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Horticultural Approach for Detection, Categorization and Enumeration of On Plant Oval Shaped Fruits

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Abstract

The basic and primary step of any image processing approach, which classifies the similar areas in the image and helps in further analysis, is Segmentation. This paper reports a segmentation algorithm for automatic singulation, categorization and enumeration of on-plant oval shaped fruits for satisfying the purpose of automatic yield estimation. The algorithm is based on thresholding of color channels that are derived from specific color spaces. Thresholding of RGB color space has been used in the process of singulation and

thresholding of YCbCr color space has been used in the process of categorization. In the process of enumeration, edge detection and dilation operations have been used. Results obtained were satisfactory basing upon various performance metrics.

Keywords

Automated systems

Color space segmentation

Pre-harvesting techniques Yield estimation

Wide range applications Loss reduction

Industrial relevance: Automated systems have found wide range of applications in the field of horticulture. Its use has shown tremendous reduction in cost, human labor, and time and has added to the improvement of accuracy and precision. The proposed approach can be used for development of an automated system, which can estimate the amount of yield prior to harvesting. It can also estimate the number of mature fruits, those are needed to be harvested early to reduce loss and wastage. Harvesting at a correct maturity stage can help farmers in selling the fruits at a higher economic value. The system can prove highly beneficial for large fruit orchards by providing ease in monitoring and maintenance.

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