USING MACHINE VISION FOR SORTING EXPORTED RAISIN

BY: M. ABBASGHOLIPOUR, JULY 2005, 103 Pages

SUMMARY

Raisin is one of the important and valuable exported products in country. But due to its classification /sorting based on color, size, spot and etc has decreased marketing. Hence the first necessary step for manufacturing raisin sorter is the design of an automatic electronic intelligent system such as machine vision system for its quality evaluation and sorting. In order to design a machine vision and implement a belt conveyer 80 cm in length, 25 cm in width was built. The system is consisted of an electric motor, an adjustable tunnel, a video camera, a capture card and a PC. In order to carry out image processing and extract useful proportion of captured images of raisin we developed an algorithm. A graphical use interface was designed in visual basic language. This algorithm initially separate background from the taken images and then determine and distinguish the good and bad raisin according to the color of raisin. Next step it’s the algorithm is to estimate the length of the raisin. By suitable combination of length and color, we can determine the good and bad raisin and sort them. Finally by calculating the raisin centroid we built a sorting system. This part of system was consisted of a solenoid valve and an air nozzle. Using the fore mentioned system we obtained the following results:

1- Using RGB color space to separate edges from shadow area is very effective.
2- The system is capable of determining raisin quality based on color and size. Further more using the information about the center of gravity of raisin one is able to built the separation part of the sorter.
3- The system is capable of sorting a large number of raisins at the same time.

The developed algorithm can be used/ adapted for sorting other agricultural products.