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*A Variational Approach for the Segmentation of the Left Ventricle*

In this talk we propose a new front propagation method to segment MR cardiac images. This framework is based on the Geodesic Active Region Model, refers to a coupled propagation of two curves (inner and outer cardiac contours) and integrates boundary and region-based segmentation modules. The boundary information is introduced to the objective function using the gradient vector flow framework while the region information using continuous probability density functions. The defined objective function is minimized using a gradient descent method and the obtained motion equations are implemented using a level set approach. A recently introduced numerical approximation scheme with fast convergence rate and stable behavior is used to implement the level set motion equations. Finally, according to the application the propagations of the level set contours are coupled using their relative distances. Encouraging experimental results are provided using real data.