



# International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: [www.ijircce.com](http://www.ijircce.com)

Vol. 7, Issue 2, February 2019

## Detection of Cucumber for Harvesting Using Color Difference Mechanism

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**ABSTRACT:** In image processing mechanism recognition of images, plays a key role and it is applied all over methods of processing with a techniques. These methods have been classify into two main groups that are local based and shape based methods, in common, a procedure of image recognition followed by dataset collection, preprocessing of images for enhance the feature of images that are noise removal, next process is segmentation of image into different classes that are classified the image according to classes of already given precession value. In our research, the cucumber image recognition is to be analysis and segmented, in here the segmentation plays vital role to our research; this process is made using image difference mechanism. From the two main methods we propose a color based image differentiation by using both mechanism (color and shape) in color based analysis, we use threshold or index value for segmentation and the optical filters are used in shape based analysis we use transformation techniques for image segmentation. In our research we improve our research by color differentiation by embedding color and shape processing, respect to percentile quantification unit. Our approach make using with dataset approach by training set of images and match with dataset images for preprocessing and segmentation.

### I. INTRODUCTION

Nowadays the image Processing is a rapidly enhancing technology, this applications is employed for business fields in various ways. Image processing is a technique to convert picture into highly developed shape and plays some actions on it, with the target to acquire enhanced picture or to separate some valuable data from it. It shapes center research region inside designing and software engineering disciplines as well. Notwithstanding applications in drug and the space program, computerized picture handling methods currently are utilized in a wide scope of utilizations. PC policies are employed to enhance the complexity or different highlights of the picture for less demanding translation of x-rays and different pictures utilized in industry, pharmaceutical and the organic sciences.

### II. EXISTING WORK

In present system SVM classifier used for pixel level mapping for identification of different color region. Used this map we mask the cucumber by morphological operation. After done the morphological operation we extract the image based on the blobs. That extracted image compared by the machine learning which blob as a cucumber using this coordinate we can send information of extract cucumber in the particular place in robots. In this system identify the cucumber at very well level some time the color intensity change due to environment it affect the pixel mapping that time it accuracy is questionable. So we need other method to resolve this trouble to make high accuracy of cucumber harvesting process using robot.

### III. PROPOSED WORK

In proposed we solve intensity problem by adding the shape based identification with existing systems. In we find the edges in different angle we can extract the form of the image. And using the blobs and shape we extract the different region by with high accuracy, by machine learning to identify the cucumber in the segment category.

### IV. MODULES

- Pixel mapping
- Morphological operation
- Shape details
- Machine learning

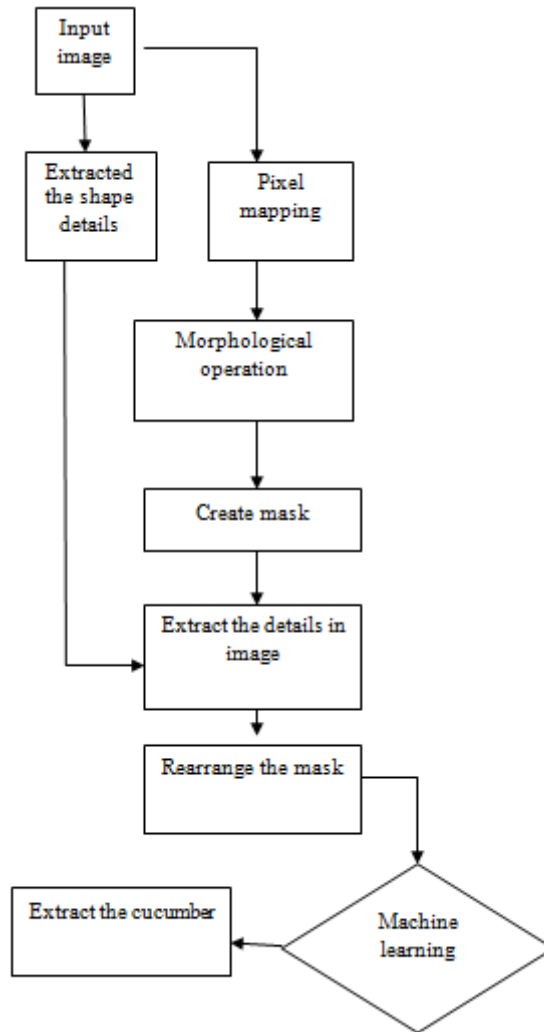
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## Flow chart:



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## A . Pixel mapping:

Pixel mapping is technique to split the image with pixel by pixel.

