Quality Assessment Of Flower Based On Digital Image Processing

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ABSTRACT: *India is an agriculture based country, where role of floriculture is very important in Indian economy. Indian floriculture industry comprise of flowers such as rose, tuberose, gladder, authurium, carnatious, marigold etc. but rose has always been admired for its beauty and fragrance. It occupies 1st position in international market of flowers. To increase productivity and maintain quality of rose flower, India comes to take modern steps in floriculture. To motivate the Rose flower growers government and other organization are organizing the King of Rose competition in agro exhibition where the quality is main aspect. Generally the quality of the rose is accessed by its color intensity and structural parameters such as height, width, curvature of petals. In such competitions flower quality has been inspected by multiple agree experts. Individual experts have their own perspective of assessment of quality of flower. So they may not come to final conclusion. Until the specific catteries are not defined it is difficult to come at the conclusion that which is good quality flower. To overcome these problems system is designed to decide the quality of rose flower based on the term Digital Image Processing that will assess the quality of flowers with predefined criteria without any biases and farmer will get the justice in the competition. The system will also help full to separate out quality flower using different processes like image preprocessing, segmentation, filtering, feature extraction and some morphological processes. Thus image processing concept is evolved for solving the problems faced by human.*

*Keywords*— **Rose flower, Frame box, digital image,MATLAB, Web camera.**

I. INTRODUCTION

India is an agriculture based country, where floriculture is very important considering Indian economy. To motivate the Rose flower growers government and other organization are organizing the King of Rose competition in agro exhibition where the quality is main aspect. Generally the quality of the rose is accessed by its color intensity and structural parameters such as height, width, curvature of petals. In such competitions flower quality has been inspected by multiple agree experts. Individual experts have their own perspective of observing quality of flower. So they may not come to final conclusion. Until the specific catteries are not defined it is difficult to come at the conclusion that which is good quality flower. To overcome these problems system is designed to decide the quality of ROSE flower based on the term Digital Image processing that will assess the quality of flowers with predefined criteria without any biases and farmer will get the justice in the competition. The system will also help full to separate out quality flowers during the export.. So

image processing concept is evolved for solving the problems faced by human.

II. PRAPOSED SYSTEM.

Block diagram of quality assessment of flower on digital image processing.
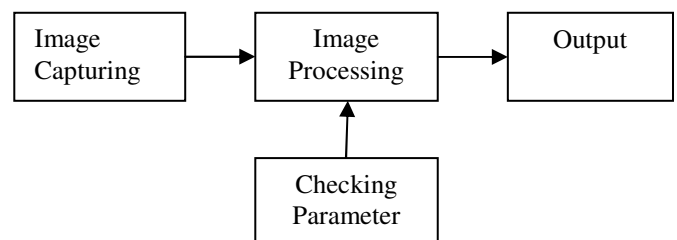
Block diagram.

III. MATERIALS AND METHODS.

Method use for finding regional parameters,

1. Imfil : Its use for Fill image regions and holes.

SYNTAX:

BW2 = imfill(BW)

[BW2,locations] = imfill(BW)

BW2 = imfill(BW,locations)

BW2 = imfill(BW,'holes')

I2 = imfill(I)

BW2 = imfill(BW,locations,conn).

2. Dilating an Image: To dilate an image, use the imdilate function.The imdilate function accepts two primary arguments:

The input image to be processed (grayscale, binary, or packed binary image). A structuring element object, returned by the strel function, or a binary matrix defining the neighborhood of a structuring element. imdilate also accepts two optional arguments, SHAPE and PACKOPT. The SHAPE argument affects the size of the output image. The PACKOPT argument identifies the input image as packed binary.

3 .Eroding an Image: To erode an image, use the imerode function. The imerode function accepts two primary arguments:

The input image to be processed (grayscale, binary, or packed binary image)

A structuring element object, returned by the strel function,or a binary matrix defining the neighborhood of a structuring element. imerode also accepts three optional arguments, SHAPE, PACKOPT, and M.

4. Combining Dilation and Erosion : Dilation and erosion are often used in combination to implement image processing operations. For example, the definition of a morphological opening of an image is an erosion followed by a dilation, using the same structuring element for both operations. The related operation, morphological closing of an image, is the reverse: it consists of dilation followed by an erosion with the same structuring element.

5. Skeletonization: To reduce all objects in an image to lines, without changing the essential structure of the image, use the bwmorph function. This process is known as skeletonization.

Image Processing: Image processing involves changing the nature of an image in order to either

