Abstract

Image segmentation is the process of subdividing a digital image into its systematized regions or objects which is useful in image analysis. In this review paper, we carried out an organized survey of many image segmentation techniques which are flexible, cost effective and computationally more efficient. We classify these segmentation methods into three categories: the traditional methods, graph theoretical methods and combination of both traditional and graph theoretical methods. In the second and third category of image segmentation approaches, the image is modeled as a weighted and undirected graph. Normally a pixel or a group of pixels are connected with nodes. The edge weights represent the dissimilarity
between the neighborhood pixels. The graph or the image is then divided according to a benchmark designed to model good clusters. Every partition of the nodes or the pixels as output from these algorithms is measured as an object segment in an image representing a graph. Some of the popular algorithms are thresholding, normalized cuts, iterated graph cut, clustering method, watershed transformation, minimum cut, grey graph cut, and minimum spanning tree-based segmentation.

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Index Terms

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Image Segmentation  Histogram  Neural Network  Thresholding  Watershed Transformation
Clustering

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Graph Theoretical Methods

Euler Graph

Minimal Spanning Tree

Grey Graph Cut

Grabcut.