Abstract

In many practical applications such as security and surveillance, robotics, medical diagnostics, remote sensing, video processing the image segmentation plays a dominant role. In general the image segmentation is performed either hierarchical method or model based methods. Both methods have advantages and disadvantages. Integrating these two methods will provide efficient utilization of resources and increases segmentation performance. Hence, in this paper an image segmentation method based on generalized Laplace Mixture Model integrated with hierarchical clustering method was developed and analyzed. The updated equations for estimating the model parameters using EM algorithm are derived for the generalized Laplace Mixture Model for the first time. The segmentation algorithm is presented under component maximum likelihood with Bayesian criteria. The efficiency of the proposed algorithm is validated by selecting sample images from Berkeley image data set and computing the segmentation performance measures such as GCE, PRI and VOI. A comparative study of proposed algorithm with that of model based image segmentation algorithm on GMM revealed that the proposed
algorithm outperforms the existing ones.

References


Studies on Image Segmentation Integrating Generalized Laplace Mixture Model and Hierarchical Clustering


Index Terms

Computer Science  Image Processing

Keywords

Segmentation, Image Segmentation, Image Analysis, Laplace distribution.