

题目：基于 Matlab 的数字水印算法研究与仿真

摘 要

随着计算机网络和数字化多媒体的高速发展,数字作品版权保护也面临着日益严峻的挑战。数字水印技术是通过在数字媒体中嵌入不可感知的版权水印信息,实现对数字产品的保护。近年来,数字水印技术因为其具有良好的隐蔽性、鲁棒性、安全性等优势,引起了学者广泛关注。

本文主要研究数字水印技术和相关算法,并基于 Matlab 对数字水印算法进行系统仿真。首先介绍数字水印技术和相关理论;其次针对数字水印的预处理部分,简单介绍加密和图像置乱技术;进而对包括水印嵌入、性能检测两个环节的数字水印系统进行设计,并基于该系统模型对余弦变换水印算法和小波变换水印算法进行仿真和性能比较。

关键词: 数字水印; 小波变换; 余弦变换; Matlab

Abstract

With the rapid development of computer network and digital multimedia, the copyright protection of digital works is facing increasingly severe challenges. Digital watermarking technology embeds imperceptible copyright watermark information into digital media to protect digital products. In recent years, digital watermarking technology has attracted a lot of attention because of its good concealment, robustness, security and other advantages.

This paper mainly studies the digital watermarking technology and related algorithms, and carries on the system simulation to the digital watermarking algorithm based on MATLAB. Firstly, it introduces the digital watermarking technology and related theories; secondly, it introduces the encryption technology and image scrambling technology for the pretreatment of digital watermarking; Then the digital watermarking system including watermark embedding and performance detection is designed, and the cosine transform watermarking algorithm and wavelet transform watermarking algorithm are simulated and compared based on the system model.

Key Words: Digital watermarking; wavelet transform; cosine transform; Matlab

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