Abstract

Digital media security is the principal concern in the today’s technological world. Due to easy production, transmission and dissemination of digital data, security threats occur while dealing with digital data. Digital watermarking is one of the growing and promising technologies to protect the digital data from being tampered and also widely used for copyright protection.
Several watermarking techniques in spatial and frequency domain were given by various researchers which suffered from problems of poor robustness and fidelity. The evolutionary techniques using genetic algorithm provide an alternative way of creating watermarks with promising values of robustness and fidelity aspect of watermarking. This paper deals with design and development of a new watermarking technique which uses genetic algorithm to identify locations within the cover image for watermark insertion in spatial domain and then apply the average neighborhood concept for the purpose of watermark insertion and extraction ensuring higher fidelity and robustness and resilience to several possible image attacks. Genetic search often produces same watermark locations in different populations for watermark insertion resulting in poor value of fidelity and robustness, which need to be checked. Sliding window concept introduced in this paper uses a set of a few genes which are serially shuffled to get new set of locations for watermarking during each population generation and helps in enhancing robustness and fidelity aspect of watermarking. Tournament selection has been used while using the genetic algorithms developed in the paper.

Reference

Sliding Window used for Robustness and Fidelity Optimization Employing Neighborhood Concept and Genetic Algorithm with Tournament Selection

Index Terms

Computer Science

Security

Key words

Digital watermarking

Fidelity

Robustness

Neighborhood concept

Sliding window