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Research Article

Intelligent Fish Freshness Assessment

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Abstract

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Abstract

Fish species identification and automated fish freshness assessment play important roles in fishery industry applications. This paper describes a method based on support vector machines (SVMs) to improve the performance of fish identification systems. The result is used for the assessment of fish freshness using artificial neural network (ANN). Identification of the fish species involves processing of the images of fish. The most efficient features were extracted and combined with the down-sampled version of the images to create a 1D input vector. Max-Win algorithm applied to the SVM-based classifiers has enhanced the reliability of sorting to 96.46%. The realisation of Cyranose 320 Electronic nose (E-nose), in order to evaluate the fish freshness in real-time, is experimented. Intelligent processing of the sensor patterns involves the use of a dedicated ANN for each species under study. The best estimation of freshness was provided by the most sensitive sensors. Data was collected from four selected species of fishes over a period of ten days. It was concluded that the performance can be increased using individual trained ANN for each specie. The proposed system has been successful in identifying the number of days after catching the fish with an accuracy of up to 91%.