University Teknologi MARA

CLUSTER VALIDITY OF THE FUZZY C-MEANS ALGORITHM IN MAMMOGRAPHIC IMAGE USING ADAPTIVE CLUSTER AND PARTITION ENTROPY INDEXES

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ABSTRACT

There are many techniques of clustering the image. The most widely used of clustering technique is Fuzzy C-Means algorithm (FCM). FCM is a technique that allows one piece of data to belong to two or more clusters. The important issues in clustering the image are to determine the optimal number of the clusters. This problem can be solved by cluster validity index. Cluster validity index is needed to find the suitable number of cluster, c in any fuzzy clustering algorithm. So the best cluster validity index must be chosen to obtain the suitable number of cluster. In this project, the best validity indexes that have been chosen are Partition Entropy and Adaptive cluster validity index. Partition Entropy is the most frequently used cluster validity index. In most of fuzzy cluster validity indexes, the separation measures are calculation based on the distances among cluster centers. However, the calculation is based only on centroids information and does not consider the overall cluster shape. So, Adaptive cluster validity index introduce the lattice degree of approaching to overcome this problem and this cluster validity index can be adapted to different type of cluster shape.

Keywords: Fuzzy C-Means Algorithm (FCM), Partition Entropy, Adaptive Cluster Validity Index, Lattice Degree, Centroids

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