

# Maturity detection and volume estimation of apricot using image processing technique

Mostafa Khojastehnazhand, Vahid Mohammadi and Saeid Minaei

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## Abstract

Physical and imaging properties of apricot fruits are the main factors considered in the design and development of sorting mechanisms. Classification of apricots based on visual appearance was performed using image processing technique. The apricots were classified into three maturity stages (i.e. unripe, ripe, and overripe) and the volume was estimated. The captured images of fruits were processed using a previously developed automatic algorithm. The images were cropped, filtered, and segmented upon which imaging features of apricots including relative R, G, B channels, gray-scale,  $L^*$ ,  $a^*$ , and  $b^*$  were extracted. The volumes of apricots were estimated using the stripping method and multiplying the value by an oval factor. The result of statistical analysis indicated that there was significant difference among the maturity stages with respect to G, gray-scale,  $L^*$  and  $b^*$  features. The LDA and QDA classifiers could categorize the apricots with the accuracy of 0.904 and 0.923, respectively based on color features. Results showed that the algorithm can properly classify the fruits using the image properties of apricots.