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A Review on Development of Object Detection System for Distortion Images

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Abstract
Object recognition plays a vital role in image processing. Object recognition is a process for identifying a specific object in a image. Object recognition algorithms rely on matching, learning, or pattern recognition algorithms using various techniques. . In any computer vision applications, it helps in the detection of an object. The computer vision applications includes: recognition, automotive safety, and surveillance. Object detection is the process of finding instances of real world objects. Object detection is use to detect the particular object from a large number of objects, the problem occurs in detection because of shadow and background objects. Here to solve this problem we are going to use skull detection and Region growing Region growing will detect particular object and skull detection will remove this particular object from whole image so that we can properly detects it Object detection technique is used to detect a particular object from image.
Key words: object recognition, image processing, skull detection, region props.

I. INTRODUCTION

Image Processing plays an important role in detection of an object. The image can be shown in the form of matrix. Image is a collection of pixels that are arranged together in columns and rows. Image Processing is a method to convert an image into the digital form. In the image processing some operations are applied to enhance the image and to extract useful information from it. In case of image processing, input can be an image, which is in the form of video frame or photograph and output is in the form an image or the characteristics associated with that image.

Types of Image Processing:

The two types of image processing techniques are used. As,

- Analog Image Processing
- Digital Image Processing

Analog or visual techniques of image processing can be used for the hard copies like printouts and photographs. Image analysts use various fundamentals of interpretation while using these visual techniques.

Digital Processing techniques help in manipulation of the digital images by using computers. As raw data from imaging sensors from satellite platform contains deficiencies. To get over such flaws and to get originality of information, it has to undergo various phases of processing.

Object Detection:

In the image processing, object detection and tracking plays an important role. In any computer vision applications, it helps in the detection of an object. The computer vision applications includes: recognition, automotive safety, and surveillance. Object detection is the process of finding instances of real world objects. Object detection algorithms are used to extracted features and learning algorithms, which helps to recognize instances of an object category. It is used in applications such as image retrieval, security, surveillance, and automated vehicle parking systems. In the object detection many methods are used. as:

- **Detect a Face To Track**

Firstly detect the face, then track face by the use of vision. The cascade object detector is used to detect the location of a face in a video frame. The cascade object detector uses the Viola Jones detection algorithm and a trained classification model for detection. The detector is used to configured the detect faces, but it can be configured for other object types. When the face of a person tilts tracking may be loss. This is happened due to the type of trained classification model used for detection.

- **Identify Facial Features To Track**

The next step in the object detection is to identify the features that will help in tracking the face. Choose a feature that is unique to the object and remains invariant even when the object moves.

- **Track the Face**

The face can be track by the use of feature. The tracking of the face depends upon which kind of features, a user select. If a user selects the skin tone for the vision, then Histogram Based Tracker is used for tracking. The histogram based tracker uses the CAM Shift algorithm, which provides the capability to track an object using a histogram of pixel values.

Object classification is a standard pattern recognition task. To track objects and analyze the behavior, it is essential to correctly classify moving objects. There are two different categories of approaches for classifying moving objects like, shape based and motion based classification.\

II. REVIEW OF LITERATURE:

How Not to Be Seen-Object Removal from Videos of Crowded Scenes, M. Granados, J. Tompkin,(2012): in this paper author described the problem comings, while removing unwanted content from the video clips. It is very important to remove the walking people and other objects that accidentally occlude the scene. Objects may also have to be erased from a video sequence due to copyright issues. Removing undesired objects from footage requires completing the disoccluded region in a perceptually plausible way. The removal of the unwanted objects is also done by the visual effects professionals. In this paper, author proposed a new approach to video completion. [1] It deals with complex scenes containing dynamic background and non periodical moving objects. In this paper, author described the spatio temporal hole left by a removed object that can be filled with data available on other regions of the video. Video completion is performed by solving a large combinatorial problem that searches for an optimal pattern of pixel offsets from occluded to unoccluded regions.

