

Jordan University of Science and Technology

Wavelet Packets-based Watermarking with Preserved High Color Image Quality and Enhanced Robustness for Copyright Protection Applications

Authors: Hazem A. Al-Otum

Abstract: This paper proposes an effective technique to be implemented for wavelet-packetsbased color image watermarking applications. The proposed technique exhibits high imperceptibility and enhanced robustness for copyright protection applications that exploits the significant features between color image components. The RGB layers of the input color host image are extracted and separately applied to the wavelet-packet transform. The obtained transformed components are used to build the so called difference conjoint core trees with coefficients corresponding to various frequency bands of the same spatial location . Next, an updating step is applied by adaptively modifying selected elements in such a manner to provide the selected coefficients with proper energy (amplitude) to preserve the watermark while not highly deteriorating the output image quality. Simulation results have shown high imperceptibility as well as superior robustness against a wide variety of mild-to-severe unintentional and intentional attacks.