

Novel watermarking technique based on the generalized squared interpoint distance for image copyright protection applications

Authors: Hazem A. Al-Otum and Omar Qasaimeh

Abstract: Since image watermarking has become an important tool for intellectual property protection and authentication, a waveletbased watermarking scheme for color images is proposed. The watermarking scheme is based on implementing the generalized squared interpoint distance (GSID) in designing a weighting function to be used in a spread-spectrum fashion watermarking (SSW) and is denoted as SSW-GSID. Watermark embedding process is carried out by transforming the host image into the wavelet domain. For highly robust and imperceptible embedding, watermark bits are added to the discrete wavelet transform (DWT) coefficients of all subbands after being weighted using the product of the calculated GSID values (of the host image) and the basis function amplitudes of the DWT decomposition. Experimental results have shown that SSW-GSID exhibits highly reliable extraction of the watermark from attacked images. Based on the provided experimental results, it can be observed that the proposed SSW-GSID method is robust against a wide variety of attacks. Comparison with other existing methods shows the superiority of the proposed SSW-GSID method.