-pixels. The fusion of MS sub-pixels is rarely addressed in current fusion techniques and their resultant synthetic versions normally remain spectrally mixed and visually blurred. In this paper, a PAN image is first segmented to image objects, and then the class of each image object is judged regarding the spectral relationships of the PAN and MS images. For an object with a known class, all MS sub-pixels superimposed by it will be set to high-resolution pure pixels of the class in a fusion process. Tested upon IKONOS MS and PAN images with a significant ratio of spatial resolutions, the object-oriented fusion method proposed in this paper offers synthetic products with high spectral quality and better visualization than several current fusion methods.