The objective of this study was to develop a machine vision system for detecting almond drop from trees on the ground during the harvesting stage. To attain this goal, in the machine vision system, the segmentation technique was coupled by genetic algorithm technique. The proposed method consists of three steps; Preprocessing included conversion images to gray level, noise reduction and edge dissimilarity enhancement; Image segmentation included K-means clustering algorithm, connected components labeling and remove small region; Region merge procedure using GA. The developed method was compared with usual image segmentation, thresholding and color segmentation. The results of fruit detection in the images showed that the developed method could detect 93% of all fruits in the images. While fruit detections using segmentation-thresholding and color segmentation in the images were 80% and 78%, respectively. The results confirmed that our method is found to be suitable, and effective for detecting almonds.


Index Terms

Computer Science

Image Processing

Keywords

Almond, almond picker, image processing, segmentation, genetic algorithm, merge procedure.