Conference Paper

Despeckling Medical Ultrasound Images using the Contourlet Transform.

January 2009

Source · DBLP

Conference: Proceedings of the 4th Indian International Conference on Artificial Intelligence, IICAI 2009, Tumkur, Karnataka, India, December 16-18, 2009

Conference · Indian International Conference on Artificial Intelligence

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... The speckle noise is modeled as a Gaussian noise, with estimated mean and standard deviation based on PSNR of the ultrasound image. Our experimental results show significant improvements of the proposed method as compared to that of cycle spinning using contourlet transform based despeckling [16] in terms of PSNR and also in visual effect. ...
... We consider a medical ultrasound image X and the corresponding despeckled image Y obtained by using the contourlet transform with cycle spinning [16] . The subtracted image Z=X-Y is the error image containing speckle noise. ...

Linear Regression Model for Gaussian Noise Estimation and Removal for Medical Ultrasound Images

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Jul 2012

Prakash Hiremath ·   Dr. Prema T. Akkasaligar ·   Dr. Sharan Badiger

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... Unlike other types of medical images, ultrasound images are corrupted by speckle noise that tends to reduce image quality and contrast, and consequently increases the level of difficulty in segmenting GS. A considerable amount of research into ultrasound image de--- nosing has been undertaken [Jawad, (2007), Hiremath et al. (2009 , Hiremath and Tegnoor, (2010)], but the research in automatic GS segmentation is limited. In [Chakkarwar et al. (2010)], a method that uses a combination of contrast enhancement, low pass filtering and Wiener filtering to de--- speckle the image, followed by thresholding, was reported with an average accuracy of 83.3% over a small database of 12 images. ...
... Step 3: False regions removal. The imclearborder function in Matlab is then applied to clear all false regions that are connected to the image border, resulting in a clean image as shown inFig 3(f). . 2015 . , No. 5, pp 1–16 (2015 3. ...

Automatic Identification of Miscarriage Cases Supported by Decision Strength Using Ultrasound Images of the Gestational Sac

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... Cigale and Zazula implemented the neural network approach for the segmentation [3]. Others use the multiscale morphological method for the denoising, contrast enhancement [5] , and horizontal and vertical thresholding for cysts segmentation [6]. ...

Automatic feature description of Endometrioma in Ultrasonic images of the ovary

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... Therefore speckle noise reduction is an important requirement whenever ultrasound imaging is used. A large amount of research into ultrasound image de-nosing has been undertaken [7, 8, 9], but the research in the area of gestational sac segmentation and enhancement is very limited. In [10], Chakkarwar et al. presented an automatic method for GS segmentation using a database of 12 images with average accuracy of 83.3%. ...

Automatic Segmentation and Classification of Gestational Sac based on Mean Sac Diameter using Medical Ultrasound Image

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... Cigale and Zazula implemented the neural network approach for the segmentation [3]. Others use the multiscale morphological method for the denoising, contrast enhancement [4], and horizontal and vertical thresholding for cysts segmentation [5]. ...

Automated Algorithm for Ovarian Cysts Detection in Ultrasonogram

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... The double iterated filter bank structure and a small redundancy at most 4/3 using two thresholding methods shows a great promise for speckle reduction. Hiremath et al. [10] have proposed despeckling medical ultrasound images using contourlet transform using Bayes shrinkage rule. K.Thangavel et al. [11] have compared different filtering techniques based on statistical methods for the removal of speckle noise from ultrasound image of prostate. ...

Performance Comparison of Wavelet Transform and Contourlet Transform based methods for Despeckling Medical Ultrasound Images

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... Due to speckle noise, finding the object boundaries is difficult and thus leads to poor segmentation. Further, a new improved algorithm is proposed in which follicle segmentation is achieved by using a speckle reduction method based on the contourlet transform [14] in preprocessing phase and edge based method for segmentation phase [18]. The experimental results of proposed method are compared with the manual results by medical expert. ...

Automatic Detection of Follicles in Ultrasound Images of Ovaries using Edge Based Method

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An anatomization of noise removal techniques on medical images

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Follicle detection in ultrasound images of ovaries using active contours method

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Fourier Based Discrete Shearlet Transform for Speckle Noise Reduction in Medical Ultrasound Images

April 2017 · Current Medical Imaging Reviews

Reza Abazari · Mehrdad Lakestani

Background: Medical ultrasonic images are usually degraded by a special kind of noise called 'speckle'. The speckle noises usually have an effect more on edges and fine details of an ultrasound images which lead to reduction in their contrast resolution consequently create difficulties in the diagnosis of illnesses. Methods: In this paper, to reduce the speckle noise of medical ultrasound image, ... [Show full abstract]

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Chapter

Evaluation of Denoising Methods in the Spatial Domain for Medical Ultrasound Imaging Applications

March 2017 · Intelligent Systems Reference Library

Humberto de Jesús Ochoa Domínguez · Vicente García

Ultrasound is used as a real-time, non-invasive, portable, versatile and relatively low cost diagnostic imaging technique. The acquired images are corrupted by speckle noise that causes a low contrast in areas where lesion cannot be detected during the diagnosis stage. The characteristic of these images is that they follow a multiplicative noise model. Some techniques convert the multiplicative ... [Show full abstract]

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A New Ultrasound Image Denoising Method Combining Nonsubsampled Contourlet Transform and Edge-Preser...

June 2014 · Advanced Materials Research

Xin Zheng Wang · Xiongzhu Bu · Jing Yu

In order to suppressing the speckle noise in ultrasound image effectively, a new hybrid denoising method is proposed by combining the nonsubsampled contourlet transform (NSCT) with edge-preserving self-snake model (EPSSM). The method comprises of three key steps.

Firstly, the noise model is established for the sake of analyzing. Then the map estimation with bivariate shrinkage function which uses ...
[Show full abstract]

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Article

Despeckling of Ultrasound Images in Contourlet Domain

January 2013 · Advanced Materials Research

Yu Shu Liu · Ming Yan Jiang

Ultrasound images are the important foundation for disease diagnostics. Unfortunately, speckle noise is an inherent property of ultrasound images. So speckle reduction is an important pre-processing step in the ultrasound image feature extraction and analysis. This paper proposes a novel noise reduction algorithm for ultrasound images, which is based on edge detection of the images using the ... [Show full abstract]

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