Abstract

The main aim of this paper is to provide a method that could easily delineate the exact location of tumor region from brain MRI images by integrating the fuzzy c-means and level set method. The proposed method smoothly exploits the spatial function during FCM clustering which in turn proves the automaticity of the method by dividing the original image into clusters and then using one cluster for automatic initialization. Since automating the process reduces the time utilization of processing thereby making the work less tedious, hence if considered it could be competent tool in future. Another problem associated when utilizing manual methods is that it may lead to different results when produced by different medical experts which can be completely erased while using this method. Secondly, the proposed method uses the level set method to find the contour of tumor region in the original image which helps in situations where image changes their topologies by merging or splitting in two. Thus, the proposed method is using the convenient variational level set method in place of traditional level set method thereby eliminating one more drawback of re-initializing the contour several times during image segmentation.
Integrating Variational Level Set Method and Fuzzy c-Means to Automatically Segment the MRI Brain Images

References

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Index Terms

Computer Science  Fuzzy Systems

Keywords

Image segmentation  level set methods  Fuzzy c-means  defuzzification
variational level sets.