# A Object Detection in Image Processing: A Review

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**ABSTRACT: Image segmentation can b define as a separation of image in sense full region regarding any object, Object recognition is a work of searching a selected object in an image or video sequence. Object detection plays a key role in image processing, It helps in searching of any particular object Object recognition is use to detect a particular object from a series of other objects, sometimes shadow and background images becomes problem in detection. Skull detection technique is use resolving such kind of problems. Here we deals with differ sort of object detection techniques and modes of multiple object detection for a image.**

**Keywords :** Image segmentation, Object Detection techniques, Image Processing, Object recognition,

## I. INTRODUCTION

Image segmentation is basics of object recognition & computer vision, the image noise must b eradicated in advance in image processing. The image segmentation deals with separation a digital image into different set of pixel region regarding a specific application. Here all the calculation are raised from the image and may b gray level, color, texture, dept or movement. In image processing, we can give a image, in the form of a photograph or a video frame and resultant we get the image or the specialties related to that image. As we know color are very important in human face detection therefore colors can play a vital role in video surveillance. As we know human can identify any particular object very easily without any efforts, therefore by taking inspiration from them , the object recognition techniques must b developed, which are less compels and more efficient. Several techniques are introduced to identify objects in real time.
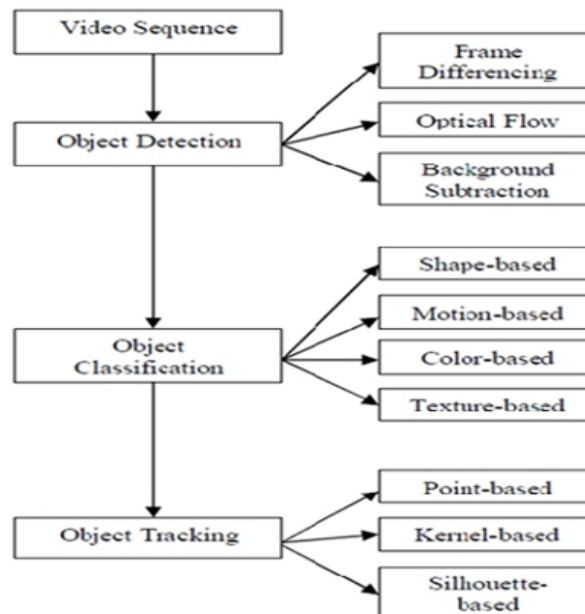


**Fig. 1.** Basic steps for tracking an objects.

To describe the reviews in real time there r two sections which are real time object detection and tracking. Object recognition is a crucial task in image processing & computer vision, these both techniques are very necessary in object recognition process, it is like getting the object which is being detected in an image.

*A. Image processing and its techniques*

Image processing is a term which indicates the processing on image or video frame which is taken as an input and the result set of processing is may be a set of related parameters of an image. The purpose of image processing is visualization which is to observe the objects that are not visible. Analysis of human motion is one of the most recent and popular research topics in digital image processing. In which the movement of human is the important part of human detection and motion analysis, the aim is to detect the motions of human from the background image in a video sequence. It also includes detection, tracking and recognition of human behavior along with some objects which are in motion from video frame.

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 image processing is important domain for many reasons. Actually Digital image processing is a recent subject in computer history. In 1960s; Bell Labs and University of Maryland, and a few other places started to develop several techniques for digital image processing. With application to satellite imagery, wire photo standards conversion, medical imaging, videophone, character recognition, and photo enhancement. But the cost of processing was fairly high with the computing equipment of that era. In the 1970s, image processing proliferated, when cheaper computers and dedicated hardware became available. Images could then be processed in real time, for some dedicated problems such as television standards conversion.

As general-purpose computers became faster, they started to take over the role of dedicated hardware for all but the most specialized and compute-intensive operations 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. In digital image processing, we use computer algorithms to perform image processing. Actually digital image processing has several advantages over the analog image processing; first it gives a high number of algorithms to be used with the input data, second we can avoid some processing problems such as creating noise and signal distortion during signal processing. In 2000s, fast computers became available for signal processing and digital image processing has become the popular form of image processing. Because of that, signal image processing became versatile method, and also cheapest.

