ISSN: 2278 – 1323
International Journal of Advanced Research in Computer Engineering & Technology (IJARCET)
Volume 5, Issue 5, May 2016

Review on small size object detect and count using digital image processing

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Abstract :

This paper reviews digital image processing for small size object detect and count .digital image processing can be used for small size object count with high accuracy.there is different methods for object detecting and counting .the aim is to design an algorithm to detect and count small size object with high accuracy.in this paper a review of previous studies to count the number of objects are summarized and identify future research directions.morphologic algorithm is used for better result.

Keywords:Digital image processing,object detecting,object counting

I.INTRODUCTION

Images contain different types of objets and structures which may convey information.counting involves estimating the number of objects in an image,detecting involves presence the number of objects in an image.counting arises in many real time application such as counting grains in agriculture industry,counting cells in microscopic images,counting of number diamonds in industry etc.existing methods for counting involves a large amount of hardware which also adds to the cost or manual counting which is time consuming and may give erroneous results. now counting can be done with the technique involving digital camera and simple image processing method based on matlab,and hence counting could be performed with ease . there is same size and shape of objects are considered in an image[1].

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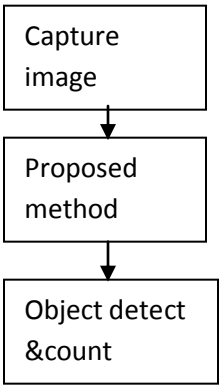
II.GENERAL METHOD



1. Image acquisition:The Image is captured by digital camera.it is input image .image with different object size in RGB color image so it converted to gray or binary image for proposed method.captured image has high resolution for better results.
2. Proposed method:Image segmentation,Image enhancement ,Denoising ,Dilation process,Erosion process used in this step.for object count and detect performing any of them on the image ,for feature extraction from image.
3. Object detect and count:Edge detection,boundary detection used for object detect and segmented area is labelled and counting objects in the image.

III.RELATED WORKS

In recent years, a lot of research has been done in the area digital image processing .All the work has a general aim:object detection and count.

1. Devendra datatray bhosale Introduced a method of automatic grain counting using digital image processing .[2]Image is captured by camera. The images acquired are colour images, so it is converted into

grayscale image. The colour information is not necessary for further processing as it does not carry any useful information. Images are normally corrupted by noise during image acquisition process. Noise may get add to original image due to different factors. Therefore, the image denoising process should be performed on the image so median filtering which is nonlinear filter is used.for efficient counting of grains the grayscale image is converted into a binary image Binary image has two colors white and black. When the gray level of pixel is greater than the threshold, that white color pixel is related to grain and conversely black means pixel related to background. In binary image the value 0 in each location is related to the background pixel. Morphological operation apply on binary image.image erosion process erodes away or eliminates boundaries of region of foreground pixels. The erosion process takes two inputs. The first is the image which is to be eroded and second is a structuring element. The shapes and sizes of structuring element are selected according to the type of grain Value 1 represents foreground object here grain in binary image. The Matlab function bwlabel() is used to count the grains. Experimental result shows the actual count and measure count of grains is same.

2. Wen-cheng Wang described an efficient method for grain counting in agricultural production[3] ,a method is proposed based on computer vision and image processing technology.color image with (red,green,blue) is transformed to gray image by gray transformation.during the course of obtaining image,due to various factors ,the resulting image will always infected with some noise,so it needs denoising.median filtering is adopt for reducing the noise.binarization processing is used for distinguishing the background and objects clearly.it exist many methods for labeling.there is little counting error between computer and manual.the main reason is the overlapping among the grains.it needs better segmentation.

3. Mohamed Rizon Investigated on automatic eye detection using intensity and edge information.[4]A new algorithm to detect the pupils of both eyes from a human face in an intensity image by lin and wu. The algorithm extracts the face region from the input image using a region growing method.The algorithm computes a cost for each pair of the feature points satisfying a spatial constraint.Finally,the algorithm determines the smallest cost to be the pupils of both eyes.Intensity difference between background and skin region of the face is small ,it is difficult to correctly extract the face region by the region growing method.Apply the sobel edge detector to the original intensity image.Canny edge detector to the face region and then detects a circle using hough transform.

