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Fruit Quality Measurement System

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Abstract: The Objective of this work is to design and implement intelligent Fruit quality detection using microcontroller. Quality evaluation of fruits is important and very vital for the food and agricultural industry. The fruits in the market should satisfy the consumer preferences. Traditionally grading of fruits is performed primarily by visual inspection using size as a particular quality attribute. This paper presents a fruit size detecting and grading system based on embedded system. The early assessment of fruit quality requires new tools for size, weight and color measurement.

INDEX TERMS*:* Embedded System, Size Detecting, Fruit Grading, and Sensors.

1. INTORDUCTION

Fruit quality detection system is widely used in industry. In this project we are going to develop such a system, which can move the finished and distribute fruit through a conveyer towards next station or towards dispatch section also it will check the dimensions, colour& weight of the fruit and if any wrong product found on the conveyer the conveyer will automatically move that fruit to the basket.All this process is done automatically with the help of microcontroller, sensors and motors. Microcontroller will move the conveyer motors at particular instant, then the sensors will check the dimensions ,weight&colour of the fruit & send the signal to microcontroller if the fruit is large,weighted& good colour then it will be moved on the large basket same as small and second quality fruit.Here two choices are provided for grading either by color,weight and size. In first case we are going to sort circular shaped fruits according color and grading is done according to size& weight. The proposed automated classification and grading system is designed to combine three processes such as feature extraction, sorting according to color and grading according to size&weight.

2. LITERATURE SURVEY

In this paper [1] to investigate and control quality, one must be able to measure quality-related attributes.

In this paper [2] due to the high moisture content in fruits and vegetables, water dominates X-ray absorption.

In this paper [3]the system takes ARM9 as main processor and develops the fruits size detecting program using image processing algorithms on the QT/Embedded platform.

In this paper [4]the color grading is a crucial step in the processing of fruits and vegetables that directly affects profitability, because the quality of agricultural products is often associated with their color.

3. MODIFICATION

In our project all the drawbacks overcome in the literature survey. ARM Based Fruit Grading and Management System Using Image Processing in this project grading system is not automatic & color sensor is not available and ARM based project is very expensive . In our project grading system is automatic & less expensive.

In Rapid Color Grading for Fruit Quality Evaluation ,Using Direct Color Mapping project ,there are only detect the color .And in our project detect the color ,height & weight also.

4. SYSTEM DESCRIPTION

4.1 GENERAL BLOCK DIAGRAM

In this block diagram there two sections, namely input section and output section. Input section consists of the height sensor,color sensor and signal conditioning circuit. And the output section consist of the microcontroller, relay driver, conveyer motor.

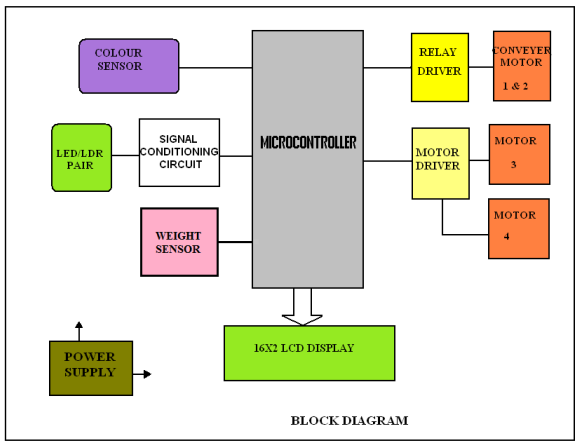

Fig.no. 21 Block Diagram of Fruit Quality Measurement

4.1 SENSORS:

Sensors are important part in this project. We are using 3sensors in this project. Laser will continuously transmit the rays and receiver (LDR) willreceive these rays. Then it will detect the height of fruit. Second sensor is color sensor it detects the color of fruit. Third sensor is weight sensor it detect the weight of the fruit.

