

Universiti Teknologi MARA

Image Clustering of Songket Motif

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Abstract

Songket is fabric which belongs to the brocade family of textiles. It is hand woven in silk or cotton, and intricately patterned with gold or silver threads. The important factor of designing songket pattern is the motif. Motifs are used to design the songket pattern and they are usually arranged in such a way that they look like several chains linked together and one main motif in between the chains. A songket pattern consist of thousands of motifs, it could be the same motifs of mixed motifs. This paper describe and compares three methods of image clustering methods to determine which methods is the best method by doing the performance measurement on each of the methods, implement the best methods and test the prototype. Even though there are many methods are applicable to cluster an image, only three methods are chosen that is Fuzzy C-means clustering, K-means clustering and hierarchical clustering. These three method's cluster result will be compared in order to choose the most acceptable method to be implemented in developing the clustering tool. Two hundred eighty nine motifs will be used as the data samples in this paper. These songket motifs are clustered based on its five basic shapes feature which are eccentricity, compactness, convexity, rectangularity, and solidity. The clustering method that provides the most acceptable result is K-means clustering and the prototype development is done by adapting the K-means clustering concept in it. Result of the clusters assigned to each of the motifs was manually compared with the actual clusters assigned manually to the motifs. The result produced by the prototype is thirty six percent of correctness and sixty four percent of incorrectness when assigning motifs into clusters.

Keywords: Image, image clustering, songket, cluster, fuzzy c-means, k- means, hierarchical, clustering

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The most gracious and the most Merciful.*

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