

## A Survey On Different Methods Of Edge Detection

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**Abstract :** Edge detection is a basic analogy of image processing. It is successful in detecting and extracting the objects features . It is the set of mathematical methods whose goal is to identifying points and shapes in a digital image of 2d geometric shapes to what place changes sharply the image brightness. A survey of diverse methodologies of edge detection are provided here .

**Keywords -** Edge detection, 2D geometric shape, Bounding Box, Canny Edge, Shape feature.

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### I. INTRODUCTION

In advanced and automated industries, there are highly efficient methods used for production and inspection process. The sensor is an important role in presenting information related to the parameters. There are some examples of parameters like temperature, light, percentage composition, humidity, structure shape, dents etc that sensor can detect.

The highly precise sensors which are used in industries is to provide a better feedback to controllers. For example, the more the precision of sensors, the more is the ability of the sensor to detect a flaw.

There are sensors like cameras acquire like video feed or image of the objects, moving on the conveyer belt. To recognize the object, the video or the image is used or it compares the object with predefined, flawless and expected object and a decision is made based on the degree of similarity between two images.

The purpose of detecting sharp changes in picture brilliance is to capture important occasions and changes in properties of the world. It can be shown that under rather general assumptions for an image formation model, discontinuities in picture brilliance are likely to correspond to discontinuities in depth, discontinuities in surface introduction, changes in material properties and variations in scene brightening.

Because of these problems in this paper we are providing survey of different methodologies of edge detection for detecting and extracting features of objects.

### II. LITERATURE SURVEY

Shambhavi vijay chaya et al.[1] detection of shape of objects by RGB reference of pixels were used to guzzle colour. The considered work on thresholding concept based on that inclination angle and area of bounding box of objects are calculated. Taken a set of images of 2D geometrical shapes like circle, Rectangle, Square and Triangle as a dataset.

Elham jasim mohammad et al.[2] segmentation and object recognition of the boundaries of edges surrounded by regions. The considered a approach provides sobel operator. Taken a set of images of vegetables as a dataset.

D.Senthamaraiannan et al.[3] The colour segmentation and colour description processes it recognizes the colour. The proposed field on colour recognition features. In this they have taken a vegetable image and robotic machine as a dataset.

Shalinee patel et al.[4] Presents by 3 phases. First is achieving detection. Second phase is image segmentation and third phase is recognition of objects shapes. The considered a method shows for detecting edges for canny edge detection. Taken a set of 5 images of different 2D geometrical shapes. First images have 13 objects, second image has 9objects, third image has 9 objects, fourth image has 4 objects and fifth image has 5 objects.

Sanket Rege et al.[5] proposed a approach provides the algorithm by the whole of concept of object metrics comparison with earlier defined value of object has a part in and RGB information, for finding shape and colour of 2D objects. Taken a set of 180 images of 2D geometrical shapes like Circle(15images of each shading), Rectangle(15images of each shading), Square(15images of each shading) and Triangle(15images of each shading) and three primary colours(Red, Green and Blue) were used for analysis.

Alberto Martin et al.[6] proposed a way of doing thing provides algorithms by classifying them in diverse logical groups and provides experiment of these algorithms in different logical groups. which gives

explain survey of different image processing. In this they have taken images of sky and triangles with connected edges as a dataset.

Shikha Garg et al.[7] The shape recognition algorithm says or guess the diverse shapes of objects of dimensions appreciate length and breadth and two parameters corners. Proposed field completely on segmentation strategy. Taken a set of five images of the 2d geometrical shapes like Square, Circle, Polygon, Triangle and Rectangle as a dataset.

Muthukrishnan R et al.[8] The edge detection technique which increases the performance and compares the techniques. Proposed field gives the image segmentation. In this they have used a Bharathiar university image as a dataset.

Wenshuo Gao et al.[9] The image by the types of filters already detecting the edges. Proposed a approach on Sobel edge operator and soft threshold wavelet which removes noises. In this they have taken a Lena image with Gaussian white noise as a dataset.

Severine Rivoller et al.[10] To segregate the shapes of 2D sets, the mathematical properties of has a part in diagram have been well-defined. proposed a approach for particular shape diagram. A set of 19 images have taken in family f1 of 2D compact sets like Segments, disks, pentagon, squares, triangles, circles etc. A set of 78 images in family f2 of 2D compact sets represented in white on binary image. A set of 1370 binary image in family f3 of kimia database. A set of 20 images of family f4 of 2D compact sets represented in white on binary images. all these sets have a 'triangle' shape. A set of 20 images of family f5 compact sets in white on binary images. All these sets have a 'disk' space..

Ehsan Nadernejad et al.[11] The fundamental properties of region like area, perimeter etc can be calculated. Proposed field on the experiment of the images of diverse techniques. Database consisting of five different test images. One image was artificial and the rest were real world photographs. Image 1 has the edge detectors to handle corners as well as a wide range of slopes in edge on the circle. Image 2 has the standard edge detector benchmarking image. Image 3 has a picture of a shoreline. Image 4 has a Multi-flash images. Image 5 has a vase with bunch of flowers and leaves.

