

An Automated Fruits Quality Detection Framework using Colour Spectrography

Mr. Nikhil Shinde¹

Department of Information
Technology
Padmabhushan Vasantdada
Patil College of Engineering
Sion - 22 Mumbai

Mr. Shubham Kakade²

Department of Information
Technology
Padmabhushan Vasantdada Patil
College of Engineering Sion - 22
Mumbai

Mr. Arbaaz Khan³

Department of Information
Technology
Padmabhushan Vasantdada Patil
College of Engineering Sion -22,
Mumbai

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

Hence, fruit identification based on machine-based system can make the task easy and consumes less time. Nowadays, the precision agriculture is supported by intelligent systems where computational methods can be applied

The computational methods dominates in all domains and its usage in agriculture sector encompasses monitoring the plant growth, recognition of disease in fruits and crops fruits, classification of weed plants and crops, counting and plucking of vegetables and fruits, classification among vegetables and fruits and so on.

Literature Review

No.	Title of paper	Author Name	Publication	Methodology	Limitation
1	Hybrid Approach Of Fruit Detection	Bhavani J.S	IEEE(2016)	Random Forest classifier	Not Accurate
2	Color Based Fruit Analysis Using Raspberry Pi	Ms.P.R.Chavan	IEEE(2018)	Raspberry Pi & Color Image Processing	Costly & More Complex Hardware
3	Fruit Quality Inspection System	Manali R.S	IEEE(2017)	RGB Image	Non Effective For Large Scale

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	:	1024*786,
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
Display Adapter Super VGA	:	Trident
Network Adapter: SMC Networks 10/100Mbps PCI Fast Ethernet Adapter	:	SMC1255TX-1
Mouse Logitech	:	
Serial Mouse	:	

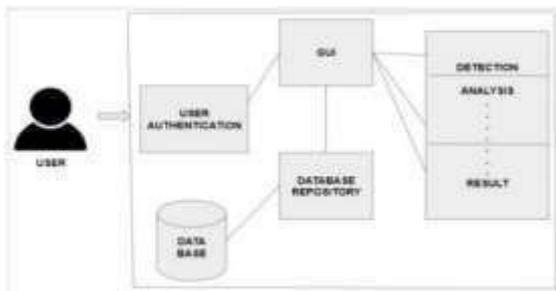


Fig1. Use Case Diagram

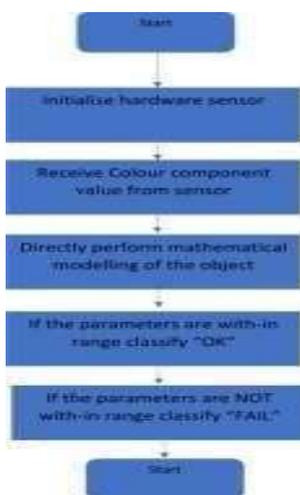


Fig 2. Flow Chart . SPECIFICATIONS

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 proccesing.

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
- [2] Color Based Fruit Analysis Using Raspberry Pi using image Processing. Ms.P.R Chavan 2018 International Conference on Communication and Signal Processing (ICCSP) .
- [3] Fruit Quality Inspection System using RGB image. Manali R.S 2017 International Conference on Communication and Signal Processing (ICCSP)- Blender Guru .