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A Review on Object Measurement Techniques

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Abstract: *These days of technological revolution, real-time object detection and measuring is a crucial aspect from an industrial point of view .The study presents an augmented technique for detecting objects and computing their measurements in real time from an input video device like a webcam etc. We've seen an object measurement technique using AI and IOT technologies like OpenCV and Numpy libraries and a video output device respectively.*

Keywords: OpenCV, Image segmentation, Edge Detection, Thresholding

I. INTRODUCTION

Since the growth of AI and IOT in the field of industrialisation we are more interested in automation and fast working. In this paper we will be looking at the techniques which we have used to detect an object and to take its measurement in a metric unit system. Detection of the object and its edges plays an important role in measuring the object. There are many methods to detect an object and its edges. Here, we evaluated and compared a few of the methods where we saw the differences between the processing time and the accuracy of the method and find the optimal and a perfect method to process the image and find its edges. Edge Detection, which is the most important field in the field of computer vision, is a way of processing image to determine the parameters of an object with an embedded image. picture. Edge detection is the important step in image analyzing and processing, computer vision, human vision, object detection and pattern recognition. In this paper we have used segmentation algorithms which are used for precise edge detection of the object. Image Segmentation algorithms are based on one of the two basic elements of continuous values of durability and similarity. The second stage is based on the division of the image into similar regions according to the conditions described earlier. The Histogram Threshold method falls under this category. The basic requirement for the Segmentation algorithms to detect the edge is using a white background so that the edges of the object are precise and accurate.

II. LITERATURE SURVEY

Open CV is the library developed by intel which is used for real time computer vision .It consists of various tools to solve computer vision problems .Here we use it to capture the real time input through webcam[8][9].It has various application such as Facial recognition system, Gesture recognition, Human–computer interaction (HCI),Mobile robotics, Motion understanding, Object detection, Segmentation and recognition.

Many studies have been focused on detecting the edge and measuring the object. The first step to understanding image processing is image classification. The various classifications of the image classification are described in [7].Different segmentation techniques such as region-based image splitting, Neural Network-based image segmentation, feature-based image segmentation, Edge-based image segmentation, Threshold-based image segmentation, Image Processing, Edge Detection is the main way to find parameters. of the object in the given image. Edge acquisition is achieved by acknowledging sharp curves or not continuing light. Edge Detection is widely used in Digital Image Processing. There are two types of Edge Detection Operators Gradient and Gaussian.[1][3] In this paper the author has stated various edge detection operators like the Robert Edge Detection, Sobel Operator, Prewitt Operator, Laplacian of Gaussian, Canny Operator.[3] Comparisons between different types of edge acquisition strategy are made. In the Robert Edge Detection, a gradient-based operator determines the number of squares of the difference between the diagonal pixels dependent on an image by a different separation. Sobel Operator produces a standard in a vector or a corresponding gradient vector. Its Differentiation Operator combines the gradient limitations of image stabilization function to determine the edge of an image. Like Sobel Operator, Prewitt Operator gets horizontal and straight edges of the image. Gaussian Laplacian works

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best when the gray-headed change appears abrupt.A Canny Operator is used for detecting the objects and it is not affected by noise.

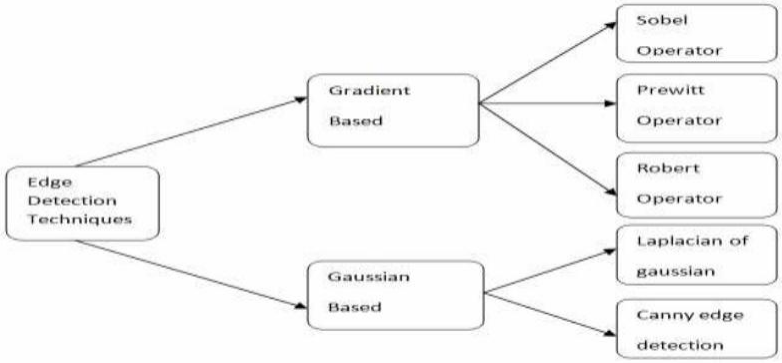
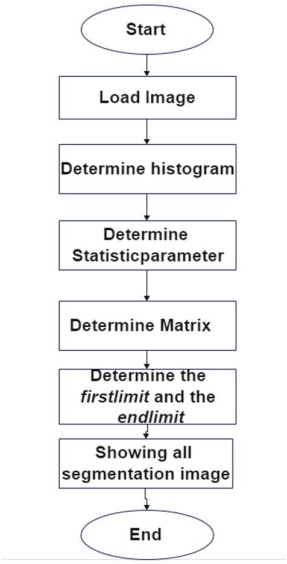


Figure 1: Edge Detection Techniques.

Another most popular image Segmentation Technique is thresholding [6]. Its is used to discriminate between foreground and background. Firstly the color image is converted into grayscale image , which is necessary for easy understanding of the image. Later this image is converted into binary image by selecting the Threshold value T .This binary image contains all the essential information regarding the image . Different types of Threasholding such as mean techniques, EMT techniques, histogram-based techniques, Visual Technique, p-tile techniques. The photographs have half the pixels which are objects and the other half are in the back. The P Tile process uses the appropriate object size information to access the image. This is one of the earliest approaches based on gray-level histogram levels. In general, objects in an image are considered to be much brighter than the background and occupy a fixed proportion of the image. Histogram-dependent methods are based on successful measurements of boundary values that separate two identical background regions of an image. Great for large, uniform images and delimits areas. Edge Maximization Method (EMT) is used when there are two or more similar areas in the image, or when there is a difference in lighting between the object and the background.. Finally, Visual Technique improves people's ability to accurately search targeted objects.



III. Conclusion

Image Segmentation has become a bright future and is mainly focused on current research in areas such as object recognition and discovery, etc. Thus, in this study we reviewed about opencv and saw various ways to classify images as a direct method. , Ptile method, histogram-based method (HDT), edge enhancement (EMT) and detection method, and edge recognition methods such as Robert edge detection, Sobel operator, Prewitt operator, The Gaussian method of Laplacian,

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Canny who is in charge of various studies is still in the Image Division to get high results with high accuracy. In addition, various papers have suggested a number of points on image classification techniques.

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