Abstract

The proposed intelligent estimator is implemented using nearest neighbor classifier for automatic grading of red delicious apple fruit from its surface color using machine vision. Though different variants of nearest neighbor classifier are reported in the literature for color classification yet no systematic study is reported till-date for its application in fruit quality assessment using surface color information. The present work reports on comparative evaluation of different variants of nearest neighbor classifier for assessing the quality of apple fruit. It has been found experimentally that amongst different variants, Euclidean Distance Metric based k-Nearest Neighbor Classifier is best suited for this particular application. The performance of this classifier is evaluated at different illuminations of the fruit surface. It is found that efficiency is the highest at a particular intensity of surface illumination. In fact, efficiency achieved using proposed estimator is nearly 95. 12% if manual grading is assumed to be 100% accurate taken as reference. However, 4. 88 % variation is due to subjective judgment of human-beings in perceiving the apple fruit visually, which of course is obvious. Moreover, the repeatability of the proposed system is found to be 100% as observed after rigorous experimental validation.
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Index Terms

Computer Science

Digital Signal Processing

Keywords

Intelligent estimator classifier color fruit and neighbor