An Automated Fruits Quality Detection Framework using Colour Spectography

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Abstract:

The hardware prototype is being created by using low power arduino this helps to speed up the process improve accuracy and efficiency and reduce time. This system design considers some features that includes fruit colors which increases accuracy for detection of fruits pixels. Then color scanning is done to get required features of fruits such as texture, color and size. Defected fruit is detected based on color detection is done based on thresholding of fruits.

INTRODUCTION

Fruits supply several vital components to the human organism and are important of a healthy and well balanced diet. Fruits and vegetables are the major sources of vitamins A and C in the human diet and constitute a rich source of photochemicals and other bioactive components with potential anti- carcinogenic and cardiovascular risk re-duction properties.

This is a complex process and may not be feasible in real world industries. Hence, we propose alternative system, which uses hybrid model of low-cost hardware and simple software model. This is due to that the quality of fruits are the important factor for the consumer and so essential for marketing a uniform high-quality product.

The similarities in the recognition of fruits are determined based on the size, shape and color. Image processing models constitute a key role in intelligent fruit detection systems. In this paper we provide an overview of several fruit identification models for different fruits where image processing is the major technique which can be implanted in machine vision systems.

In [1] authors, they have created a system to check quality of apple fruit. This system was introduce to detect quality of apple fruit only and also result given by system was not accurate.

In [2] authors, They have built the system for fruits detection using Raspberry Pi which make easy to build this system but at same time its costly and difficult to implement it. For writing code in raspberry pi they have use matlab. Which make easy for coding and to implement logic.

In [3] authors, They have build system which have system features likes detecting fruits by using image
processing, size, texture and color. They have place infrared sensor on conveyor belt to place fruits in proper place. So camera can take picture of fruit and then based on its color, texture and size.

Which make this system very expensive.

PROPOSED SYSTEM

The problem that arises is that there is no single fruit which can be said it is pure from outside just by looks. This causes the humans to buy from various unreliable sources and understanding of the fruit is unclear at the end. This leads to health problem in human.

Also Manual method of fruits quality detection is also a costly process. Hence, there is a need to upgrade the manual system with automated system which can detects the quality of fruits using colour spectrography.

Therefore, we have came with a system which help to detect the infected fruits using color spectrography method. Which will lead to use of less man power. In low budget and which work more efficient then man power and take less time for processing.

**HARDWARE DESCRIPTION**

- Processor GHz: i3/i5/i7, +2
- RAM: 2 GB
- Hard Disk Drive: 1GB
- Video: full colors
- Processor GHz: i5, 2.7
- RAM: 4 GB
- Hard Disk Drive: 40 GB
- Keyboard: 101/102 or Digi Sync Family
- Standard
- Monitor: Panel (1024 X 764)
- Display
- Network Adapter: SMC Networks SMC1255TX-1 10/100Mbps PCI Fast Ethernet Adapter
- Mouse: Logitech
- Serial Mouse

**SPECIFICATIONS**

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SOFTWARE DESCRIPTION

Operating System: Windows Xp /7/8 32 Bit Front-End: Visual Studio
Back- End: If Required, Ms Sql Server 2005 Express

CONCLUSION

The hardware includes the arduino, color sensor, bluetooth arduino model. The software system analyzes the still frame extraction, preprocessing of fruits, features extraction and finally gradation. Proposed system takes data from the color sensor and then process that data and give output in the GUI.

This system help to reduce man power and save money. We have successfully developed this system which is more efficient then man power processing.

These models could be used in intelligent picking devices. In future a single device can comprise more number of approaches to detect more categories of fruits.

REFERENCES

[1] Hybrid approach for apple fruit diseases detection and classification using random forest classifier .Bhavini J. Samajpati ;Sheshang
