Fish Shape Recognition using Multiple Shape Descriptors

Abstract

This paper studies recognition of fish shapes using both Region based and Contour based shape based descriptors[9]. Moment Invariants are chosen as the Region based descriptor and the Simple (geometric) shape descriptors (SSD) are used as Contour based shape descriptors. The shapes are varied through scaling and rotation. Manhattan Distance is used as the classifier. The study of the recognition rate by using moment invariants and simple shape descriptors is done separately. Each moment invariant (M1, M2, M3, M4 and M5) is studied separately and jointly. Then simple shape descriptors are combined with moment invariants to get hybrid feature vectors for improving recognition rate.

References

- S. Abbasi, F. Mokhtarian, J. Kittler, "Curvature scale space image in shape..."
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- Latecki, L. J. and Lakämper, R., 1999 Convexity rule for shape decomposition based on
discrete contour evolution, Computer Vision and Image Understanding, 73(3):441-454.
- D. Zhang and G. Lu, "Content-Based Shape Retrieval Using Different Shape
Descriptors: A Comparative Study", in IEEE International Conference on Multimedia and
- D. Zhang and G. Lu, "Generic Fourier Descriptor for Shape-based Image
Retrieval", in International Conference on Multimedia & Expo (Volume :1) IEEE, 2002.
- Q. Chen, E. Petriul, X. Yang, "A Comparative Study of Fourier Descriptors
Technologies", Kluwer International Series in Engineering and Computer Science, Boston
- D. S. Zhang & G. Lu, "Review of shape representation and description
- C. Shahabi, M. Safar, "An experimental study of alternative shape-based image
retrieval techniques", in Springer Science + Business Media, LLC 2006
- N. Jamil, Z. Abu Bakar, & T. M. T. Sembok, "Image Retrieval of Songket Motifs
using Simple Shape Descriptors", in Proceedings of the Geometric Modeling and Imaging
- W. Lin, N. Boston, "Summation invariant and its applications to shape
- K. Krish, W. Snyder, "A Shape Recognition Algorithm Robust to Occlusion:
- M. Sarfraz and A. Redha, "Content-based Image Retrieval using Multiple Shape
Descriptors",
Measure the distance between the shapes and use the Euclidean distance to classify them.

Index Terms
Computer Science
Pattern Recognition

Keywords
Moment invariants  Eccentricity  Simple Shape Descriptors