

Endocardial Ultrasound Segmentation using Level Set method

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Abstract : This paper presents a fully automatic segmentation method of the left ventricle at End Systolic (ES) and End Diastolic (ED) in the ultrasound images by means of an implicit deformable model (level set) based on Geodesic Active Contour model. A pre-processing Gaussian smoothing stage is applied to the image, which is essential for a good segmentation. Before the segmentation phase, we locate automatically the area of the left ventricle by using a detection approach based on the Hough Transform method. Consequently, the result obtained is used to automate the initialization of the level set model. This initial curve (zero level set) deforms to search the Endocardial border in the image. On the other hand, quantitative evaluation was performed on a data set composed of 15 subjects with a comparison to ground truth (manual segmentation).

Keywords : level set method, transform Hough, Gaussian smoothing, left ventricle, ultrasound images.

Conference Title : ICISP 2015 : International Conference on Imaging and Signal Processing

Conference Location : Istanbul, Türkiye

Conference Dates : January 26-27, 2015