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Abstract

The problem of data clustering is concerned with discovery of a grouping structure in a finite number of data point. In our research, we investigated a Fuzzy Kohonen Clustering Network (FKCN) to image segmentation. We developed a software using combination of Fuzzy C-Mean and Kohonen neural network techniques to segment different types of images in (intensity, color and texture). FKCN combines the idea of membership values of FCM to update the learning rate of kohonen neural network. Image segmentation is one of the crucial steps in digital image processing that can be used in different applications. Neural networks have provided potential alternative to the traditional techniques for image processing problems. It can also work efficiently with fuzzy system for increasing the accuracy and avoiding the disadvantage of neural network two new modifications have been suggested in the proposal algorithm of FKCN, the first modification is to overcome the problem of learning rate in the training Kohonen neural network. The second modification in the l fuzzy kohonen clustering network about the spatial FCM , the effectiveness of the modification in the thresoulding .All experiments had been shown about modifications of FKCN gives acceptable results and doing improvement to the performance of FKCN algorithm. In general our system consists of the following phases:

- First phase a set of pixels values of image or set of features are extracted from image (histogram, color and co-occurrence texture features).
- Second phase, clustering by fuzzy Kohonen neural network which groups the feature space into clusters
- Third phase all clusters mapped back to spatial domain to produce a image segmentation

The obtained results indicate that Kohonen neural network and fuzzy c-mean algorithm can be provide adaptive image segmentation and produced good results in a different application.