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Abstract

Hyperspectral sensors are imaging spectrometry sensors that generate useful information about climate and the earth surface in numerous contiguous narrow spectral bands, and are widely used in resource management, agriculture, environmental monitoring, etc. Compression of the Hyperspectral data helps in long-term storage and transmission systems. Lossless

compression is preferred for high-detail data, such as Hyperspectral data. There are a few well-known methods for lossless compression, such as JPEG standards, and some other previously proposed methods. However, improving the compression ratio of previous methods is the major focus in Hyperspectral-data compression. This paper introduces two new lossless compression methods. One of these methods is adaptive and powerful for the compression of Hyperspectral data, which is based on separating the bands with different specifications and compressing each one efficiently. The new proposed methods improve the compression ratio of the JPEG standards, save storage space, and speed up the transmission system. The proposed methods are applied on different test cases, and the results are evaluated and compared with other state-of-the-art compression methods, such as lossless JPEG and JPEG2000.

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Index Terms

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Keywords

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