

Paper ID: MISS21\_20

# Deep Learning Techniques for Medical Image Segmentation- A Review

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## Abstract

**Background:** Medical image segmentation has an essential role in computer-aided diagnosis systems in different applications. The study has mainly focused on some few methods based on Deep Learning areas which is suitable for the data and the segmentation task. Image segmentation is considered the most essential medical imaging process as it extracts the region of interest (ROI) through a semiautomatic or automatic process [1].

**Objectives:** Medical Image segmentation is an important image processing step. Comparing images to evaluate the quality of segmentation is an essential part of measuring progress in this research area. Medical image processing established on deep convolutional neural networks has to do something for research hotspot, with the fast growth of Deep learning. This paper introduces the basic ideas and characteristics of medical image segmentation based on deep learning [2].

**Methodology:** In this paper we use some methods to get more precise results in medical image segmentation. Convolutional Neural Network: This neural network computational model uses a variation of multilayer perceptron and contains one or more convolutional layers that can be either connected or pooled [1]. U-Net: The network is based on the fully convolutional network and its architecture was modified and extended to work with fewer training images and to yield more precise segmentation [1]. THRESHOLDING TECHNIQUE: Threshold is a term which is not only applicable to image processing. In any field threshold has the same meaning. A threshold is a value which has two regions on its either side i.e. below the threshold or above the threshold. In general, any function can have a threshold [5]. K-MEANS CLUSTERING: K-means clustering is a method used for clustering analysis, especially in data mining and statistics. It aims to partition a set of observations into a number of clusters (k), resulting in the partitioning of the data [4]. REGION GROWING TECHNIQUES: Region growing is a simple region-based image segmentation method. It is also classified as the pixel-based image segmentation method [6]. The main objective of segmentation is to the separation of the image into regions.

**Results and discussion:** It summarize various segmentation techniques, the advantages, and disadvantages. Segmentation can be applied to any type of images we have used such methods and algorithms to get accuracy in the result.

**Conclusions and future work:** This summarize various techniques of image segmentation have been discussed [3]. Here we have worked with deep learning methods based on machine learning developers to find accuracy rate in algorithms which we have been used. In future, we will work on fuzzy c means and few other methods to get more precise accurate results.



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