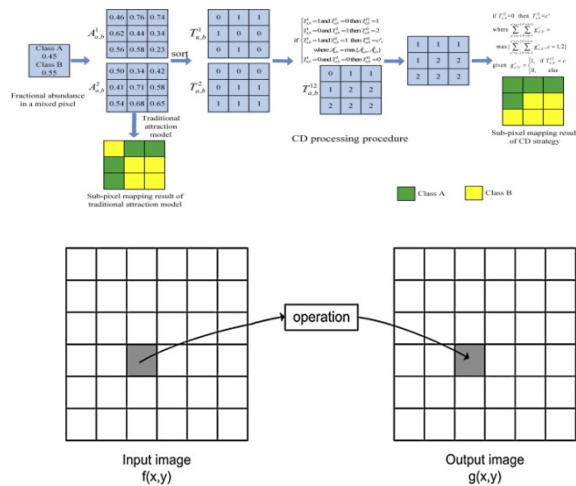


Figure: Point processing method

It helps to enhance the exactness of the masking. It is help to identify the particular pixel values for the thresh hold mask the cucumber.

## B . Morphological operation:

The activities of morphological are simple to use and takes a shot at the principle of set hypothesis. The image structure fault is evacuated by the utilizing morphology target. The greater part of the activities utilized here are mix of two procedures, expansion and disintegration. A little lattice structure is used by this task called as arranging component. The arranging component size and shape has remarkable cause on the final result. In this paper an endeavor is made to comprehend the essential morphological tasks by utilizing them on some standard images.

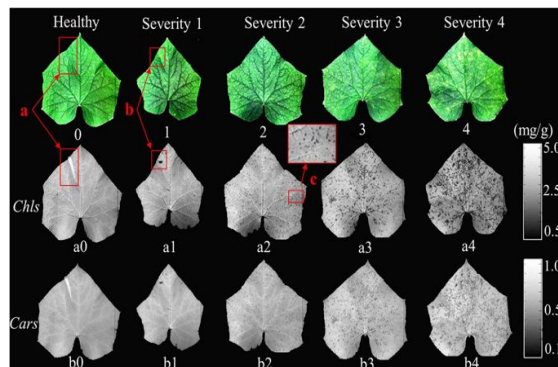


Figure: Hyperspectral morphological operation

The cooperation of the organizing component with examining image is to such an extent that the root of the organizing component is meant all conceivable pixel areas in the test image and afterward the correlation is done between the image pixels and the organizing component. The outcome is then gotten dependent on the proposed morphological process connected. Two dimensional organizing components can be delegated level organizing

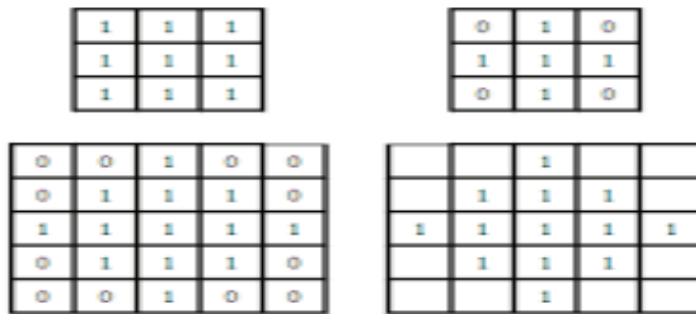
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component and non-level auxiliary components. Organizing components in morphological image processing are same as convolution veils in straight filtering of image



Regardless of the truth that the morphological tasks depend on set hypothesis huge numbers of the morphological activities are fundamentally sensible activities and are easy to utilize. The fundamental morphological operations are erosion and dilation. The other morphological tasks that are talked about in this paper are reliant on these two essential activities. The accompanying discourse clarifies couple of other morphological activities.

## Dilation

The dilation activity makes a question develop by size. The level at which it develops relies upon the nature and state of the organizing component. The dilation of a image A (set) by organizing component B is characterized as

$$A \oplus B = \{z | (\widehat{B})_z \cap A \neq \emptyset\}$$

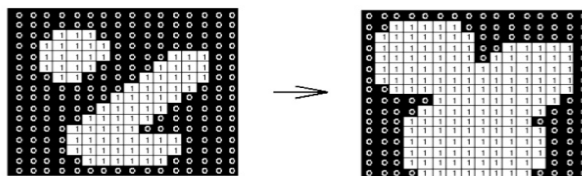


Figure: Dilation methodology to bridge gaps of an image

Whenever set B is reflected about its root and moved by z, at that point the enlargement of A by B is the arrangement of all relocations z with the end goal that  $B^{\wedge}$  and A have somewhere around one normal component. Expansion, as said above, adds pixels to the limit components. The widening procedure develops the quantity of pixels with esteem one (frontal area) and psychologists the quantity of pixels with esteem zero (foundation). Likewise expansion process is essentially used to fill the openings (missing pixels) in a persistent protest. The enlargement activity, since it includes pixels at the limit of the protest it influences the force at that area and accordingly obscuring impact can be watched. So it tends to be said that it is practically equivalent to smoothing spatial low pass channels that are utilized in direct filtering of the image.

