

博士論文の要旨

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博士論文題名

Information retrieval method with shape features extracted by layered structure representation and its application to shape independent clustering

(層構造表現に基づく対象物形状特徴抽出を伴う情報検索方法および形状クラスタリングへの応用)

The new method for retrieving image based on shape extraction is proposed for improving the accuracy. Image retrieval has been used to seek an image over thousand database images. In the image search engine, the image retrieval has been used for searching an image based on text input or image. Once an input taking into account, the method will search most related image to the input. The correlation between input and output has been defined by specific role. we develop the image retrieval method based on shape features extracted. In conventional method, centroid contour distance (CCD) is formed by measuring distance between centroid (center) and boundary of object, however these method cannot capture if an object have multiple boundary in the same angle.

In this research we proposed new method that able to capture represent of image (feature vector) although the image have multiple boundary in same angle. Firstly the input image have to be converted from RGB image to Grayscale image and then follow by edge detection process. After edge detection process

the boundary object will be obtained and then calculate distance between center of object and the boundary of object and put it in the feature vector and if there is other boundary on same angle then put it in the different feature vector with different layer or multi layer centroid contour distance(MLCCD). We applied that method to the simulation dataset and plankton dataset and the result show that the proposed method better than the conventional method (CCD, Hsv and Fourier descriptor). We also implement the proposed method with some modification to cluster a group of data and compare with K-MEAN clustering method and other clustering method Hierarchical clustering algorithms (Single Linkage, Centroid Linkage, Complete Linkage and Average Linkage). The experiment result by using the proposed clustering method show better than K-MEAN and other clustering method.