An approach to self reference image watermarking scheme based on Discrete Cosine Transform (DCT) and Singular Value Decomposition (SVD). First, the original image is segmented into blocks by using ZIG - ZAG sequence. Then find the edges in each block and kept a threshold on these number of edges in each block. Using this threshold, get the essential blocks. A reference image is formed by taking these essential blocks. Reference image is transformed into DCT domain and then SVD is performed on both reference and watermarked image. Embedding is done by modifying singular values of the reference image using singular values of watermark. After embedding, modified reference image is segmented into blocks and these modified blocks are mapped into their original places for constructing watermarked image. For extraction, the watermarked reference image is constructed by the watermarked image using the positions of the selected blocks and the reverse process is used for extracting the singular values of the watermark from watermarked reference image. Robustness of proposed scheme is carried out by a variety of attacks.
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A Semi Blind Self Reference Image Watermarking in Discrete Cosine Transform using Singular Value Decomposition

- Gengming Zhu, and Nong Sang "Watermarking Algorithm Research and Implementation Based on DCT Block": proceedings of world academy of science, engineering and technology volume 35 november 2008 issn 2070-3740
A Semi Blind Self Reference Image Watermarking in Discrete Cosine Transform using Singular Value Decomposition

386-393.


Index Terms

Computer Science
Image Processing

Keywords
DCT  SVD  Zig-Zag  Robust edges