A Prominent Application for Wild Identification, Segmentation and Tracking

Chhatra Pal Singh , Sanjay Kumar

***Abstract*— In now a day's wild tiger often killed people. In India, over 50 to 60 people are killed by tiger every year and this rate is growing year by year. The proposed work is to develop a Prominent Application for security level application that is could be used by forest department. This security level application segment, identified and tracking the tiger Object. The security level system contain four main major parts segment the tiger object, identification of tiger object, track the tiger object and calculate the distance traveled by the target tiger object from starting position to the suspected boundary. If tiger pass out the coordinate of suspected boundary then generate a message tiger goes outside the boundary.**

***Index Terms*— Object Identification, Image Segmentation wild tracking Method. Feature matching**

I. INTRODUCTION

Image Processing is a technique to translate an image into digital figure and carry out some operations to get a better image and take out useful information from it [1]. In this research work the concept of the segmentation and identification of tiger object movement to trigger warning. In today's time tiger often kill people. A total no. of 3,73,000 people were killed by Tigers from 1800 – 2009 . in South and Southeast Asia. In India, 50 to 60 people are killed by tiger each year and this rate is growing year by year. The proposed work is to develop a security level application that is could be used by forest department. This security level application identified and tracking the special object (Tiger) and object passes outside the boundary of forest then send the message or trigger warning to the related forest ranger. This application is useful prevent the attack on the humans by tiger in future aspect. In this dissertation, we have to find the better result of segmentation using Fixed Region Technique based on continuous edges corresponding to earlier segmentation technique based on discontinuous of edges. In this dissertation we have to identify the tiger in images using old Interest Point Matching and new purposed Putatively Feature Matching Technique and

then tracking the tiger in video with the help of purposed Point Change over Technique. This tracking technique applied on sequence of tiger images or video. In this correspondence if tiger goes outside the suspected forest boundary means if tiger tracking coordinate is greater than suspected boundary coordinate then a message would be sent to the forest ranger so that appropriate action can be taken timely. In this dissertation find the total distance between the starting position of object and the suspected boundary using Coordinate Distance Technique. In this technique find the initial position of target object in each image in terms of x and y coordinate. Calculate the change between first target object position and second target object position using Euclidean Distance formula and this process continue to the suspected boundary position then add each change and find out the distance travelled by object from starting point to suspected boundary.

Image processing edge detection is basic tool used. Mostly image processing application s to obtain information from the frames as precursor step to feature extraction and object segmentation. It is a simple process which detects boundaries between object and back ground in an image. edge detection can also be used which improve the appearance of blurred image. Segmentation is the foundation of object recognition and computer vision [2][3].

II. LITERATURE SERVEY

A. Literature Survey

In this paper, we used seven techniques for edge detection, Sobel operator technique, Prewitt technique, Kiresh technique, Laplacian technique; canny technique, Roberts's technique and Edge Maximization Technique (EMT) and they are compared with one another so as to choose the best technique for edge detection segment image. These techniques applied on one satellite images to choose base guesses for segmentation or edge detection image. Discontinuity detection is partition an image based on abrupt changes in gray-level image. Canny technique is very important method to find edges by isolating noise from the image before find edges of image, without affecting the features of the edges in the image and then applying the tendency to find the edges and the critical value for threshold [1].

In this paper define the two ways of edge detection technique that are gradient and Laplacian. The gradient method detects the edges by looking for the maximum and minimum in the first derivative of the image. The Laplacian method searches for the zero crossings in the second derivative of the image to find edges. In Laplacian of Gaussian edge detection uses three steps in its process. The First one is filter which is the image object. Secondly, it enhances the image object and finally detects [3].

In this paper, we identify the multiple objectives associated with image segmentation problems of natural images. The main aim of paper to provide the implementation of for edge

Manuscript received August 23, 2014.

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detection technique like Robert Edge Detection, Prewitt Edge Detection, and Log Edge Detection, Sobel Edge Detection for natural image segmentation and their comparisons. In this paper define Edge detection techniques are classified in two categories: parallel and sequential techniques. The parallel edge detection technique implies that the decision of whether a set of points are on an edge or not is dependent on the gray level of the set and some set of its neighbors, which includes high emphasis spatial frequency filtering, gradient operators, adaptive local operator, relaxation, and line and curve fitting, while the sequential edge detection techniques make decision based on the results of the previously examined points [4].

In this paper define the Object identification is to identify an object which belongs to and feature extraction to extract features from the image like size, shape, texture and spectral information of the image. With the help of feature extraction techniques we can easily find the relevant information from the data and the data can easily be classified. There are several existing techniques for object identification and feature extraction which are discussed in this paper. The aim of this paper is to represent an approach for extracting the knowledge from the image. Identification means to identify the objects which belong to an image because of noise and shadow objects cannot be identified. Object recognition or identification can be classified in two types based on the feature type they use. The two types are edge based and patch based feature type. Edge based feature type extracts the edge map of an image and identify the features of the object at the edges. It represents the object boundaries and data efficiently. Patch based feature type uses appearance as cues [27].

