

Fruit Quality Management and Sorting using Image Processing

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Abstract – Fruit quality Management and Sorting proposed a way to differentiate the quality product and the bad or damaged fruit using a advanced system that is image processing in this the image processing is the basic blog to differentiate the objects .The old existing system have the disadvantages of low efficiency , low speed of grading , high cost and complexity. The implementation of this proposed system, it will able to sort and grade fruits based on their color, size and shape.

Keyword—RGB (Red Green Blue), MATLAB, Image Processing , ANN(Artificial Neural Network)

I. INTRODUCTION

Detecting the fruit quality is done using the vision detecting technology in this paper the development in image processing technology computer software and hardware is becoming more and more advance. The disadvantage of the existing food grading and sorting system is that the speed, efficiency is very low. The system is very complex and it is very much costly. Hence it is required to design and proposed such a system which is more efficient less complex and less costly with high performance speed. They are mainly two choices provided for grading either by color and size, First case we are going to sort circular shaped fruits according color and grading is done according to size.

Therefore in brief the project aims at achieving following objectives:

1. To determine the quality of fruits based on the fruit color and size through image processing.
2. To determine quality of large volume of fruits.
3. To eliminate manual errors while sorting.

The image processing is a promising field which aims at automating a lot of manual processes. However, one disadvantage of image processing is the large amount of database which is needed to compare the input parameter with the existing ones. The captured image is pre-processed with the data base. It also requires a lot of training for the system to be more accurate. Considering all of this in the study and aim of the paper will be to understand and to be more accurate results.

II. METHODOLOGY

The system is proposed so that it can overcome the conventional means sorting and grading the fruits. In this paper the system proposed helps in finding such solutions over the conventional system. Human observation is used in the conventional system. The proposed system involves feature extraction, grading and sorting on the basis of size and color. In this paper the image is taken directly from the digital camera or pre saved image is processed. The image is fist converted in to a grey scale image for further process. The features like bright color and other textures are already extracted using algorithm in the Matlab software.

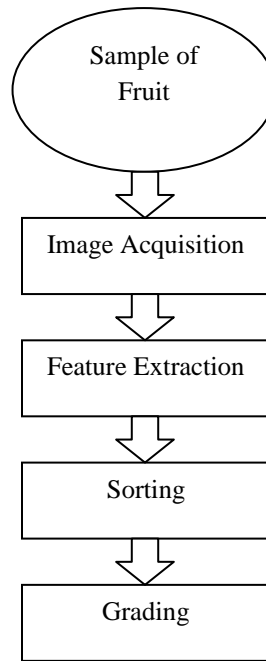


Fig. 1 Methodology Overview

III. DESIGN FLOW

The image is taken with the help of digital camera, it required that the image is taken with the white background or the fruit is placed on the white surface. In such a way only the image of the fruit is processed and the other part like background can be excluded from the processing at the initial level of image processing.

The sample image which will be taken in the process will be like.

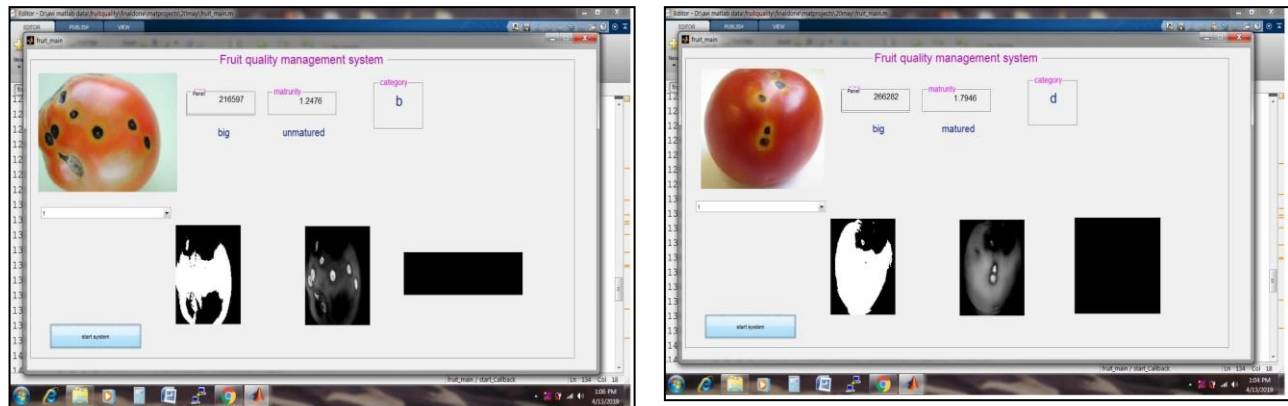


Fig. 2 Sample Image Processing

Capturing Image

A digital image is captured using a digital camera. A digital camera can be a webcam or a mobile camera which produces a digital form of image. A film or negative camera cannot be used in the processed as it does not generate a digital image. This image is then loaded in the MATLAB algorithm for further processing. An already saved data of image also can be processed in the MATLAB. Once the image is loaded in the algorithm the processes are carried out like boundary length extraction, size and color extraction and feature extraction.

