Abstract

The rapid growth of digital multimedia and Internet technologies has made data security as an important issue in digital world. Encryption techniques are used to achieve data confidentiality, and this paper proposes a novel integrity verification method for images during transit. The confidential image is first divided into dedicated number of blocks; a discrete transform domain algorithm is used to embed a block based mark of the same image in another block according to a specific algorithm. In this work, the popular discrete transform domains, such as the discrete cosine transform (DCT), discrete Fourier transforms (DFT), and discrete wavelet transform (DWT) are examined individually. Different image analyses and comparisons are
verified to examine the suitability of proposed algorithm with these domains. The discrete cosine transform (DCT) proved to be more efficient transform domain used with the proposed scheme. Higher sensitivity to simple modifications makes proposed scheme more applicable tool for image integrity verification with hyper secure data transformations such military and nuclear applications.

References

- C. Shoemaker, Rudko, "Hidden Bits: A Survey of Techniques for Digital
Image Contents Verification Algorithm using Transform Domain Techniques

Watermarking" Independent Study EER-290 Prof Rudko, Spring 2002.

Index Terms

Computer Science

Security

Keywords

Information security

Integrity

Image verification

Authentication

Digital Watermarking

DCT

DFT

DWT

MSE

PSNR

Correlation

Noise