

Topic: Crop Detection (Image processing) using MATLAB

Details:

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**Abstract:** The Field of image processing is continually evolving. During the previous five years, there has been a huge increment in the degree of enthusiasm for picture morphology, neural systems, full-shading picture handling, picture information pressure, picture acknowledgment, and information based picture investigation frameworks. Image preparing techniques comes from two head application territories: improvement of pictorial data for human translation, and handling of scene information for independent machine recognition.

In these years the image processing has been used in many fields and for many purposes such as the face detection, computer vision, remote sensing, weather forecasting, optical character recognition, finger print detection, optical sorting, argument reality, microscope imaging and many more.

Image understanding, image analysis, and computer vision aim to duplicate the effect of human vision by electronically perceiving and understanding image(s) In digital image processing system, first step in the process is Image Acquisition it require taking an image, After a digital image is obtained, the next step deals with Preprocessing its function is to improve the image in ways that increase the chance for success of the other processes, the next step deals with Segmentation it partitions an input image into its constituent parts or objects, Representation & Description deals with make data in the form that suitable for computer processing, and after that Recognition is that assigns a label to an object, and last Interpretation involves meaning to an assemble of recognized objects.

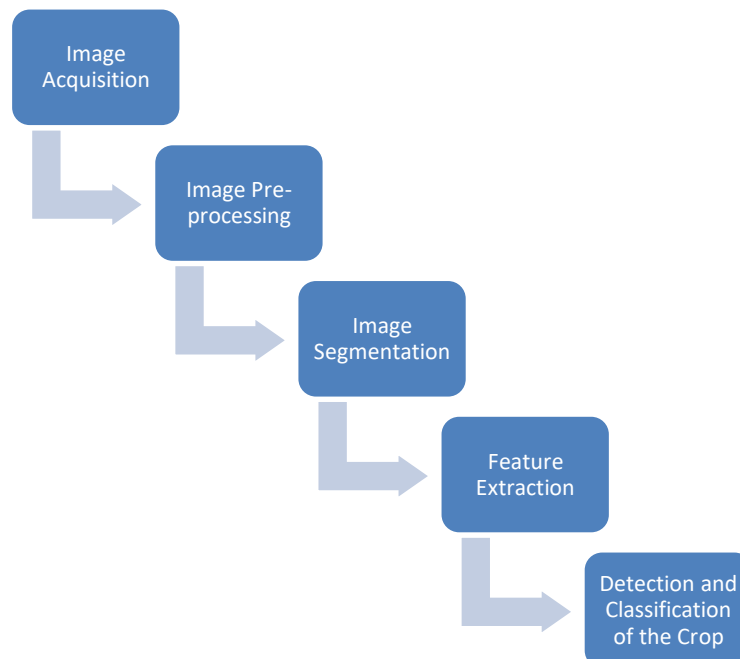


Image processing toolbox of MATLAB is used and in our report we are going to use this for crop detection .Some of the basics methods used are imread(), imwrite(), imshowpair(), etc.

From this project we will be able to detect the various types of crops and details of the crops like medicinal properties, geo locations, the requirements to grow and many more.

**Introduction:** We are using image processing toolbox of the MATLAB to detect a crop from a given database by capturing a image of the crop using our phone's camera .The code will compare the image captured by the user to the existing images in the database and show the information of the crop such as medicinal properties, geo locations, the requirements to grow if a match is found in database and will add the crop and its details to the database by extracting it from the internet if the match is not found. So our aim is to make a app which is self-sufficient to provide all important information about any crop in existence.

### **Literature Review:**

1. Sai Kirthi Pilli, Bharathiraja Nallathambi, Jessy George Smith, Vivek Diwanji ( 2015 ), It was an project based on the agriculture use as the crops when sowed needs to take care from the start and has to be taken care in such a way that the diseases should be took care of that the crop doesn't catch the disease and if caught the medicine and the curing technique are told and by the device known as eAGROBOT. It is a robot which tells the details of disease, how it is caused and the curing techniques.
2. Xavier P.Burgos-Artizzu, Angela Ribeiro, Maria Guijarro, Gonzalo Pajares ( 2010 ), It was an project in which the weeds and the crops can be identified very easily and the project also does that the while a tractor is running in real time for removing weeds the project made also identifies if any weed is left behind, this also tells about an rough idea of location of weeds.
3. Khirade Sachin D., Patil A.B. (2015), this paper discussed about the steps involved in the detection of diseases in plants using the images of their leaves. The steps involved image acquisition, image pre-processing, image segmentation, feature extraction and classification. Some Image segmentation and feature extraction algorithms were also included in this paper.
4. A.Camargo, J.S Smith(2009), this paper describes a method of image processing by visualizing the symptoms by the analysis of colored images. The algorithm converts the RGB images of the plants into the H, I3a and I3b color transformations. The images which are transformed are segmented by analyzing them based on the intensities of the histogram. The threshold cutoff value is determined based on their positions on histogram. After this the image is post processed by removing the pixel regions which are not considered as a part of the target. Manually segmented images were compared with the automatically segmented images. The result was positive as it proved that the developed algorithms were able to detect the disease even if the intensities were in variety of wide range.

**Problem Statement:** Many people do not know about the crops and the plants in their locality and the uses of that plant or crop so to give a glimpse about the particular plant or crop this will help them to know that particular plant or crop.