4. Xueyin Lin and William G. Wee investigated A NEW STRATEGY FOR THE RECOGNITION OF OBJECT USING RANGE DATA.In this paper goal is to develop a vision sytem using range image for the industrial application.[5]In the system simple basic surface primitives(such as plane,quadrics and straight line)are considered and are extracted from the range image.Vision system is a model guided and simple surface patch based system.both recognition of an object and creation of its model are based on the use of position and orientation these simple surface patches are detected by using the generalized hough transform.In the recognition phase,first surface patches are extracted by the hough transform then matching operation is performed.

5. Identification, Counting, and Sizing of Dispersed Phase Droplet of Scanning Electron Microscopy Micrograph Using Digital Image Processing[6]
Manop Phankokkruad investigated The morphology phase of polymer blends are studied by SEM and give output as SEM image, which reveals the dispersed phase droplets. These droplets are important for understand the properties of polymer blends. Thus, the appropriate method to analyze the droplet must be considered. However, the identification, counting and measurement of the droplets in SEM image are a difficulty by using a visually manual method. Because the characterization of droplets has several types such as circular curve, circular hole, circular deep and the overlapping circles which effect on the identification of circle boundary. The counting and measurement of

droplet depend on the determination of the circle boundary, but it is difficult to identify by visually manual. Thus, the digital image processing method is chosen for analyzing the droplet due to this method is appropriate to identify the boundary of various circle types. the DIP method starts at the gray-scale SEM image. By applying the mathematics morphology, the morphological image processing operates on the set of pixels, it relies on the ordering of pixels in the image which is applied to gray scale images.The binary images are images whose pixels have only two possible intensity values. Frequently, the binary images are produced by threshold a gray scale, in order to separate an object in the image from the background and noise. The next steps, the boundaries of objects are identified by the Hough transform technique in order to isolate the object shape. Then, the numbers of objects are counted and also sized. The Hough transform is a robust technique for curve and shape detection. This technique can detect object even polluted by noise.

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6. Asif ur Rahman Shaik [7]describied image processing technique to count the number of logs in a timber truck.The results of using image processing technique to get information about the load of timber trucks.The main Objective is to detect the object and represent it in a better way.in the detection step,acquired images are preprocessed ,enhanced and segmented according to object properties such as colour and shap.only the regions of interest are extracted from the complex background and represent it in another mask.The segmented object is imposed against canny edges of original image;further connected component labeling is done to identify individual objects.All the selected objects are numbered to count number of logs in itSeveral image analysis techniques were applied for each image to segment the logs within the image and to derive the required information .sample images were tested with its algorithm and achieve an average of 97% success in counting the number of logs in a truck from an image.

IV.METHODOLOGY

According to literature reviews first image of different objects is acquire with a color digital camera.Input image is preprocessed ,enhanced and segmented according to object properties.
The image acquired is in RGB colour format ,for easy processing images are normally corrupted by noise.
During image acquisition process,noise may get add to original image due to different factors.the noise interference in image might affect the results for some processing that worsen the quality of original image.therefore ,the image denoising process should be performed on the image before applying other image processing methods.image is converted to gray image using gray transformation .determinaton of object count from grayscale image is difficult task so it need to convert in binary image.from binary image ,individual object can be identified.

Thresholding is used to convert the grayscale image to a binary image. Binary image has two colors white and black. When the gray level of pixel is greater than the threshold, that white color pixel is related to object and conversely black means pixel related to background. We need to find a threshold that is representing good value to separate the two different gray levels.

Image dilation is most basic image processing operation typically applied on binary images. Image dilation process dilates away or eliminates boundaries of region of foreground pixels which are white pixels related to objects and makes it shrink towards centre. The dilation process takes two inputs. The first is the image which is to be binary and second is a structuring element. The shapes and sizes of structuring element are selected according to the type of object. Usually used shapes are diamond, disk, line, square, etc. In this work we used disk structuring element.

V.CONCLUSION

Image processing based on Matlab is effectively used to determine count of different objects. Traditionally object counting is done manually or may involve costly electronic systems. This can be replaced by proposed system. The developed method is quick and low cost as there are no costly equipment and software. Good accuracy has been achieved in

experimental results. It has been observed that for bigger objects the counting accuracy is more. Accuracy can be increased by separating conglutination among the objects.experiment result shows that 100% accuracy is achieved for object size diameter is 0.5cm.parameters also affects on the result .threshold value is set to 0.95 and objects are separated .if objects are not separated 2% error in the result.

ACKNOWLEDGEMENT

We would like to thank the R K University for its constant support all the way through our work.and thankful to professor Dhaval S. Pipalia The Head Of Department Electraical engineering in research work.

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