In this paper define the kernel based object tracking using color histogram technique has been applied for different challenging situations. Every tracking method requires an object detection mechanism either in every frame or when the object first appears in the video. Some commonly used object detection methods are: point detectors, background subtraction, segmentation and supervised learning. After detection of the object the tracker's task is to generate the trajectory of an object over time by locating the object position in every frame of the video [31].

B. Application of Image Segmentation

1. **Object detection**

   Pedestrian detection

- Face detection
- Brake light detection

2. **Medical**

- Surgery planning
- Virtual surgery simulation
- Intra-surgery navigation

3. **Traffic control systems**

III. OBJECT SEGMENTATION, IDENTIFICATION AND TRACKING

A. Image Segmentation

Image segmentation is to partition an image into meaningful regions with respect to a particular application. The analysis of image objects begin with finding them-judge which object belong to related pixel values. This is known as image segmentation, the technique of extracting objects from the background in an image. Segmentation is the approach of separating a image into its meaningful parts or regions or object.

B. Types of Image Segmentation

There are two types of image segmentation

a. Edge based segmentation

In image processing edge may be simplify as a group of connected pixels that belong to boundary between from one regions to other. Basically, edge detection is a method of segmentation which is extract an image into discontinuity region. This method plays an vital role in image processing system and usual aspects of our real world life.The process of detecting and locating intense changes of discontinuities in an image . In image processing for a noisy image it is hard to find edges as both noise and edge contains maximum frequency contents which outcome in distorted and blurred result. In this paper we analyse lot of edge detection techniques as Robert, Canny and Sobel method. The edge detection makes use of lot of operators to find changes in the gradients of the grey scale images. The edge widely exists between objects and background, objects and primitives. It contains rich information, step property, shape etc, which is able to describe the target object.

Figure 1: Edge Based Segmentation [35]

b. Thresholding based segmentation

Thresholding is probably the most frequently used technique to segment an image. The grayscale image (also referred as intensity images) can be converted to binary image by a process called thresholding. The histogram thresholding technique is used to segment an image.

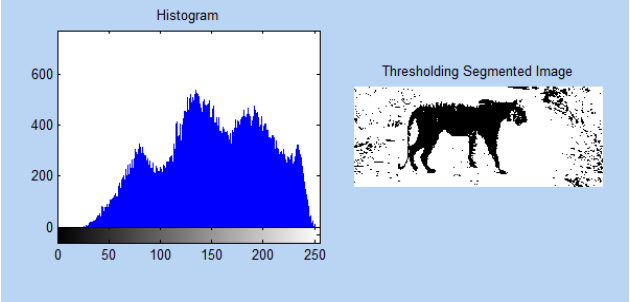

Figure 2 Thresholding Based Segmentation

C. *Object Identification*

In image processing object identification is the method of seeking a given target object in an image sequence or video. In an image any object, there are lot off 'features' which are strongest points on the object that can be extracted to produce a "feature" detail of the object. This detail extracted from a training target image can then be used to detect the object when try to locate the target object in a test entire image containing other objects

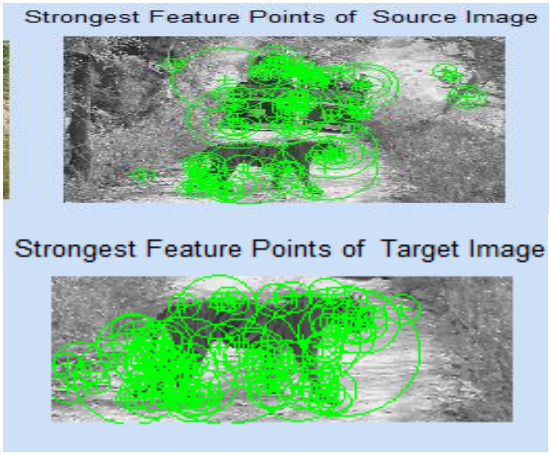

Figure 3: object identification

a. Technique of Object identification

b. Template matching

Template matching is a approach for seeking mini parts of an image which match a sample template target image. Template matching is a straightforward process. In this technique template images for different objects are stored. When an image is given as input to the system, it is matched with the stored template images to determine the object in the input image. Templates are frequently used for recognition of characters, numbers, objects, etc. It can be performed on either color or gray level images. Template matching can either be pixel to pixel matching or feature based. In feature based the features of template image is compared to

c. Color based matching

Color provides potent information for object recognition. A simple and efficient object detection scheme is to represent and match images on the basis of color histograms.

