

## **A Framework for Auto-segmentation of Left Ventricle from Magnetic Resonance Images**

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A new framework is proposed for the auto-segmentation of the left ventricle (LV) from cardiac magnetic resonance (CMR) images. The segmentation method is based on the random walk (RW) algorithm, which requires user-selected background and foreground seeds. In this paper, the seeds are initialized automatically. The first image frame of a short-axis slice is first partitioned into different regions using the fuzzy c-means (FCM) algorithm, and the LV region is identified using a heuristic method. Two circular region of interests (ROIs) are then defined based on the estimated centre of the partitioned LV region, which are used as the RW seeds initialization to segment the LV of the first image frame. The centre pixel of the adjacent image frame is then computed using the segmented LV of the previous frame. The foreground and background circular ROIs can then be defined and used as initialization of the RW algorithm to segment the adjacent image. The effectiveness of the proposed framework is verified by the experimental results on real CMR images.

**Keywords:** Cardiac Magnetic Resonance, Image Segmentation, Random Walk, Left Ventricle, Fuzzy C-means.