论文

基于DCT-TCQ的SAR原始数据压缩算法

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摘要
该文提出了一种基于离散余弦变换(DCT)和网格编码量化(TCQ)的SAR原始数据压缩算法。SAR原始数据可以看成是距离向和方位向的2维线性调频信号的线性平移叠加，因而含有丰富的频率分量，对DCT系数按频率分组，根据各组频率分量系数方差确定量化比特分配，然后对量化系数进行TCQ编码量化，可以大幅度提高了量化增益。真实SAR原始数据实验结果表明：该算法使SAR原始数据的压缩性能指标较现有算法有了明显提高。

关键词　　SAR原始数据压缩　　离散余弦变换　　比特分配　网格编码量化

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DCT-TCQ Based SAR Raw Data Compression Algorithm

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Abstract
In this paper, an algorithm for compressing SAR raw data is proposed. This algorithm is based on the combination of Discrete Cosine Transform(DCT) and Trellis Coding Quantization(TCQ). Because SAR raw data consists of mass linear frequency modulation signals and have plenty of frequency components, a quantization bit allocation method is desired with grouped DCT coefficients based on frequency components, and quantizing the coefficients with TCQ methods. therefore this algorithm obtains notable quantization gain. Simulation results on real SAR raw data show that the proposed algorithm outperforms existed algorithms.

Key words　　SAR raw data compression　　Discrete Cosine Transform(DCT)　　Bit allocation　Trellis Coding Quantization(TCQ)

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