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Brain MRI Tumor Detection using Active Contour Model and Local Image Fitting Energy NOOSHIN NABIZADEH, NIGEL JOHN, Univ of Miami — Automatic abnormality detection in Magnetic Resonance Imaging (MRI) is an important issue in many diagnostic and therapeutic applications. Here an automatic brain tumor detection method is introduced that uses T1-weighted images and K. Zhang *et. al.*'s active contour model driven by local image fitting (LIF) energy. Local image fitting energy obtains the local image information, which enables the algorithm to segment images with intensity inhomogeneities. Advantage of this method is that the LIF energy functional has less computational complexity than the local binary fitting (LBF) energy functional; moreover, it maintains the sub-pixel accuracy and boundary regularization properties. In Zhang's algorithm, a new level set method based on Gaussian filtering is used to implement the variational formulation, which is not only vigorous to prevent the energy functional from being trapped into local minimum, but also effective in keeping the level set function regular. Experiments show that the proposed method achieves high accuracy brain tumor segmentation results.

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