Abstract

One of the important quality features of fruits is its appearance. Appearance not only influences their market value, the preferences and the choice of the consumer, but also their internal quality to a certain extent. Color, texture, size, shape, as well the visual flaws are generally examined to assess the outside quality of food. Manually controlling external quality control of fruit is time consuming and labor-intensive. Thus for automatic external quality control of food and agricultural products, computer vision systems have been widely used in the food industry and have proved to be a scientific and powerful tool for by intensive work over decades. The use of machine and computer vision technology in the field of external quality inspection of fruit has been published based on studies carried on spatial image and / or spectral image processing and analysis. A detailed overview of the process of fruit classification and grading has been presented in this paper. Detail examination of each step is done. Some extraction methods like Speeded Up Robust Features (SURF), Histogram of Oriented Gradient (HOG) and Local Binary Pattern (LBP) are discussed with the common features of fruits like color, size, shape and texture. Machine learning algorithms like K-nearest neighbor (KNN), Support Vector
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Machine (SVM), Artificial Neural Networks (ANN) and Convolutional Neural Networks (CNN) are also discussed. Process, advantages, disadvantages, challenges occurring in food-classification and grading is discussed in this paper, which can give direction to researchers.

References

14. Sapan Naik and Bankim Patel,“ CIELab based color feature extraction for maturity level grading of Mango (Mangifera Indica L.)”, National journal of system and information technology (0974-3308), VOLUME 7, NO. 1, June 2014.
17. Dong Zhang et al.,"Date maturity and quality evaluation using color distribution analysis


43. Konaje, Nayan Kumar. "Food recognition and calorie extraction using Bag-of-SURF and Spatial Pyramid Matching methods."
56. Gonzalo Pajares, Xavier P. Burgos-Artizzu, Angela Ribeiro Alberto Tellaeche, "A


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