A real time adaptive visual surveillance system for tracking low resolution colour targets in dynamically changing scenes, Pakorn KaewTrakulPong, Richard Bowden,(2003): in this paper author describe the adaptive visual surveillance system. The author discussed the tracking process. The main component of the data tracking process is data association. There is lots of work done in tracking, in this radar tracking is explain. Tracking deals with maintaining motion models of the objects being tracked whereas data association uses the motion model which summaries all past measurements of a target. It uses all the measurements to predict position for the next time step. [2] The data association is responsible for matching the measurements at the current time to targets. As a number of objects move independently, target observations may fall in other targets predicted areas. False or undetected measurements further introduce ambiguity to this assignment problem. Target contains the stationary objects in the scene as well as by other targets. In visual surveillance, targets consisting of pedestrians and vehicles can have relatively slow non linear motions. In this paper, author presents a variety of probabilistic models for tracking small area targets which are common objects of interest in outdoor visual surveillance scenes. This approach is rely upon motion, shape cues and color information to help in associating objects. In this paper, author proposed a method that is designed to track small color targets commonly found in outdoor visual surveillance. The paper shows the system successfully tracking multiple people moving independently and the ability of the approach to maintain trajectories in the presence of occlusions and background clutter.

Design of Augmented Object Compositing System based on Diminished Reality, Donghyun Kim et.al, [2013]: in this paper author discuss about the object composting system. In the recent years, the contents can be shared with others due to appearance of SNS. The internet broadcasting services have a problem that the immersion of service users decreases. This service decreases due to broadcasting, because the broadcasting is produced in the narrow space. Broadcasting service providers are supplying the various broadcasting environments through virtual studio, these studios uses small scaled blue screen. [3] In this paper, author discussed the improved augmented object synthesis system structure that uses the object removal technique. Augmented reality is an area of virtual reality in which a virtual object is combined with the real world. The editorial broadcasting base virtual studio system is used to support more high quality broadcasting than traditional methods like real time personal broadcasting using PC and web-cam. These services provide various broadcasting environments. It cannot show the reality of broadcasting service.

Region Filling and Object Removal by Exempeler Based Image Inpainting, Nikhil Sharma, Niharika Mehta,[2013]: in this paper author described the image manipulation techniques. In this paper, author modifies the images in such a way so that the observer does not come to know about the original image.[4] The main motive of this work was simple. It is used to bring medieval pictures up to date as to fill any gaps. This technique is called retouching. In multimedia signal processing, image in painting is the technology that is applied to the problem of automatic filling in the missing regions of an image in a possible way. In painting includes electronic imaging applications such as photo editing, image

restoration and multimedia transmission. Digital techniques are used for performing in painting, ranging from all the attempts of fully automatic detection. It helps to remove scratches in film. In the purposed scheme, the objects are removed from digital images and the hole left behind is filled by a graphical technique called in painting in a visually plausible way. This technique can be applied not only to images consisting of simple textures but also to real life images having complex textures and color scheme.

III. PURPOSED WORK

In the current era of digital technology visual surveillance systems are being easier to use, versatile, inexpensive and very fast. During object detection, the surveillance system must detect other objects and identify them as humans, animals, vehicles. When one or more persons are detected, their movements need to be analyzed to recognize the activities that they are involved in. So video surveillance systems make this kind of work very easier for user and it provides security and control where all time watch is required. Object Tracking is an important task in video processing because of its variety of applications in visual surveillance, human activity monitoring and recognition, traffic flow management etc. Multiple object detection and tracking in outdoor environment is a challenging task because of the problems raised by poor lighting conditions, variation in poses of human object, shape, size, clothing, etc. The surveillance system would be able to accomplish this even while continuing to move. The proposed algorithm will helpful to detect moving object and classify it as human being and keep track of moving human.

Figure 1: Moving object detection

In figure 3.1, the detection is shown. In this case the objects are detected by the camera, these objects are humans, animals and vehicles. When a person moved, the camera detects the all moving things, that create the big trouble. To remove this trouble we can use the various techniques in our proposed work.

In our proposed work, we can done it with the help of two basic attributes. These attributes are

- Activity detection and tracking: For the activity detection and tracking, we can improve the robustness in activity analysis by providing intelligent control and fail over mechanisms. It can be built from the top of low level motion detection algorithms. These mechanisms improve the robustness and accuracy by maintaining tracking and recovering of the moving objects.
- Activity recognition: for this purpose, we propose an efficient representation of human activities based on tracked trajectories. We have developed a scheme that distinguishes different interaction patterns among a group of people by identifying the unique signatures in the relative position and velocity of the human being.

IV. Methodology

There were many diverse methods have been used while approaching the challenge, that come while detecting the moving objects. The approaches can be varied and depended on the required speed, the scope of application, and resource availability. Currently the work is done upon detecting the small and slow moving objects accurately. Whenever an moving object is detected an alarm is raised that the moving object is detected and tracked in the system. But it have some problems like object classifications, Shadow removal and removing false alarm. To remove these problem we can use a novel approach, which can easily classify the moving objects and the shadow of the objects can be removed by using this technique.

