Esprax Id: **Esparx-Reg-15062**

Information Technology

Image Compression and Watermarking scheme using Scalar Quantization

Abstract: **This paper presents a new compression technique and image watermarking algorithm based on Contourlet Transform (CT). For image compression, an energy based quantization is used. Scalar quantization is explored for image watermarking. Double filter bank structure is used in CT. The Laplacian Pyramid (LP) is used to capture the point discontinuities, and then followed by a Directional Filter Bank (DFB) to link point discontinuities. The coefficients of down sampled low pass version of LP decomposed image are re-ordered in a pre-determined manner and prediction algorithm is used to reduce entropy (bits/pixel). In addition, the coefficients of CT are quantized based on the energy in the particular band. The superiority of proposed algorithm to JPEG is observed in terms of reduced blocking artifacts. The results are also compared with wavelet transform (WT). Superiority of CT to WT is observed when the image contains more contours. The watermark image is embedded in the low pass image of contourlet decomposition. The watermark can be extracted with minimum error. In terms of PSNR, the visual quality of the watermarked image is exceptional. The proposed algorithm is robust to many image attacks and suitable for copyright protection applications.**