**Code:**

```
count=0;
t=0;
x=imread('F:\images\first1.jpg');
a=r2g(x);
sf = dir('F:\images \*.jpg');
% the folder in which images exists
for i = 1 : length(sf)
    f = strcat('F:\images\',sf(i).name);
    z = imread(f);
    count=count+1;
    b=r2g(z);
    c=corr2(a,b);
    if c==1
        imwrite(z, 'C:\Users\Lenovo\Desktop\image1.jpg');
        u=u+1;
    else
        disp('Two image are not similar');
    end
end
```

**Result:** This project is made and this will help to identify any type of crop and tell us about the medicinal properties and also tell us about the climate and weather conditions required if we want that crop and all the characteristics of that crop and also the medicinal purpose of that crop for any kind of use without dependence on anything like networks and all we only require the app.

**Conclusion:** From this project we can find the use of any crop anywhere and any place at any time and this project also help us to know about the medicinal purposes and also can use this without dependence on anything such as mobile network etc. we only require the app installed in the device from which we are taking the picture of the crop.

## **References:**

1. Pilli Sai Kirthi, George Smith Jessy, Nallathambi Bharathiraja and Diwanji Vivek (2015), eAGROBOT — A robot for early crop disease detection using image processing, in 2nd International Conference on Electronics and Communication Systems (2103). DOI: 10.1109/ECS.2014.7090754
2. Xavier P. Burgos-Artizzu, Angela Ribeiro, Maria Guijarro and Gonzalo Pajares (2010), On combining vision-based hybrid classifiers for weeds detection in precision agriculture, in International Journal of Reasoning based intelligent systems (2010). DOI: 10.1504/IJRIS.2010.034905
3. Sachin D. Khirade and A.B. Patil, Plant Disease Detection Using Image Processing, in IEEE (2015). DOI: 10.1109/ICCUBEA.2015.153
4. A. Camargo and Smith J.S, An image-processing based algorithm to automatically identify plant disease visual symptoms, in Biosystems Engineering (2009). Volume 102, Issue 1, Pages 9-21

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constituent parts or objects, Representation & Description deals with make data in the form that suitable for computer processing, and after that Recognition is that assigns a label to an object, and last interpretation involves making to an ensemble of recognized objects. Image processing toolbox of MATLAB is used and in our report we are going to use this for crop detection. Some of the basics methods used are imread(), imshow(), imshowpair(), etc. From this project we will be able to detect the various types of crops and details of the crops like medicinal properties, geo locations, the requirements to grow and many more. Introduction: We are using image processing toolbox of the MATLAB to detect a crop from a given database by capturing a image of the crop using our phone's camera. The code will compare the image captured by the user to the existing images in the database and show the information of the crop such as medicinal properties, geo locations, the requirements to grow if a match is found in database and will add the crop and its details to the database by extracting it from the internet if the match is not found. So our aim is to make a app which is self-sufficient to provide all important information about any crop in existence. Literature Review: 1. Sai Kirithi PBI, Bharathiraja Natthambal, Jessy George Smith, Vivek Dwanji (2015), It was a project based on the agriculture use as the crops when sowed needs to take care from the start and has to be taken care in such a way that the diseases should be took care of that the crop doesn't catch the disease and if caught the medicine and the curing technique are told and by the device known as eAGROBOT. It is a robot which tells the details of disease,

how it is caused and the curing techniques. 2. Xavier P.Burgos-Artiz, Angela Ribeiro, Maria Gujaro, Gonzalo Pajares (2010), It was a project in which the weeds and the crops can be identified very easily and the project also does that the while a tractor is running in real time for removing weeds the project made also identifies if any weed is left behind, this also tells about an rough idea of location of weeds. 3. Khirade Sachin D., Patil A.B. (2015), this paper discussed about the steps involved in the detection of diseases in plants using the images of their leaves. The steps involved image acquisition, image pre-processing, image segmentation, feature extraction and classification. Some image segmentation and feature extraction algorithms were also included in this paper. 4. A.Camargo, J.S Smith(2009), this paper describes a method of image processing by visualizing the symptoms by the analysis of colored images. The algorithm converts the RGB images of the plants into the H, Sa and Tb color transformations. The images which are transformed are segmented by analyzing them based on the intensities of the histogram. The threshold cutoff value is determined based on their positions on histogram. After this the image is post processed by removing the pixel regions which are not considered as a part of the target. Manually segmented images were compared with the automatically segmented images. The result was positive as it proved that the developed algorithms were able to detect the disease even if the intensities were in variety of color range. Problem Statement: Many people do not know about the crops and the plants in their locality and the users of that plant or crop so to give a glimpse about the particular plant or crop this will help them to know that particular plant or crop. Code: count0; b=0; x=imread('F:\images\frst1.jpg'); a=2g(x); if = di(F:\images 'F.jpg'); % the folder in which images exists for i = 1 : length(x) f = strcat('F:\images\'A\I\name); z = imread(f); count=count+1; b=2g(z); c=cor2(a,b); if c=1 imwrite(z, C:\Users\Lenovo\Desktop\image1.jpg); u=u+1; else disp('Two image are not similar'); end end Result: This project is made and this will help to identify any type of crop and tell us about the medicinal properties and also tell us about the climate and weather conditions required if we want that crop and all the characteristics of that crop and also the medicinal purpose of that crop for any kind of use without dependence on anything like networks and all we only

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