

Active Contour Model Based on Fuzzy C-Means and Local Pre-fitting Energy for Image Segmentation

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Online Resource 2

0.1 Validation Experiment: Effects of the Regularization Function

In order to validate the effect of level set regularization function in Sec 3.4, we use the FLPF model to segment two images, including a synthetic image and a real image. The results are shown in Fig.1, where the two-dimensional and three-dimensional plane graphs of the level set function ϕ and ϕ_R before and after regularization are presented, respectively. It can be seen that after regularization, the data around the zero-level set is stretched, which means that the slope of the zero-crossing region of the level set function ϕ increases. In addition, the range of the regularized level set function ϕ_R is limited to $[-\pi/2, \pi/2]$ to achieve the purpose of regularizing the level set function and keep the evolution process stable.

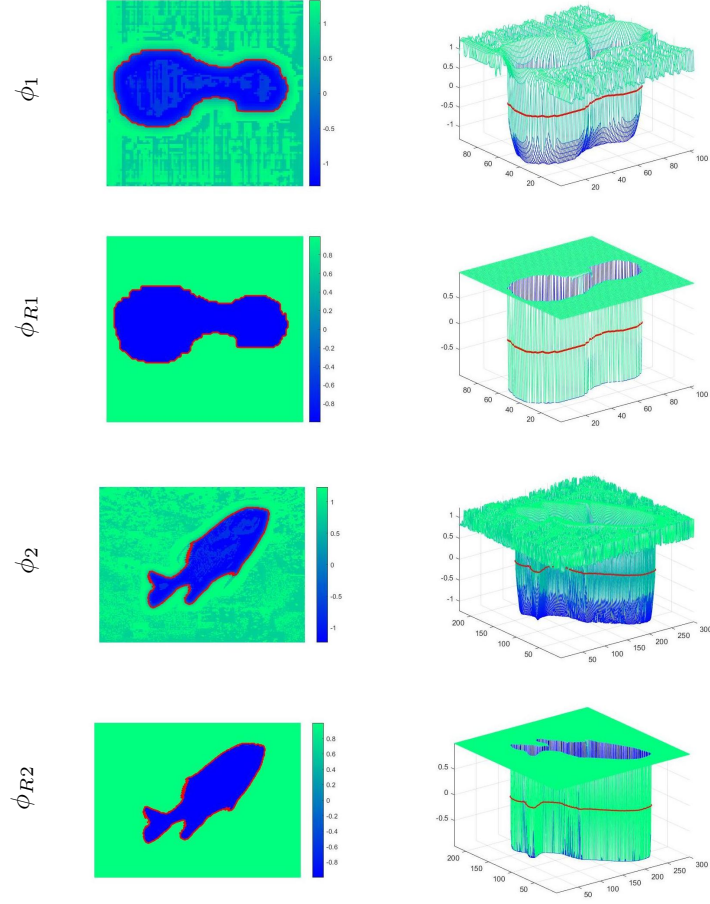


Fig. 1 Visualization results of level set regularization. First column: the two-dimensional graph of level set function ϕ and regularized level set function ϕ_R . Second column: the three-dimensional graphs, where the red contour line represents the zero-level set function.