

# A Review on the Strategies and Techniques of image Segmentation

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**Abstract**— Segmentation is a method of partitioning an image or picture into different regions which has same attributes like Texture, intensity, gray level etc with the motive to yield object of interest from the background. It is a method in which we included the object belongs to the same category in one class and the objects that belong to other category are added in other class for separating the object and background. There are several image segmentation techniques namely traditional thresholding (Otsu) and clustering segmentation (K-means). By differentiating all these image segmentation techniques we have to find which segmentation technique is better on the characteristics of image segmented. Segmentation is done on built in environment which becomes more demanding. In built in environment, both K-means and Otsu are unsuccessful to yield good standard of segmentation because of varying lightening on the image and complex surrounding.

**Keywords**— *Ultrasound images; Otsu; K-means; Synthetic aperture radar (SAR); Thresholding; expectation maximization; neural network; wavelength decomposition*

## I. INTRODUCTION

In the computer perception, images are examined as the most essential means of carrying information by interpreting the images. This information can also be used for another task for example: identification and diagnosis of cancerous cells, steersman ship of robots and recognition of an airport from sensing the data which is at distant. Hence image segmentation is a method or technique due to which we can interpret the images and withdraw the useful information from the image. This step is called image survey or image analysis. Image segmentation methods were extensively used in the identification of images and classification of image in numerous fields such as medical, forensic and agricultural [1].

It is one of the most complex stages for image processing because the standard of segmented images affects the outcome of the left processes which generate imprecise and wrong outcomes. Computer

Aided Design is the design which does the image segmentation without loss of information for medical discovering purposes. For medical discovering purpose doing image segmentation without loss of information is a challenging work which can be done through computer aided diagnosis (CAD) [2].

K. Hammoudda et al. using the unsupervised method for segmentation with the help of Gabor filter and K-means algorithm. He suggested three methods of segmentation called as K-Means clustering, Thresholding and expectation maximization. Thresholding because of its clarity and direct nature and clustering approach because of its ability to categorise images efficiently and efficiently, are the very well known method for image segmentation between image segmentation techniques [41].

The first method named as Otsu method which was depend on gray method histogram and was widely adapted because it is simple, ability to process the gray level images exactly, it is capable to work with a global threshold values and it does need the former knowledge of the structure of the histogram. A clustering technique is an unsupervised categorization of objects into meaningful groups or clusters based on their homogeneity.

## II. LITERATURE REVIEW

This section of related works takes into account several researches that have been made on image segmentation work. The first paper which we have taken is based on the unsupervised techniques of segmentation which is basically formulated to be done on texture images. A comparison published by Khanna et al. The author shows the basic three unsupervised techniques which include K-means clustering, thresholding and expectation maximization. Texture exhibits a sort of relativity or periodicity of basic patterns which can be used to identify different objects.

The images that are being used here by unsupervised techniques are Ultrasound images received from radiologists. Later it has been found by the author that texture detection is more accurate for US image