Title Design and Implementation of an Intelligent Sorting System for Raisins Based on Machine Vision

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Citation Proceedings: Abstract Summary, International Conference on Agricultural, Food and Biological Engineering & Post Harvest/Production Technology, Sofitel Raja Orchid Hotel, Khon Kaen, Thailand, 21-24 January 2007. 204 p.

Keywords raisin; algorithms; RGB color space; center of gravity

Abstract

Raisin is an important and valuable exported product of Iran. The color feature is the most important parameter in the classification and sorting of raisins. In order to carry out image processing and to extract useful features of captured images by machine vision, a highly efficient algorithm was developed and implemented in Visual Basic 6.0 environment. To carry out the algorithm, a prototype sorter was designed and built. The proposed system consists of a video camera, Capture Card PVR DV2000, adjustable lighting tunnel, a PC with 2.4 MHZ processor and a pneumatic part. The algorithm initially eliminates the background from the taken images sorted in the PC. It then sorts the raisins according to their color features. The next step in the algorithm is to estimate the length of each raisin. By a suitable combination of length and RGB color value, we can determine good and bad raisins and sort them accordingly. The final step in the algorithm is to calculate the centre of gravity of each raisin and to send appropriate command to the pneumatic part of the system. The proposed system was tested, and results show that its accuracy is about 96%. The system can be easily adapted for sorting other agricultural goods such as Lentil, Hazelnut, Almond and Date.