

SHAPE BASED IMAGE RETRIEVAL USING HYBRID
LEGENDRE MOMENTS, MOMENT INVARIANTS
AND FUZZY LOGIC TECHNIQUE

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Shape is one of the most important features used for Content Based Image Retrieval (CBIR). As compared to its other counterparts such as the color and texture features, shape plays an important part in the recognition of objects by human beings and it is also utilized in Shape Based Image Retrieval (SBIR). The problems in SBIR are normally with its shape based descriptors. Therefore in this study, the problems of the low image retrieval ability in moment invariants and the inability of being rotation invariant for Legendre moments were tackled. Besides that, this study only focuses on the SBIR of binary shape images and the methods employed were region based shape descriptors namely Legendre moments and moment invariants. Moreover, in this thesis, a wide range of comparative study for SBIR using Legendre moments and moment invariants were done. Extensive experiments were carried out by using the 12 randomly selected query images from a database which consist of 1008 shape binary images. Based on the

obtained precision and recall performance image retrieval indicator, it was found that the hybrid selected features between Legendre moments and moment invariants provide the best retrieval performance as compared to features selected solely from Legendre moments or moment invariants methods. Moreover, fuzzy logic technique was also incorporated together with the new hybrid selected features in order to further improve its image retrieval performance. Therefore, based on the comparison of image retrieval results, it was found that the retrieval performance of incorporating fuzzy logic technique with the hybrid selected features have better results as compared to employ only the hybrid selected features between Legendre moments and moment invariants.