

عنوان مقاله:

Using Discrete Wavelet Transform to increase the Accuracy of Hyper Spectral and High Resolution Images Fusion

محل انتشار:

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خلاصه مقاله:

In optical remote sensing, hyper-spectral (HS) image which contains color information is produced by hundreds of spectral bands. Because of the trade-off imposed by the physical constraint between spatial and spectral resolutions, the HS image has poor spatial resolution. On the contrary, the panchromatic (PAN) images have high spatial resolution but no color information. Image fusion can combine the geometric detail of PAN image and the color information of the HS image to produce a high-resolution HS image. The aim of this study is the fusion of Hyperion and OrbView-3 PAN images based on Discrete Wavelet Transform (DWT). Firstly, the preprocessing methods were applied on Hyperion and OrbView-3 images and registration method based on nearest neighbor method were applied on two dataset. In order to fit images pixel size, the resampling operation was applied. PAN image was decomposed by DWT and then fused by hyper spectral image with GST algorithm. DIV, CC, Q and RMSE accuracy assessment methods were used on final fused image to evaluate the results accuracy. The results showed that using DWT based decomposition PAN image, preserve the spatial information during fusion rule. Also this technique gains high accuracy in term of spectral information of hyper spectral image.

کلمات کلیدی:

Discrete Wavelet Transform (DWT), Hyperion, OrbView-3, Accuracy assessment

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