Image Segmentation Segmentation is the process that subdivides an image into a number of uniformly homogeneous regions.Histogram-oriented segmentation produces an individual segmentation for each feature of the multifeatured data, and then overlaps the segmentation results from each feature to produce more fragmented regions.In other words, segmentation of an image is defined by a set of regions that are connected and nonoverlapping, so that each pixel in a segment in the image acquires a unique region label that indicates the region it belongs to. Segmentation is one of the most important elements in automated image analysis, mainly because at this step the objects or other entities of interest are extracted from an image for subsequent processing, such as description and recognition.An image is thus defined by a set of regions that are connected and nonoverlapping, so that each pixel in the image acquires a unique region label that indicates the region it belongs to. The set of objects of interest in an image, which are segmented, undergoes subsequent processing, such as object classification and scene description.Some of the texture properties are coarseness, smoothness, regularity, etc., while the common shape descriptors are length, breadth, aspect ratio, area, location, perimeter, compactness, etc.Segmentation involves partitioning an image into a set of homogeneous and meaningful regions, such that the pixels in each partitioned region possess an identical set of properties or attributes.Gray level thresholding techniques are computationally inexpensive methods for partitioning a digital image into mutually exclusive and exhaustive regions.One of the earliest thresholding algorithms was suggested by Otsu ,which is based on the principle that the gray-level for which the inter-class variance is maximum is selected as the threshold.It is an iterative process where each seed pixel grows iteratively until every pixel is processed and thereby forms different regions whose boundaries are defined by closed polygons.Cluster-oriented techniques may be more appropriate than histogram-oriented ones in segmenting images, where each pixel has several attributes and is represented by a vector.Thus the pixels inside the regions describe the region and the process of segmentation involves partitioning the entire scene in a finite number of regions.The thresholding operation involves identification of a set of optimal thresholds, based on which the image is partitioned into several meaningful regions.If objects are disjoint and their gray levels are clearly distinct from the background, then the histogram is multimodal with each peak distinctly separate from the other. c) Similarity: The similarity denotes the minimum difference in the gray level observed between two spatially adjacent pixels or average gray level of a set of pixels, which will yield different regions.After extracting each segment; the next task is to extract a set of meaningful features such as texture, color, and shape.The growing need for automated image analysis and interpretation in a wide range of applications necessitates the development of segmentation algorithms.Thus if we can extract the edges in an image and link them, then the region is described by the edge contour that contains it. ?Region growing : Region growing refers t o the procedure that groups pixels or subregions into larger regions.Starting with a set of seed points, the regions are grown from these points by including to each seed point those neighboring pixels that have similar attributes like intensity] gray level texture, color, etc.o o The important issues in the region growing are: a) Selection of initial seeds that represent regions and the selection of suitable properties for including the points in various regions during the growing process.A binary matrix A is called an adjacency matrix when it represents a region adjacency

graph (RAG).Cluster-oriented segmentation uses the multidimensional data to partition the image pixels into clusters.Thereafter the objects on the land part of the scene need to be appropriately segmented and subsequently classified.These are important measurable entities which give measures of various properties of image segments.Segmentation algorithms are based on one of the two basic properties of gray-level values-discontinuity and similarity among the pixels.The criterion proposed by Otsu maximizes the between-class variance of pixel intensity.This method results in more computational complexity because of complexities involved in computation of the between-class variance.Bi-level thresholding is employed on images which have bimodal histograms.????????.