AN INTELLIGENT METHOD FOR FRUIT COUNTING SYSTEM

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Abstract: -

In this paper image processing based yield counting system and health monitoring of citrus fruit is being processed. The model which is explained in the paper can be worked in any graphical area. The system consists of an automatic robot which revolves around. The axis of citrus tree and clicks various images from different angle. Then this images are processed by image processing algorithm and color based counting of fruit is presented at the output. The system is being designed to automatically and accurately calculated the yield of citrus group tree and health monitoring is temperature and moisture of tree is also include in system.

Keywords: - Digital Signal Processing, Image Processing, Data Equalization, Robotics, WSN.

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I. INTRODUCTION

In India vidharbha especially Nagpur citrus group fruits such as orange, lemon, sweet lime. Grower farmers are in large numbers. About 75% farming totally depends on orange and sweet lime. But one thing is noticeable the yield calculation of the fruit tree is manual even after so many advancement in other sectors to solve this problem there was necessity of such user friendly system. So we had development such a system which automatically calculate the tiled of citrus fruit tree. Many researchers had worked in this area and got different result some of them are listed below. The author for [1] proposed as system whose analysis and fruit recognition depends on shapes in the image it also talks are about the maturity of stage of fruit. The combination of color and texture is proposed by author in [2] for fruit recognition. A computer vision system capable of detecting defects in the citrus peel was presented in [3]. The author in [4] used the local or shapes based analysis for rapid fruit segmentation and were able to detect the fruit at specific maturity stages i.e., fruit with a color different from the background. The on-line estimation of oranges, peaches and apples regarding the quality attributes like size, color, stem location and segmentation of external blemishes was presented in [5]. Based on Bayesian discriminate analysis, the effect of drying on shrinkage, color and image texture of apple discs was presented in [6]. Apple discs were classified into classes depending on external image features at different stages of drying by Euclidean distance classifier. A machine vision algorithm consists of segmentation, region labeling, size filtering, perimeter extraction and perimeter-based segmentation, for the recognition of orange fruit was presented in [7].

The authors in [8] had developed three types of harvesting robot: strawberry-harvesting robot, eggplantharvesting robot and tomato-harvesting robot. The survey of different vision based algorithm is presented in [9]. An automatic fruit recognition system and a review of various fruit detection work are reported by the authors in [10].

In our system a camera which provided the required images of tree is consider as primary sensing element. The system consists of primary sensing elements that are camera system or client robot. a communication protocol logic control and motors switching circuits The camera is used to clicks the different images of the tree serial or UART communication protocol is used to develop communication between pc and different sensors in the system logic control circuits one used control circuits soil sensors and the motor.

II. FLOWCHART

Figure 1: Flow Chart of the Proposed System.

The Fig. 1 shows the flow chart for the proposed system. In this system, first the image is to be clicked. The clicked image is send to the PC or Laptop. After sending the clicked image, the color object detection and counting technique is used. The method detects the object. If not detected then it goes to start. The same process is repeated until the object is detected. If the object is detected then it shows on the screen that the object is to be detected and the number that is how many objects are to be detected.

III. Working

In this paper we had made use of her cascade algorithm for color base segmentation of the image for this camera is fixed on autonomous robot which click image. Firstly the robot calculates the radius of trees and revolves around the axis the camera click image with the angular displacement the robot moves 30^0 and click image so the camera click total 2 image. Then this image are moved via UART TO THE SYSTEM FOR IMAGE firstly processing the system is being trainel on RGB and HSU parameter and a range of different value. This is decided as a threshold value. This is because the color of fruit changes for different stage of mainly when the clicked image is processed for comparison the object in the image which matches with the range of decided parameter is being cancelled and thus the fruit is being counted. In this process hoer cascade algorithm plays a vital role some time the fruit in the image appears such as one fruit but it consist two fruit one behind other so to detect such object depth factor is taken into consideration.

IV. Serial Communication

Figure 2: Serial Communication

Serial Communication is one of the easiest communication protocols available. This example demonstrates how to use serial communication to send and receive data through a serial port (rs232c) available in a computer.

V. Conclusion

In this paper, a survey on intelligent fruit counting system is discussed. The image processing technique is used. The web cam is used for taking the real time images of the fruits. For detection of the fruits, the color object detection technique is used. Also for counting the fruits, the same technique is used. For the simulation part, the VB .Net is used.

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