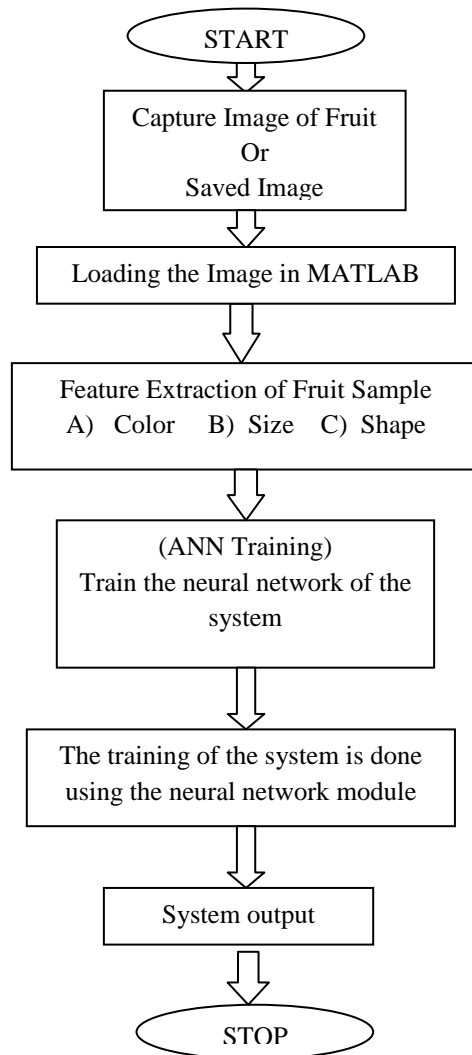


Fig.3 Flow Chart of proposed system for fruit detection

Boundary Extraction of the image:

The image uploaded in the MATLAB is a color image and it is required that image is first converted in to a grayscale image. The function is defined in the MATLAB algorithm so that it first converted in to the grayscale image. After that the image is converted in to the binary form of image. The final image is only in two colors which is black and white.

Geometric feature Extraction of the image:

The image which is added into the MATLAB is now defined in terms of the geometry. The size and dimension of the fruit is defined in this step. The geometric feature is extracted in this stage.

Color and Size:

The image is already in the RGB image or color form before processing or converting it in the grayscale. The digital image is processed on the basis of colors like red, green and blue the yellow colors are derived color from this to color. The color of the image defines the fruit in category like ripped fruit or infected fruit.

IV. RESULTS

The images below shows the initiali of the Fruit Quality Management and the class of fruit.

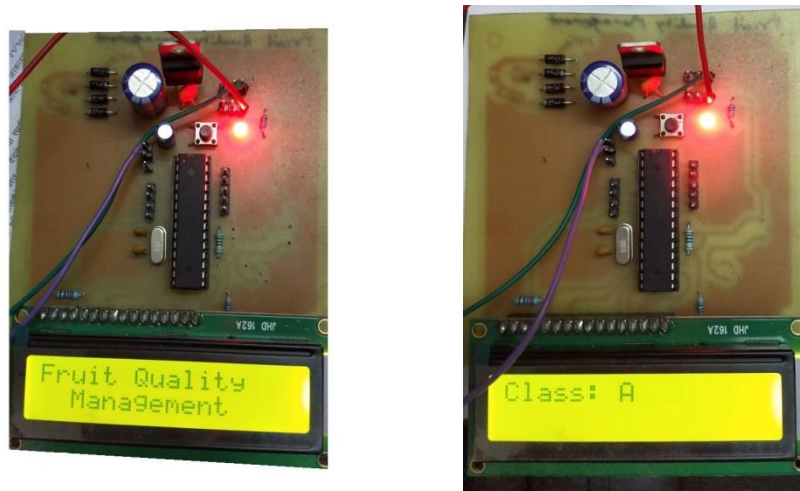


Fig.4 Output of proposed system for fruit detection

V. CONCLUSION

The implementation of this proposed system, we are able to sort and grade fruits based on their color, size and shape. Firstly, the captured image's preprocessed (filtered for noise) format is obtained and then send for analysis. The image will be converted to RGB format to extract its color and further it will be used for color extraction of the fruit. Also depending on major and minor axis size the fruit is graded (this will involve classification of fruits as big, small, medium)

VI. REFERENCES

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