Abstract

Image segmentation divides an image into several constituent components such as color, structure, shape, and texture. It forms a major research topic for many image processing researchers as the applications are endless. Its applications include image enhancement, object detection, image retrieval, image compression, and medical image processing to name a few. The segmentation of color images is necessary for efficient pattern recognition and feature extraction involving various color spaces such as RGB, HSV and CIE L* A* B*, etc. This paper describes the different cluster based segmentation techniques used for segmenting the different color images and the resultant is analyzed with subjective and objective measures. Initially, registered color images are considered as input. Then the cluster based segmentation techniques namely K-Means clustering, Pillar-Kmeans clustering and Fuzzy C-means (FCM)
clustering techniques are applied. Further, the segmented image is analyzed with measures such as compactness and execution time. From the experimental results, it has been observed that K-means and Pillar-Kmeans are the most suitable techniques for RGB, HSV and LAB color spaces than the FCM technique.

References


Index Terms

Computer Science

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Keywords
Image Segmentation  Color Spaces  Clustering  Compactness