DESIGN AND DETECTION OF FRUITS AND VEGETABLE SPOILED DETETCTION SYSTEM

Link: https://www.ijaiem.org/Volume10Issue6/IJAIEM-2021-06-17-8.pdf

Methodology

Texture, Color and Size are the important parameters for fruit quality identification. By using image processing technique, the proposed system determines the quality by its color, size, weight and age limit of the fruit and vegetable. We will do object detection in this article using something known as haarcascades.

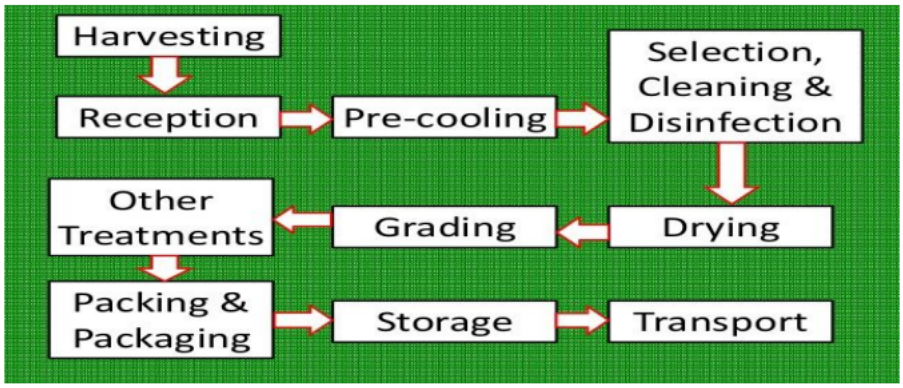


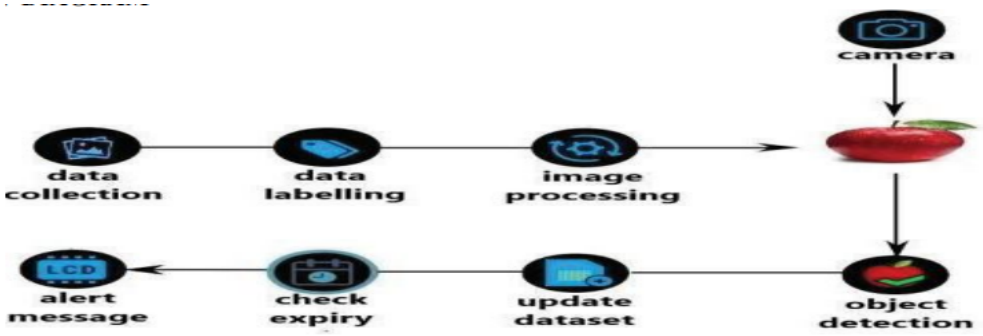
Figure 1: Post Harvesting Techniques

- Color recognition is a very important process in ripeness detection. The ripeness detection is external quality factor.
- Because of texture defected fruit can be recognized. Texture analysis detects the non-uniformity of fruit outer surface.
- The size is also an important parameter. It clearly seen parameter all customers select fruit based on size.

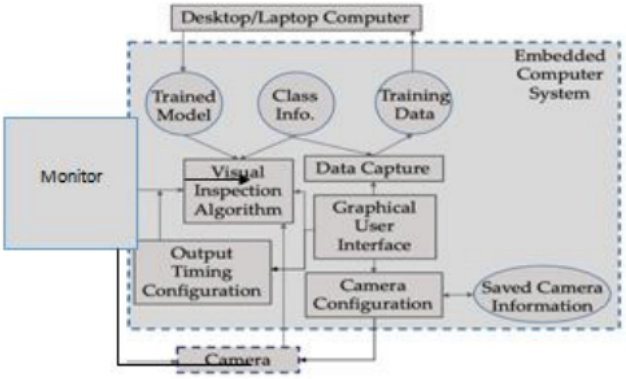
Component Used

- OpenCV version 1.0 (It has C++, C, Python and Java interfaces and supports Windows, Linux, Mac OS, iOS and Android.)
- Python
- Image Processing
- Web Camera

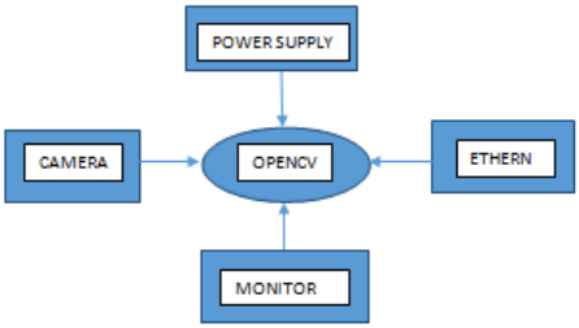
Flow Diagram



Architecture



Block Diagram



Findings

- Acquiring the images of the Fruits
- Detection process
- Detection of defective Fruits

Problem Faced

The image is captured with camera that image is with noise and its features are not clearly seen so image pre-processing is done on that image.

Result

The main aim of image processing is an improvement of image so that unwanted distortions are suppressed and enhance image features which are important for further processing.

The image is captured. First convert the RGB image to gray scale image. Then OSTU thresholding the binary thresholding is performed on that image. Then morphological operation such as dilation then erosion is performed. For boundary detection opening is performed. Then major axis and minor axis length is calculated. Then the size is decided as small, medium, and large.

Analysis

The software is divided into two parts first one is for image analysis and other is for controlling hardware based on image processing results. The system is operated in two different scenarios in first the image is captured with camera the all the image processing is done in the control module. All the processes are shown on a monitor and then based on decision taken by control module. The conveyor assembly is operated.

Future Work

This pick and place robotic sensors can be used only for the boxes in the topmost rows, further work will be carried out on usage of these sensors for the boxes at the bottom. In this project we can identify the defected objects one by one, in future it can be introduced to use in industries to massive quality checking.

We identify the fruits or vegetables is spoiled or not by its color, size and texture, this can be extracted in future as the fruit or vegetables is affected by its inside or not.