4.2 MICROCONTROLLER AT89C52:

2 sensors give different code to the microcontroller. As per coding microcontroller detects the fruit size & color and move the fruit in particular basket with the help of dc motor.

4.3MOTOR DRIVER:

For movement of conveyer system, we use DC motor. To drive the motor we use relay driver.

4.4 DC MOTOR:

It is o/p of system. We use geared DC motor for control the conveyer & distribution.

4.5 POWER SUPPLY:

For operation of the whole system we need power supply. It is +5Vdc & +6Vdc.

5. FRUIT QUALITY MEASUREMENT SYSTEM MODULE:-

Such system which can move the finished and distribute fruit through a conveyer towards next station or towards dispatch section also it will check the height ,weight& color of the fruit and if any wrong fruit found on the conveyer the conveyer will automatically move that fruit to the basket.

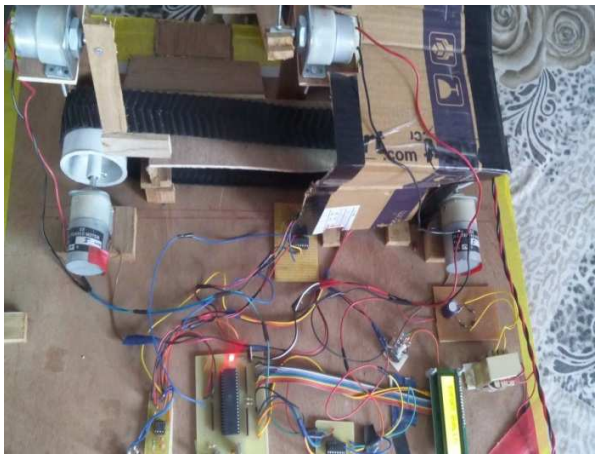

Fig.no. 2 Kit of Fruit Quality Measurement system

All this process is done automatically with the help of microcontroller, sensors and motors. Microcontroller will move the conveyer motors at particular instant. The sensors will check the height, weight& color of the fruit then send the signal to microcontroller. If the fruit is large, good in weight & good in color then it will be moved in the large basket.

6. EXPERIMENTAL RESULT:-

Fig.no.4 Initial Condition Of Fruit Quality Measurement System

This display roll is main of the system.Display shows the message is Fruit Quality MeasurementSystem. It can be used for detect the different quality of fruit like Expert Quality and Grade 2 quality.Figure shows the display in initial condition offruit quality measurement system.

Fig.no.5Display shows the Expert Quality Of Fruit

Fig 5 shows the expert quality of fruit. When a fruit is detected in height,weight and also detect the color, then this fruit is distributed to expert quality.

Fig.no.6 Display Shows the Grade 2 Quality Of Fruit

Fig 6 shows the grade 2 quality of fruit. When a fruit is detected either in height,weight or in color or vice versa, then this fruit is distributed to grade 2 quality.

7. APPLICATIONS

1. It is used in a chemical industry for bottle movement.
2. It is used in Automobile industry.
3. It is used in a Food company. (Chipsetc.).
4. It is used in mechanical industries.
5. It is used in cold drink companies.

7. CONCLUSION

The fruit quality measurement system using microcontroller & conveyer is successfully implemented. The fruit quality measurement system obtained 3 sensors such as height, color and weight.

8. REFERANCES

[1] A Fruit Quality Management System Based On Image Processing, Volume 8, Issue 6 (Nov. - Dec. 2013)

[2]Quality measurement of fruits and vegetables, Judith A. Abbott Received 30 June 1998; accepted 11 November 1998

[3]ARM Based Fruit Grading and Management System Using Image Processing Manoj B. Avhad 1, Satish M. Turkane 2. Volume 2, Issue 1, January 2013.

[4]Rapid Color Grading for Fruit Quality Evaluation Using Direct Color Mapping, Published in Automation Science and Engineering, IEEE Transactions on (Volume:8 , Issue: 2) Date of Publication :15 November 2010