研发、设计、测试

基于MCM的block-DCT域盲隐写分析算法

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摘要　针对block-DCT域隐写，基于马尔可夫链模型（Markov Chain Model，MCM），提出了一种新的盲隐写分析算法。该算法分析研究了DCT系数的分布特点和统计特征，采用隐马尔可夫树（Hiding Markov Tree Mode，HMT）模型，实现了载体图像的预测；基于MCM构建二阶马尔可夫经验转移矩模型，捕捉块内和块间DCT系数的相关性，提取经验转移矩阵对角元素作为特征向量，构建特征向量夹角作为检测秘密信息是否存在的依据。实验结果证明：该检测方法比普通的隐写算法具有较高的可靠性和较好的综合性能。

关键词　马尔可夫链模型　隐写分析　经验转移矩　隐马尔可夫

分类号

Blind steganalysis algorithm based on MCM in block-DCT domain

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Abstract

Aiming at steganography of the block-DCT domain，a new blind steganalysis algorithm based on Markov Chain Model（MCM） is proposed.This algorithm analizes and researches the distribution characteristic and the statistical features of the DCT coefficients，the Hiding Markov Tree（HMT） model is applied to generate the estimated cover images，and a two-order Markov empirical transition matrix model is built to capture both inter-block and intra-block dependencies between the block-DCT coefficients.And then，the diagonal elements are extracted from its empirical transition matrix as eigenvectors of the images，and the angle of the eigenvectors is constructed for detection the present or not of secrete messages in the digital images without knowledge of the original cover images.At the end，it takes an example to illustrate both the reliability and general performances of the algorithm is superior to the general detection algorithm.

Key words　Markov Chain Model（MCM）　steganalysis　empirical transition matrix　Hiding Markov Tree（HMT）

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