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论文

基于DCT的分块自适应量化算法及其用于SAR原始数据压缩

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摘要
该文提出了一种基于离散余弦变换(DCT)和分块自适应量化相结合的SAR原始数据压缩算法。利用SAR原始数据满足局部平稳高斯随机过程的特点，通过将DCT系数进行重排，并对重排后的系数矩阵进行有效的量化比特分配和分块自适应量化，从而大幅度提高了量化增益。通过对真实SAR原始数据的压缩实验结果表明：该文算法与BAQ算法相比，以相对较低的运算复杂度增加，使图像域的压缩性能指标有了明显提高。

关键词 SAR原始数据压缩 离散余弦变换 比特分配 分块自适应量化

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A Compression Algorithm for SAR Raw Data Based on the Combination of Discrete Cosine Transform and Block-Adaptive Quantization

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Abstract
In this paper, an algorithm for compressing synthetic aperture radar raw data is proposed. This algorithm is based on the combination of discrete cosine transform and block-adaptive quantization. The known results that a block normalized SAR raw signal is a Gaussian stationary process are exploited in order to re-array the DCT coefficients. Coupled with a proper bit allocation strategy and block-adaptive quantization on re-arrayed coefficients matrix, this algorithm exhibits notably an interesting performance/complexity trade-off with respect to conventional methods such as BAQ. Simulation results on real-world SAR raw data also show that the proposed algorithm outperforms methods based on wavelets as to SNR and PSNR.

Key words SAR raw data compression DCT Bit allocation Block-adaptive quantization

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