

Conference Paper

An Optimal Wavelet Filter for Despeckling Echocardiographic Images

January 2008

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Abstract

The major difficulty concerning echocardiograph image processing is speckle noise. In this paper, we present wavelet based algorithm for denoising echocardiograph images and then determine an optimal wavelet filter that yields good quality images. The log transformed input is represented in multiscale wavelet domain. Global hard thresholding of subband coefficients is performed to achieve lossy compression of image. The inverse wavelet transformed image is free from speckle noise. The image quality is assessed in terms of objective and statistical measures, namely, peak-signal-to-noise ratio (PSNR), compression ratio, variance, mean square error (MSE). The experiments are performed using different wavelets at various levels of decomposition. The results show that bior6.8 with 2-level decomposition yields better quality despeckled images.

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... Various filters such as median, Gaussian, Weiner and Gabor filters are used in noise removal [3]. The despeckling of USG image using wavelets is highlighted in [4]. Efficiency of the method is illustrated by measuring the parameters such as mean square error, peak signal to noise ratio, etc. ...

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... The +1 value of r indicates positively correlated and -1 value indicates negatively correlated [13]. A zero value indicates no correlation [14, 15]. ...

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Joint encoding of the depth image based representation using shape-adaptive wavelets

January 2008 · Proceedings / ICIP ... International Conference on Image Processing

● Matthieu Maitre · ● Minh N. Do

We present a novel codec of depth-image-based representations for free-viewpoint 3D-TV. The proposed codec relies on a shape-adaptive wavelet transform and an explicit representation of the locations of major depth edges. Unlike classical wavelet transforms, the shape-adaptive transform generates small wavelet coefficients along depth edges, which greatly reduces the data entropy. The codec also ... [\[Show full abstract\]](#)

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Improved techniques for lossless image compression with reversible integer wavelet transforms

November 1998

● Nasir D. Memon · X. Wu · ● Boon-Lock Yeo

The past few years have seen an increasing interest in using reversible integer wavelets in image compression. Reversible integer wavelet image coders facilitate decompression from low bit rates all the way up to lossless reconstruction. However, in the past, specific implementations of such techniques, like S+P, could not match the lossless compression performance of state-of-the-art predictive ... [\[Show full abstract\]](#)

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RL turbulence degraded image restoration algorithm based on wavelet transform

October 2017

X.-R. Xu · M. Dai · C.-L. Yin

In order to recover the target image accurately and effectively from the turbulence degraded image, a RL turbulence degraded image restoration algorithm based on wavelet transform is proposed. Firstly, the turbulence degraded image is decomposed by wavelet, and sub-images of different frequency bands can be obtained at different decomposition scales. According to the wavelet coefficients of the ... [\[Show full abstract\]](#)

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BLaC-wavelets: a multiresolution analysis with non-nested spaces

December 1996

December 1990

G. -p. Bonneau · Stefanie Hahmann · Gregory M Nielson

In the last five years, there has been numerous applications of wavelets and multiresolution analysis in many fields of computer graphics as different as geometric modelling, volume visualization or illumination modelling. Classical multiresolution analysis is based on the knowledge of a nested set of functional spaces in which the successive approximations of a given function converge to that ... [\[Show full abstract\]](#)

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Research of de-noising for micro-mechanical gyro signal based wavelet transform

December 2009

Yang Jinxian · Zhang Ying

According to a certain type of micro-machined gyroscope signal characteristics, wavelet transform de-noising method was adopted. The measured noise signal mainly concentrated in the low-frequency phase, overlapping with the gyro signal spectrum, and therefore the wavelet should have a certain degree of vanishing moments, in order to reduce the calculation and the distortion of reconstructed ... [\[Show full abstract\]](#)

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Quantization of adaptive wavelets for image compression

August 2004

Gemma Piella · Henk J. A. M. Heijmans · Beatrice Pesquet

In this paper we investigate the potential of a special class of adaptive wavelet schemes to yield an effective representation for compression purposes. In particular, we analyze the effect of a scalar uniform quantization in an adaptive multiresolution analysis based on a lifting implementation. We provide conditions for recovering the original decisions at synthesis and we provide expressions ... [\[Show full abstract\]](#)

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A hybrid wavelet compression scheme for material textures

February 2001

D. Ramasubramanian · Laveen N. Kanal · J. Moulton · W. Journigan


We present a novel compression scheme based on wavelets for compressing material textures and terrain data. Our new hybrid technique is efficient, attractive and appropriate for material textures as demonstrated by the results. Further, the proposed scheme, which is amenable to real time implementation, is found to be superior to the existing state-of-art hardware-based compression schemes such ... [\[Show full abstract\]](#)

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A fast algorithm for wavelet packet decomposition using statistical properties of images

December 1996

Jeong-Ho Park · Jae-Ho Choi ·  Hoon-Sung Kwak

The recent attention of image coding community is paid to wavelet transform, which is of interest for the nonstationary signal analysis because it provides good localization in time and frequency. There are two directions of study in decomposing an image by wavelet transform, that is octave form and wavelet packet. Of this, wavelet packet works adequately for all images with various properties, ... [\[Show full abstract\]](#)

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A New Wave-Front Reconstruction Method for Adaptive Optics Systems Using Wavelets

November 2008 · IEEE Journal of Selected Topics in Signal Processing

 Peter John Hampton ·  Panajotis Agathoklis · Colin Bradley




A new technique for wave-front reconstruction from gradient measurements on a square data set is presented. This technique is based on obtaining the Haar wavelet image decomposition of the original wave-front by appropriate filtering and down-sampling of the gradient measurement data. The use of the wavelet decomposition leads to an algorithm with complexity of $O(N)$, where N is the number of ... [\[Show full abstract\]](#)

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Evaluation of histogram enhancement techniques used in conjunction with wavelet compression methods...

December 2001

 George Anastassopoulos ·  Ioannis Stephanakis ·  Stefanos Gardikis

The performance of wavelet compression techniques, in conjunction with enhancement methods like histogram normalization, is evaluated in this paper for a child trauma emergency case. The compression techniques are applied to original CT digitized images as well as to enhanced images. The processing of the images consists of alternative application of enhancement and compression techniques. The ... [\[Show full](#)

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Edge adapted nonlinear multiscale transforms for compact image representation

October 2003 · Proceedings / ICIP ... International Conference on Image Processing

● Francesc Aràndiga · ● Albert Cohen · Doblas · ● Basarab Matei

We introduce nonlinear edge-adapted multiresolution transforms for image processing. These transforms have the same structure as wavelet basis decompositions, but incorporate a specific geometric treatment of edges, which results in sparser representations of piecewise smooth images and in turn better compression properties. We also observe visual improvements over classical wavelets for the ... [\[Show full abstract\]](#)

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Wavelet decomposition of binary finite images

December 1994

M.D. Swanson · ● Ahmed Tewfik

Constructs a theory of wavelet decompositions of binary images. The construction defines binary valued wavelets and scaling functions and their associated spectral properties. The authors begin by introducing a new binary field transform and the corresponding concept of sequence spectra over $GF(2)$. Using this transform, a theory of binary wavelets is then developed in terms of 2-band perfect ... [\[Show full abstract\]](#)

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