D. *Object Tracking*

Object tracking is the approach of locating object when moving over time in an image sequence. It has a variety of uses, some of which are: human-computer interaction, security and surveillance, video communication and compression, augmented reality, traffic control, medical imaging and video editing. Video tracking can be a time consuming process due to the amount of data that is contained in video.

IV. PROPOSED WORK USING MAT LAB

In our proposed work we used fix region for segmentation returns edges of the selected object and another is it returns edges at those point where gradient of image is low and high intensity and gives better segmentation result. In object identification we used the putatively feature matching techniques in this techniques find the corner and surface feature of object. Surface feature is presented in region of object it returns low intensity and high intensity feature both surface and corner. So detection is more successful.

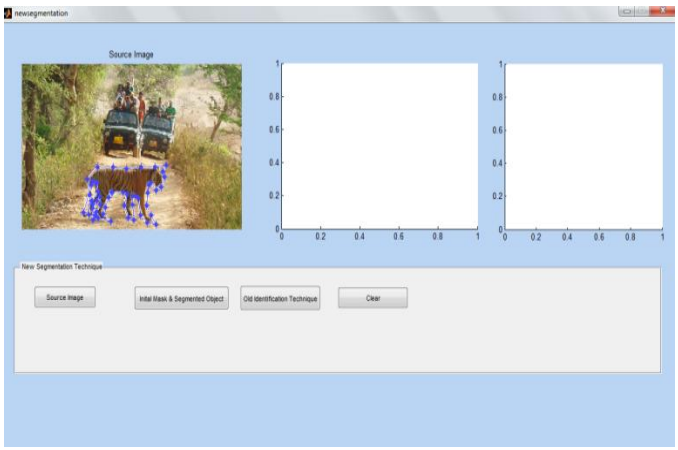

Figure: 4: Masking The Image Using Fixed Region Technique

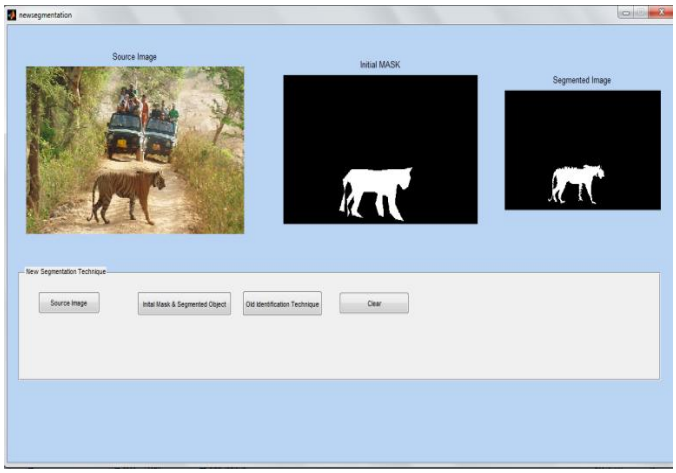

Figure 5: Segment The Image Using Fixed Region Technique

A. *Results of Point Change Over Tracking Technique*

In this technique track the tiger object in each frame on X and Y coordinate movement. X and Y coordinate move on the

color density feature of crop target tiger image and source tiger object in the frame to frame. When match the similar color density feature of target tiger object with respect to source tiger image frame to frame then get the x and y coordinate of source tiger object in each frame and track the tiger on the basis of x and y coordinate

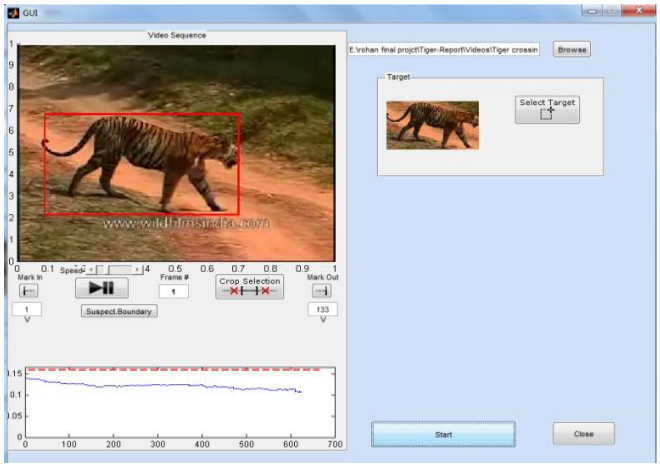

Figure 6: Track the Tiger in each Frame using Color Density Feature

B. Results of Coordinate Distance Technique

In this technique find the distance from starting position of object to suspected boundary.

```
first x point of target object
    27

first y point of target object
    77

Suspected Boundary x Coordinate Point
    61

Suspected Boundary y Coordinate Point
    86
```

