

论文

基于运动估计和ROI编码的干涉多光谱图像压缩

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摘要:

根据干涉多光谱图像的谱间相关性和光谱分布特点,提出一种基于运动估计和感兴趣区域编码的干涉多光谱图像压缩方法。为了去除多光谱图像的谱间相关性,采用运动估计法,对补偿后的图像(即预测误差)进行小波变换及率失真优化截取内嵌码块编码。同时采用率失真斜率提升的感兴趣区域编码方法,更好地保护光谱信息,使图像在相同的光谱分辨率下具有更好的空间分辨率。实验结果与基于三维小波变换的压缩方法以及比特平面移位的感兴趣区域编码方法相比,本文所提方法能有效改善恢复图像质量,提高编码效率,更好地保护光谱信息。

关键词: 图像处理 干涉光谱图像 运动估计 感兴趣区域 优化截取内嵌码块编码 率失真

An Algorithm for Multi-Spectral Image Compression Based on Motion Estimation and ROI

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Abstract:

With the analyses of the characteristic of interferential multi-spectral images, a new compression algorithm was proposed, which is based on motion compensation and region of interest coding method. In order to eliminate the redundancy between the two successive frames, the motion estimation method was adopted. With the method based on ROI coding of EBCOT, the image produced after motion compensation was coded. ROI coding was completed by lifting the slope of rate-distortion of code block, as the result multi-spectral information was well protected, higher compression ratio and less computing complexity were obtained as well. Compared with the algorithm based on 3D DWT and bit-plane scale-shift method of ROI, experimental results show that the proposed algorithm can improve the reconstructed image quality, enhance the efficiency of image coding and efficiently protect the multi-spectral information.

Keywords: Image processing Multi-spectral image Motion estimation ROI EBCOT Rate-distortion

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