*B. Object Detection and its techniques*

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.
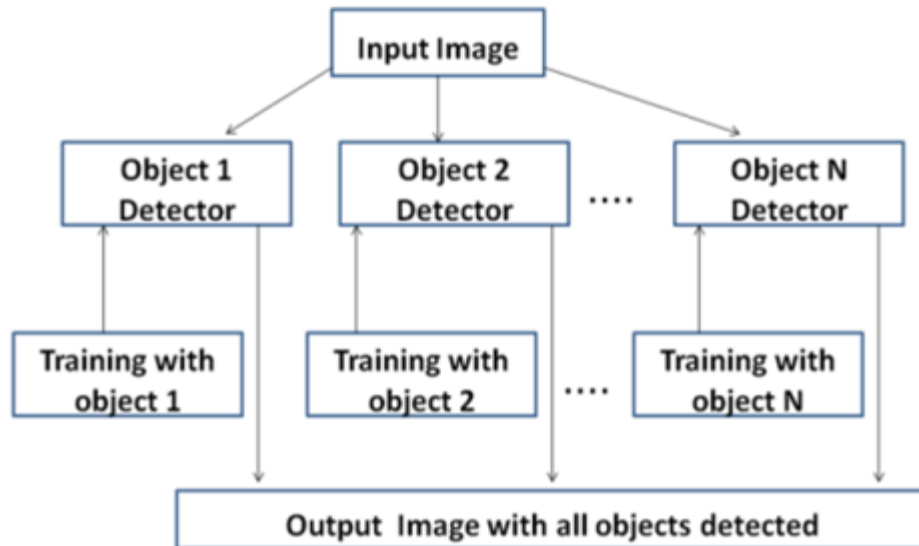


**Fig. 2.** Method for detection /multi object in a image.

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:

**(1) 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.

**(2) 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.

**(3) 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.

## II. RELATED WORK

The problems of digital image segmentation represent great challenges for computer vision. The wide range of the problems of computer vision may make good use of image segmentation. Many researchers had created several methods to deal with the problem of image segmentation.

Zimmer *et al.* created a method to detect the mobility of live cells using the active contour (snakes) method. Modified method to handle the tracking problem using threshold method was developed. The inverse modeling to detect the mobility of living cells. Recently there have been a number of researchers has tried to create several image segmentation algorithms. In this paper we managed to review and summarized the major techniques for digital image segmentation. The techniques stated in [3-4] ranges from very basic algorithm to state of the art published techniques categorized based on speed, memory requirements and accuracy. They used methods such as frame difference technique, Real time background subtraction and shadow detection technique, adaptive background mixture model for real time tracking technique. They used algorithms ranges from varying levels of accuracy and computational complexity. Some of them can also deal with real time challenges like snow, rain, moving branches, objects overlapping, light intensity or slow moving objects. The problems of achieving high detection rate with low false alarm rate for human detection and tracking in video sequence is to maximize performance and improve response time. The stated causes are the effect of scene complexity, scale changes and scene background-human interactions. A two-step processing solution which is, human detection, and human tracking with two novel pattern classifiers presented in [1-5]. There are three basic phases in video examination: detection of interesting objects in video scene, tracking of such objects from frame to frame, and analysis of object tracks to recognize their activities. Detecting humans from video is a challenging problem owing to the motion of the subjects. In they developed a detector for moving people in videos with possibly moving cameras and backgrounds, testing several different coding schemes of moving object and showing that orientated histograms of differential optical flow give the maximum performance. Motion-based descriptors are combined with Histogram of Oriented Gradient appearance descriptors. Achieved detector is tested on several databases includes a challenging test set taken from video and containing wide ranges of position, motion and background imbalance, including rotating cameras and backgrounds. They have analyzed moving object detection techniques, frame difference and the approximate median method. The frame differentiating has been adopted for the reference frame and the step length. They have suggested the moving object detection and object tracking by using the modified frame difference method. In the surveillance system for video captured by single camera is considered for the space 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. Here we deal with RIPBM in this latter for object detection in Hr remote sensing images [5-9]. Here we sort out the rotational invariance part of our model with the help of displacement, deformation cost and rotational cost for other parts. In encoding the attributes of rotated parts, we forward HOG to RIHOG with the help of elaborating the dominant orientations as in with SIFT descriptors. During that finding session, a clustering technique take place with our model to decrease the find pace of parts, and declare the ultimate results, the ending process shows the robustness features of the model. Further we going to study how to search multi objects with the help of our model at a time for future analysis of the images.

## III. CONCLUSION

It is not possible to consider a single method for all type of images, nor can all methods perform well for particular types of image. The background subtraction method detects object with noise and output is not accurate. Object behind object is not detected. Problem occurs during identification of object when any obstacles come before the object. If the position of camera is not proper and object in image is not captured properly then it cannot be identified. To solve above problems and bring some accuracy and richness by combining multiple methods and make use of it together according to the application. From the previous review, we classify the current methods and summarize their features. Also each method has its suitable application fields, and researchers should combine the application background and practical requirements to design proper algorithms.

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