Figure 7 Starting Coordinate Point of Target Object and Suspected Boundary

```
x=61
y=90
Tiger goes outside the boundary
Distance
  156.7478
```

Figure 8 Distance Between First Tiger Position and Suspected Boundary

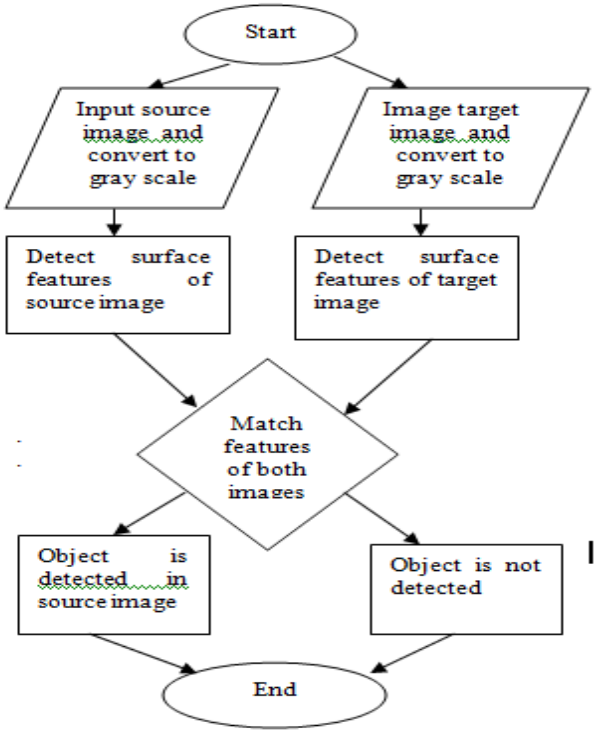

Figure 9 Proposed Feature Matching Technique

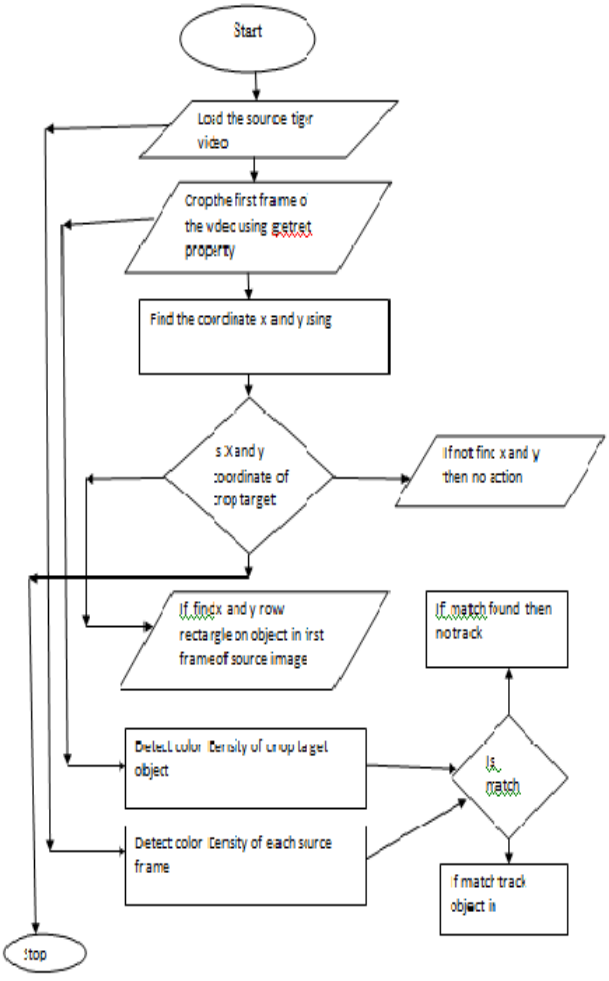

Figure 10 Proposed Point Change over Technique

V. APPLICATION OF EMAGE PROCESSING

- **Security:** Demising image in order to identify a crime suspect whose picture was taken by either a poor camera or in a poor condition [9].
- **Medicine:** To clean image in order to have a clear understanding of the part of the body that was snapped (e.g. X-rays) [9].
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- **Astronomical Aplication:** Image taken from space by satellites [9].

VI. CONCLUSION

In this paper, we conclude that image identification, segmentation is a very important technique which is used in digital image processing. This Project focuses mainly on the segmentation and identification of Special Object Tiger. The interaction between image segmentation and object recognition in the framework of the Sobel, Prewitt, Roberts, Canny are studied and build new own Technique for better result in future. It provides information for identification or recognition and interpretation of object. In our work find the distance from starting position of object to suspected boundary.

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