Object detection is use to detect the particular object from a large number of objects, the problem occurs in detection because of shadow and background objects. Here to solve this problem we are going to use skull detection and Region growing. Region growing will detect particular object and skull detection will remove this particular object from whole image so that we can properly detects it Object detection technique is used to detect a particular object from image.

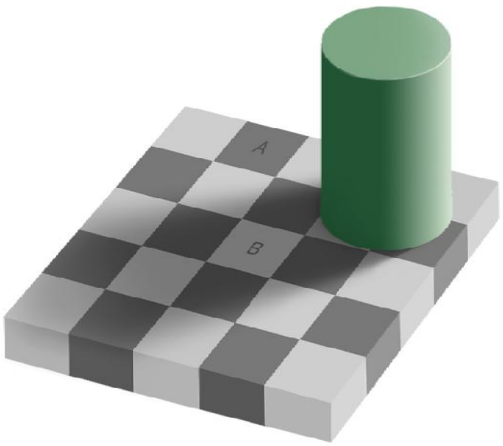

Figure 2: Image with object and shadow

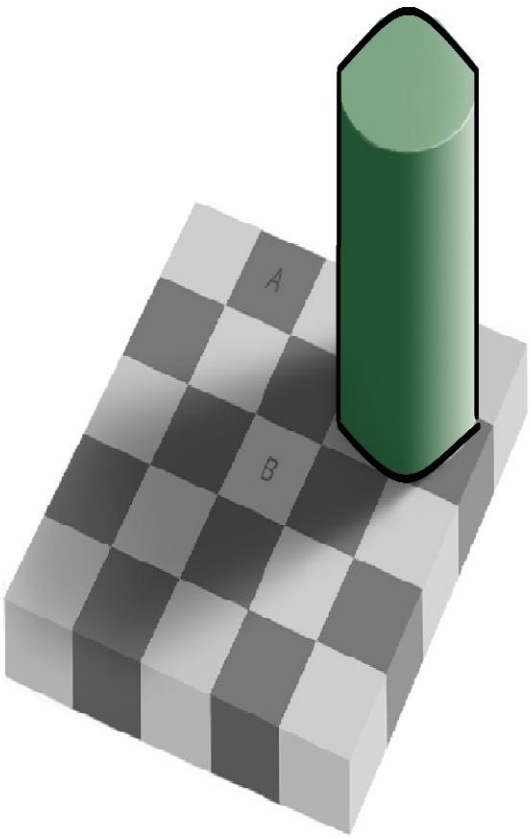

Figure 3: Region growing will detects object

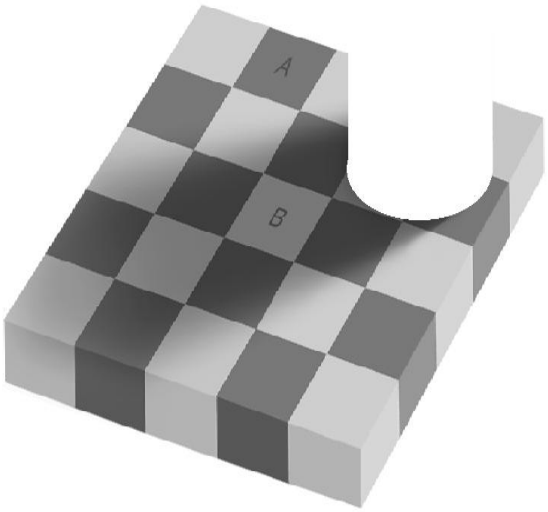

Figure 4:Skull detection

It will remove the detected object from whole image

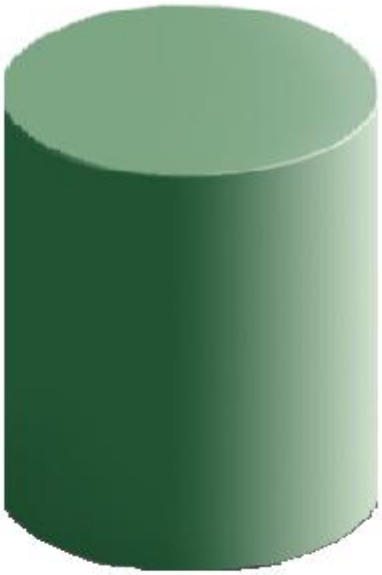

Figure 5: removal of noise objects

Now it will remove the all other objects like shadow, background and can properly detects particular object

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