

论文

基于谱间线性滤波的高光谱图像压缩感知

计振兴, 孔繁铨

南京航空航天大学 航天学院, 南京 210016

摘要:

根据高光谱图像较强的谱间相关性,提出一种基于谱间线性滤波的高光谱图像压缩感知方法.高光谱图像进行压缩重构时,利用相邻波谱的谱间相关性,对重构的当前帧与前一谱段的重构图像进行谱间线性滤波,降低了重构帧的噪音信息,纠正了重构帧的轮廓信息,从而提高重构质量.在进行谱间线性滤波时,保留重构帧的低频系数,高频系数与前一波谱重构图像的高频小波变换系数进行线性加权求和,达到滤波的效果.通过实验表明,该方法能够有效提升图像重构质量,并降低重构时间.

关键词: 高光谱图像 谱间线性滤波 压缩感知 小波变换

Hyperspectral Image Compressed Sensing Based on Linear Filter Between Bands

Ji Zhen-xing, KONG Fan-qiang

College of Astronautics, Nanjing University of Aeronautics and Astronautics, Nanjing 210016, China

Abstract:

According to the strong correlation between the spectrum on hyperspectral images, a method of hyperspectral image compressed sensing is proposed which is based on the linear filter between bands. In terms of apparent correlations between the image series, linear filter between bands is used between reconstruction frame and former reconstruction image, to reduce noise information, correct contour information on reconstruction image, and improve the precision of the reconstruction. In the linear filter between bands, low-frequency coefficients of the reconstruction frame are reserved, and high frequency coefficients are summed with the high wavelet transform coefficients of the previous spectrum reconstruction image. Experiment results show that the proposed method can improve the precision of the reconstruction and reduce the reconstruction time.

Keywords: Hyperspectral image Linear filter between bands Compressed sensing Wavelet transform

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