Raman Maini et al.[12] proposed a method for the prewitt achieve detector algorithm. For detecting edges for noisy images. In this they have used 7different standard test images of Free coin image, Cameraman, Circuit, Cell, MRI images, Tire, Tree as a dataset.

Daniel Sharvit et al.[13] proposed a approach on differentiated in symmetry of achieve maps. For characterisation of symmetry. In this they have used dataset consisting of binary shapes and match grey-scale images of isolated objects and user drawn sketches of shapes like fishes, planes, rabbits, tools etc.

Alexander C.P.Louii et al.[14] proposed a way of doing thing For random sample and categorization of shape, the properties of shape such as area, perimeter, radii and diameter have readily defined. Recognition of 2D shapes based on mathematical morphology. In this they have taken dataset consisting of twelve different binary test images of Disk, Annulus, Socket, Nut, Frame, Ellipse, Rectangle, Triangle, T, Angle, E and Square.

Table 1: A survey of different methodologies or techniques used for edge detection

Year	Author	Methodologies	Pros	Cons	Recognition rate
2015	Shambhavi vijay chaya et al.[1]	Shape and colour of object detection.	Detection of the image clarity more accurately.  Shadows must be avoided to avoid the changes in threshold value.	Doesn't provides overlapped object detection.	The images are tested and proved to be 95% accurate.
2014	Elham jasim mohammad et al.[2]	Sobel edge detector.	Sobel edge operator provides smoothing effect to the random noises in the image.  Sobel edge operator is used for edge detection.	Sobel edge operator doesn't work for the image which have a lot of white Gaussian noises.  Sobel operator doesn't accurately locate the complex edges.	The results are proved to be very good in analyzing the images.
2014	D.Senthamaik annan et al.[3]	Colour recognition and segmentation.	Provides a survey on image segmentation based on colour.	Doesn't provide the colour distribution in different changing lighting conditions.	The results of techniques are quite promising.
2013	Shalinee patel et al.[4]	Canny edge detection.	Used for Shape detection using 'region props' properties.		The results of this algorithm are 90.38% accurate.
2013	Sanket Rege et al.[5]	Shape and Colour recognition.	Effective for analysing the shapes and colour of objects.		The images are tested and results are proved to be 99% accurate.

2013	Alberto Martin et al. [6]	Basic machine vision and image processing algorithms.	High computational speed, high video resolution.  Efficient in processing data of computer languages.		The images having two spatial dimensions takes much longer than the simple 1D problem.
2012	Shikha Garg et al.[7]	Oversegmentation techniques.	Provides the modified shape recognition using oversegmentation techniques.  Predict the accuracy in the execution of algorithms.	It can improve the recognition rate and reduces the process complexity.  Doesn't overlap the images by changing the colour intensity.	The results of the algorithms are 86.55% accurate.
2011	Muthukrishnan R et al.[8]	Edge detection techniques.	Analyse the performance of edge detection technique for image segmentation.	Difficult to detect the exact original image without noise.	The results are proved to be very good in analyzing the images.
2010	Wenshuo Gao et al.[9]	Sobel operator	Detects the images which have white Gaussian noise.  Provides effective		The results are of this algorithm are quite promising.

			performance.		
2010	Severine Rivoller et al.[10]	Shape representation and analysis of 2D compact sets.	Representation for 2D set in 2D Euclidean plane.  Used for shape discrimination. Finds shape whose mathematical properties are well-defined.	Shape discrimination of only twenty-one shape diagrams.	The results of the images used in this algorithms are quite good.
2008	Ehsan Nadernejad et al.[11]	Edge detection techniques.	Comparison of different techniques in image processing.	Multi-flash method doesn't work for all the outdoor scenes.	The results of the algorithm are good in analyzing the images.
2006	Raman Maini et al.[12]	Prewitt edge detector.	Evaluates the performance of the prewitt operator for noisy images.  Works well for digital images corrupted with Poisson noise.	Performance decreases sharply for other kind of noise.  Cannot be used in practical images with Gaussian noise, salt and pepper noise.	The images are tested and the results are quite promising.
1998	Daniel Sharvit et al.[13]	Symmetry matching.	Symmetry in edge maps.  Joint correlation measure between pairs of edge elements.	Pre-segmentation of an image requires the use of traditional skeletons, as loci of symmetries of a shape.	The accuracy of this algorithm are quite good.
1992	Alexander C.P.Louii et al.[14]	Shape representation and classification techniques.	Shape descriptor called morphological autocorrelation transform (MAT).  Well suited for shape representation and classification.		The results obtained in this algorithm are quite promising.

This table gives a detail survey on different edge detection methods or techniques along with its advantages and disadvantages

### **III. CONCLUSION**

Shape and colour detection are the most important features in image processing. In this paper we did a detailed survey of different shape and colour detection methodologies which are useful for detecting shape of an object..

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