Classification of Serranidae Species Using Color Based Statistical Features

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Abstract

In this study 6 species (*Epinephelus aeneus, Epinephelus caninus, Epinephelus costae, Epinephelus marginatus, Hyporthodus haifensis and Mycteroperca rubra*) of Serranidae family were classified by using a color based feature extraction method. A database which consists of 112 fish images was used in this study. In each image, a fish was located on a white background floor with the same position and the images were taken from different distances. A combination of manual processes and automatic algorithms were applied on images until obtaining colored fish sample images with a black background. Since the presented color based feature extraction method avoids including background, these images were processed by using an automatic algorithm in order to obtain a solid texture image from the fish and extract features. The obtained solid texture image was in HSV color space and used due to extract meaningful information about fish sample. Each of the *hue*, *saturation* and *value* components of the HSV color space was used separately in order to extract 7 statistical features. Hence, totally 21 features were extracted for each fish sample. The extracted features were used within Nearest Neighbor algorithm and 112 fish samples from 6 species were classified with an overall accuracy achievement of 86%.

Keywords:
Classification, fish species, HSV, color, texture