

Purpose: A new approach is presented to automatically extract brain tumor in CT images.

Methods: The method uses a sequence of brain CT images. Firstly, use morphology operations and wavelets based filter for denoising. Secondly, find out whether CT images contain brain tumor according to the symmetry of the brain CT images, extract the unsymmetric part and its neighbor as the region of interest (ROI). Then, extract the feature (e.g. texture, contrast, homogeneity, etc.) of the ROI. Finally, use k-means clustering and support vector machines (SVM) for classification with the extracted feature of the ROI and get the contour of the brain tumor.

Results: Compared with manually contoured by the physicians, this method enables accurate and automatic extraction of brain tumor in CT images.

Conclusions: The method is shown with better performance than current methods. And it's a fully automatic, fast and accurate method in precise diagnosis and treatment of brain tumor patients.