理论研究

H.264中一种有效的对整数DCT系数的预测方法

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摘要 提出了一种在H.264中减小DCT变换和量化计算量的新的有效方法。通过理论分析，研究了Normal4×4，LumaDC4×4和ChramaDC2×2这三种变换的系数动态分布，进而对变换和量化方法的三种类型提出相应的DCT系数量化为零三个充分条件。与文献中所提到的其它方法相比，该方法更加有效、精确。理论分析和实验结果表明：在减小计算复杂度、编码视频质量、错误接受率（false acceptance rate），错误拒绝率（false rejection rate）等方面，该方法都优于其它方法。

关键词 视频编码 H.264 量化

分类号

Efficient prediction method of integer DCT coefficients for H.264/AVC

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Abstract

This paper presents a novel efficient prediction method to reduce redundant Discrete Cosine Transform（DCT） and quantization computations for H.264 encoding optimization.Through theoretical analysis，three transform dynamic distribution coefficient of Normal4×4，LumaDC4×4 and ChramaDC2×2 are studied，and the sufficient condition for DCT coefficients to be quantized to zeros is studied.As a result，three sufficient conditions corresponding to three types of transform and quantization methods in H.264 are proposed.Compared with other method in the literature，the proposed method derives more precise and efficient conditions to predict zero quantized DCT coefficients.Both the theoretical analysis and experimental results demonstrate that the proposed algorithm is superior to other algorithms in terms of the computational complexity reduction，encoded video quality，false acceptance rate，and false rejection rate.

Key words video coding H.264 quantization

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