1.Improve its pictorial information for human interpretation, 2.Render it more suitable for autonomous machine perception. Enhancing the edges of an image to make it appear sharper, Removing "noise" from an image; noise being random errors in the image. Removing motion blur from an image. Removing detail from an image. For measurement or counting purposes, we may not be interested in all the detail in an image. Image enhancement is the improvement of digital image quality (wanted e.g. for visual inspection or for machine analysis), without knowledge about the source of degradation. The aim of image enhancement is to improve the interpretability or perception of information in images for human viewers, or to provide `better' input for other automated image processing techniques.
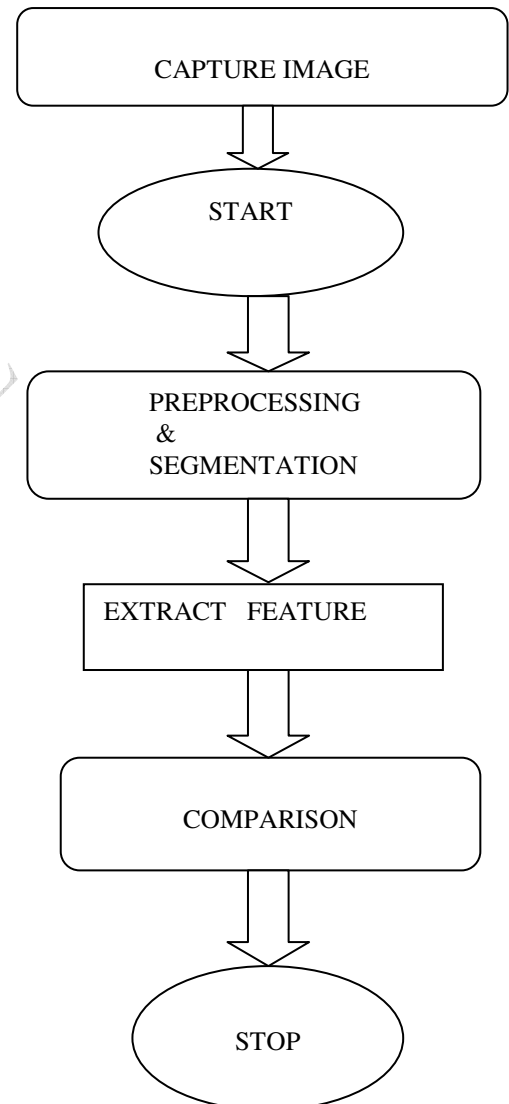
IV. PROPOSED WORK FLOW DIAGRAM:

Image Enhancement:

 Image enhancement operations improve the qualities of an image like improving the image's contrast and brightness characteristics, reducing its noise content, or sharpen the details. This just enhances the image and reveals the same information in more understandable image. It does not add any information to it.

Image Restoration:

Image restoration concerns the removal or reduction of degradations which have occurred during the acquisition of the image. Such degradations may include noise, which are errors in the pixel values, or optical effects such as out of focus blurring, or blurring due to camera motion. We shall see that some restoration techniques can be performed very successfully using neighbourhood operations, while others require the use of frequency domain processes.

Image Compression:

Image compression and decompression reduce the data content necessary to describe the image. Most of the images contain lot of redundant information, compression removes all the redundancies. Because of the compression the size is reduced, so efficiently stored or transported. The compressed image is decompressed when displayed. Lossless compression preserves the exact data in the original image, but Lossy compression does not represent the original image but provide excellent compression.

Image Segmentation:

Image segmentation is the process of partitioning a digital image into multiple segments (sets of pixels, also known as super pixels). The goal of segmentation is to simplify and/or change the representation of an image into something that is more meaningful and easier to analyze. Image segmentation is typically used to locate objects and boundaries (lines, curves, etc.) in images. More precisely, image segmentation is the process of assigning a label to every pixel in an image such that pixels with the same label share certain visual characteristics.

Feature Extraction:

Feature extraction is defined as grouping the input data objects into a set of features. The features extracted carefully will help to extract the relevant information from the input data in order to perform the feature matching .Using this we can reduce the representation input size instead of the full size input. Here clustering process has been used to extract features form good and bad flowers.

Filtering:

The purpose of filtering is to smooth the image. This is done to reduce noise and improve the visual quality of the image. Often, smoothing is referred to as filtering. Here filtering is carried out by median filter since it is very useful in detecting edges.

V. RESULTS AND DISCUSSION:

TAJ MAHAL ROSE MEASURNMENT:

ROSE	MANUAL READINGS (in cm)			GUI READING (in cm)		
	H	W	S	H	W	S
1	5	5	6	5.7	5.2	6.8
2	3.5	4.5	5	6.1	4.1	5.16
3	4.4	4	6.5	5.9	5.5	7.6
4	4.5	4.5	7	5.7	5.4	8.6
5	4	2.5	6	4.3	3.2	**7**
6	4	3.5	6.5	4.9	4.3	**7.1**

DUTCH ROSE MEASURMENT:

ROSE	MANUAL READINGS (in cm)			GUI READING (in cm)		
	H	W	S	H	W	S
1	3.5	7.5	6	4.4	7.2	5.1
2	2.5	6.5	7	3.7	6.5	7
3	2.5	6	4	2.7	6.3	3.4
4	7.2	6	4	2.9	6.1	3.5
5	2.5	5.5	4.5	3.1	6.6	5

Fig. 3 original image

refWidthPixel:10.849
refHeightPixel:53.5995

RoseWidthPixel:27.2704
RoseHeightPixel:42.3183

RoseWidth:40.7025mm ,
RoseHeight:63.1623mm

Fig. 4 measurements

StemWidth:3.4469mm

Fig. 5 stem measurement

VI. FUTURE SCOPE

This system use to measure quality of rose by measuring the height, width and steam width. In future using odor sensor measure fragrance of rose. Using conveyer belt measure quality of maximum numbers of roses at a time.

Also these systems implement to check quality of different types of flower.

VII. CONCLUSION

In floriculture various roses are cultivated and based on their requirements as well as quality. In India we majorly produces first red for the purpose of exporting so we check the quality of these roses for better selling, marketing and also for agro exhibitions. Here these system find out the parameters such as height, width and steam width. Based on these parameter we check either the quality of flower is good or not. Also implement this system at agro exhibition were the different different competition are organized by government. System can easily find out the better quality rose among the large number of roses.

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