

基于子带相似性分析的JPEG2000图像无参考质量评价

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No Reference Image Quality Assessment Based on Subbands Similarity and Statistical Analysis for JPEG2000

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摘要

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摘要 无失真图像中相邻尺度同一方向子带的小波系数是相互关联的, 而编码压缩使得这种相关性随着压缩率而变化的。该文采用余弦相似性来模拟相邻尺度同方向子带图像的相关性, 根据提取的子带相似性特征矢量和统计工具来分析人的主观质量评价得分MOS(Mean Opinion Scores)与子带余弦相似性的关系, 得到了一种新的无参考质量模型。实验结果显示该文提出的JPEG2000无参考质量评价方法与MOS具有较高的相关性, 而且复杂度低, 运行时间少。

关键词: 图像处理 无参考图像质量评价 余弦相似 统计分析 JPEG2000

Abstract: For undistorted images, the wavelet coefficients of between-scale coefficients in the same orientation are correlated, while compression coding reduce the correlation. Cosine similarity is used in this work to model the correlation of between-scale subbands, and statistical regression is applied to analyze the relationship between human subjective assessment Mean Opinion Scores (MOS) and subbands cosine similarity. The accurate quality model is obtained by regression analysis. Experimental results show that the proposed no-reference method has a high correlation with the MOS measurement, and a considerably lower computational complexity and less run time.

Keywords: Image processing No-reference Image quality assessment Cosine similarity Statistical analysis JPEG2000

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