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Quality Checking of Fruits using Image Processing

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Abstract: Today man has made a lot of progress in different field's. The way a human being needs technology, Like that a humans need pure and healthy foods too. If we observe this then we can see without fruits human's food list is incomplete. If fruits matter in human food style. That's why we need pure and good quality of fruit. Nowadays there is high demand for pure and good quality of fruits in market. So we have observed that point and need, we are implementing this project to reduce human efforts. In this project, we are creating the machine which will work on checking quality of fruit using image processing. In this project, machine will work to check fruit's name, size, colure, testEtc and display that.

I. INTRODUCTION

India is an agricultural country. Many types of fruits and vegetable are produced in India. After china India is at second number in fruit production country. Nowadays there is high demands for pure and good quality of fruit in market.so we have observed that and we decided to work on "Quality Checking of Fruits Using Image Processing" project. In this project we will check fruit's purification and quality through quality checking machine. By this we will know that fruit's name, size, colure, shape.....etc. The biggest benefit from this will be that first is better quality of fruit production, another one is reduced human resources, good quality's fruit yield gain importance, Pure and good quality's fruit will available in market and hope farmer filed will gain more benefit from before as well as importance..

II. LITERATUREREVIEW

Now a days, We see every system is fully automatic and man power become a non-economical and time consuming task. In the several case but in fruit and vegetable .It become a very important product and sensitive as it a food item and clean, hygiene become the most important parameter or aspect. While handing. In this project we are going to implement the automated fruit quality sensing, detection and the fruit will be accepted or rejected.

The study done by several researcher in the area of image recognition, fruit classification, friut disease identification using image. In the most of the study in this field related of fruit checking and detecting. For detection of fruit have to consider color, texture, edges...etc properties for the categorization.

Md. Rokunuzzaman , H. P. W. Jayasuriya," Development of a low cost machine vision system for sorting of tomatoes", CIGR Journal, Vol. 15, No. 1,pp. 173-180,2013.In this paper color image threshold technique is used to find defects in tomato which can be found based on color of tomato. Miss. Shital A. Lakare¹, Prof: Kapale N.D2, "Automatic Fruit Quality Detection System". This paper includes the computerized fruit quality detection for grading and sorting and detection of defects in fruit and vegetables.

Olsen, Alex, et al. "In Situ Leaf Classification Using Histograms of Oriented Gradients." Digital Image Computing: Techniques and Applications (DICTA), 2015 International Conference on. IEEE, 2015.this paper includes development of area segmentation algorithm.

III. OBJECTIVES

- A. Reduces Human Resources.
- B. Improve production quality.
- C. Improve Quality of product.

IV. METHODOLOGY

A. Pre-processing

First we take the image of fruit. In this system we collected number of dataset of fruit image and this dataset having good and bad quality images. This dataset is more helpful to accurate result. So this dataset is used as a input image for the system.

Pre-processing method a small pixel in an input image to obtain new bright output image and pre-processing method is also known as filtration.

B. Image Segmentation

In image processing, image segmentation can be defined as a “ Process of partitioning of digital image into multiple segment” the goal of this process is to simplify the representation of an image. Which is good to analyze.

Image segmentation is divided into two types on the basis of discontinuity and similarity. Boundary based methods are based on discontinuities and region based methods are based on similarity. The output of the segmentation can be limitation of the object from the background or the region itself.

There are other several method listed below:

- 1) Edge detection technique
- 2) Histograms thresholding
- 3) Region based approaches
- 4) Feature scope clustering

C. Detection Process

The fruit is detected by using feature process. Feature Extraction is used to detect where the fruit is defective or non-defective. To do this the color statistical and texture details are extracted (RGB). The color channel such as color mean, standard deviation, skewness, contrast, correlation, and energy and color texture is used to extract color statistical features and the mango ripeness is calculated related to this color. The average value is calculated by acquiring the R, G, B values of the fruit and a threshold is fixed.

Next step in fruit sorting and grading process after segmentation is feature extraction. Main and important visual external features of fruit are its color, shape, size and texture. Feature descriptor is a depiction of an image or part of it, which extract useful information and rejects unnecessary information. It is importantly used for image recognition and object detection.

D. Defective Fruits Detection Process

To find out defective fruit is one of the most important process. A color image of the fruit was used for the analysis. If the pixel value of image is less than the selected threshold value then it is considered as a part of defective skin i.e. bad quality fruit. Any pixel value which is greater than the selected threshold value is a part of pure skin i.e. good quality fruit.

V. CONCLUSION

In our project we conclude that manual method of fruit purification detection, good quality detection and fruit defect detection technique is replaced by automatic vision based technology. In this project based on the image processing technology pure, healthy and good qualities of fruits as well as defected fruits have been identified. Thus it can be modified according to the development of technology for the large amount of fruit like food factory and fruit market. This system has many advantages such as low operation cost, easy to use and effective.

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