A Review of Image Segmentation Methodologies in Medical Image

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Abstract. A precise segmentation of medical image is an important stage in contouring throughout radiotherapy preparation. Medical images are mostly used as radiographic techniques in diagnosis, clinical studies and treatment planning. This review paper defines the limitation and strength of each methods currently existing for the segmentation of medical images.

Keywords: Advantages, Image segmentation, Medical image

1   Introduction

In medical fields nowadays, medical imaging is a crucial component in a many applications. Such applications take place throughout the clinical track of events; not only within diagnostic settings, but prominently in the area of preparation, carrying out and evaluation before surgical operations.

Generally, image segmentation is the procedure of separating an image into several parts. Instead of considering the whole data presented in an image all at once, it is better to focus on a certain region-based semantic object in image segmentation. Image segmentation has been widely implemented in medical imaging to separate homogeneous area. Studied proposed by Liew et al. in 2012 shows that region of interest (ROI) segmentation plays a crucial role in multilevel authentication [1]. Thus the goal of image segmentation is to find the regions that represent meaningful parts of objects for easier analyzation purpose .In this review paper, author aims to gather and analyze methods used in image segmentation. So, in general this paper will summarize suitable image segmentation methods to be used for each types of medical images scan.

2   Method

In this section, several techniques that are being widely used on medical image segmentation had been briefly described by the author. Segmentations are divided mainly in four different techniques, which are thresholding-based, region-based, edge-based, and clustering-based. Additionally there are also other methods for image segmentations. The figure below illustrates the types of image segmentation available.