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Segmentation of Kidney Stones in Medical Ultrasound Images

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Abstract

The computer-aided diagnostic system has become an important issue in clinical diagnosis. Development of new technologies and use of various imaging modalities have raised more challenging issues. The major issue is processing and analyzing a significantly large volume of image data, to generate qualitative information for diagnosis and treatment of diseases. Medical imaging, particularly ultrasound imaging is one of the commonly used diagnostic tool by medical experts. Segmenting a region of interest in medical ultrasound image is a difficult task because of variation in object shape, orientation and image quality. In the present study, initially preprocessing of kidney ultrasound images is performed using contourlet transform and contrast enhancement using histogram equalization. The proposed method focuses on segmentation of kidney stones in preprocessed medical ultrasound images using level set method. The developed method shows better performance in segmenting renal calculi in medical ultrasound images of the kidney. The experimental results demonstrate the effectiveness of the developed software module.

Keywords

Level set segmentation Renal calculi Medical ultrasound image

Notes

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