A B- Spline-Based Image Compression and Watermarking Techniques

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Abstract

A fast computationally efficient method is proposed for computing the non real time response of non-causal digital systems. This method is then used for the computation of B_Spline signal decomposition. Next, it is shown that when this pre-transformed B_Spline based technique is used in image compression using bit rates of the order 1.0 bits/pixel or less, it performs better than known coding schemes like JPEG2K and SPIHT in spite of using far less amount of data. Moreover, this scheme is also used in digital image watermarking. Comparisons with vector quantization based watermarking schemes show that the proposed method yields a higher watermarked PSNR. Security of the watermarking image can be increased by varying the order of the B_Spline function used, as well as the decimation ratio M. Illustrative examples are given.

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