## Erosion

The erosion activity is supplement of the enlargement task in setting with the task impact. That is disintegration task makes question lose its size. The disintegration of a image A by arranging the B component is characterized as

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$$A \ominus B = \{z | (B)_z \subseteq A\}$$

The image erosion A by arranging component B is the arrangement of all focuses z with the end goal that the organizing component B is deciphered by z is a subset of the image. This activity results in loss of limit pixels of the protest. The erosion procedure develops the quantity of pixels with esteem zero (foundation) and psychologists the quantity of pixels with esteem one (forefront).

### C. Morphological operations applications

Morphological tasks are helpful in numerous applications. To list a couple of they are utilized in opening filling, limit extraction of items, extraction of associated segments, Thinning and thickening et cetera. Among these applications the limit extraction is demonstrated as follows. For examination it is finished with Sobel edge extraction.



### D. Shape details:

Shape highlights of cucumber built from post-handled Shape channel reactions have been effectively utilized in different vital PC vision errands, for example, in surface division, confront location, and iris design portrayal. In any case, just seldom the fundamental shortcoming of Shape channel based highlights, the computational largeness, has gotten any consideration despite the fact that it might keep the utilization of proposed techniques in genuine applications. It is clear that Shape channels have numerous beneficial or even prevalent properties for highlight extraction; however on the off chance that the computational multifaceted nature can't be enhanced their application territories will stay restricted. Since Shape channels relate to any direct channels the clearest strategy to play out the sifting task is by means of the convolution in the spatial space. The standard convolution with Shape channels can be enhanced by using the distinctness of Shape channels or their symmetry, hostile to symmetry and wavelet attributes for decreasing the quantity of required duplications and increments. The convolution upgrades anyway apply just for certain channel designs making them simply exceptional cases, and along these lines, it frequently happens that the textbook arrangement, performing separating in the recurrence area, gives the most productive general change.

Likewise, certain estimate systems respecting more effective calculation, for example, recursive Shape approximation or approximation by disintegration into Gaussians, have been proposed, yet the approximations don't ensure the helpful element space properties, and in this way, the focal points may remain some way or another counterfeit. Primary strategies which can be utilized in a proficient calculation, yet which are heretofore ignored, are outside information about how the highlights are commonly utilized: the multi-goals structure using a few frequencies and introductions, and the stable numerical help given by a generally little powerful territory of the channels.

### E. Machine learning:

Machine learning models decide an arrangement of guidelines utilizing immense measures of figuring power that a cucumber would be unequipped for preparing. The more information a machine learning model is encouraged, the more perplexing the guidelines and the more exact the expectations. While a measurable model is probably going to have an innate rationale that can be comprehended by the vast majority, the tenets made by machine learning are



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frequently outside human ability to understand in light of the fact that our brains are unequipped for processing and dissecting tremendous informational collections.

The reason for the Classification show is to decide a mark or classification it is it is possible that something. We prepare the model utilizing an arrangement of named information. For instance, we need to anticipate if a man's mole is destructive or not, so we make a model utilizing an informational index of mole filters from 1000 cucumber datas that a specialist has just inspected to decide if they demonstrate growth or not. We likewise feed the model an entire cluster of other information, for example, a cucumber size, color, intensity, and pixel value. We at that point make a model which will empower us to display another image examine and choose in the event that it portrays growth or not. The specked line is the lead dictated by the model that best isolates the positive and negative outcomes, in light of the information it was given amid preparing.

## V. CONCLUSION

We conclude our results and discussion with the statistical parameter of Cucumbers proportional scaling and rotational operation. Our methodology performs accuracy with 98% to detect cucumber in greenhouse. Initially Multi template library is build to our algorithm to process out cucumber edge detection mechanism after we have applied color difference and shape difference mechanism field grown cucumber. The autonomous harvesting using robots include SVM (Support Vector Machine) based pixel classifier in existing mechanism it gives only based shape, not by color or grown cucumbers. Nowadays due to many meteorological issues fruits grown and ripped quickly with in the small size, so according to size we can't determine whether it is grown or not grown, it is our problem definition to find out cucumbers from field grown greenhouse using color difference and shape difference mechanism. Our segmentation procedure makes very accurate to classify cucumber from the plants and decreases the detection of plant leaves. Image category classifier plays main role with its library for matching detected cucumber is correct or incorrect. Thus at result we proven with high accuracy than existing system.

## VI. FUTURE ENHANCEMENTS

The scope of doing future works as follows

1. In future using color difference mechanism we need to detect plant disease with help of machine learning methods.
2. Speed and accuracy of color difference mechanism is need improved more.
3. Development of hybrid algorithms based on Neural networks and machine learning algorithm to enhancement of classifier recognition rate
4. Implementations with robot make manual flaws, so we need to given with tested results using simulators.
5. Plant disease detection is given as new enhancement of this research and also we enhance detection of diseases rate to much more.

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ISSN(Online): 2320-9801  
ISSN (Print) : 2320-9798

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