A Computer Vision Process to Detect and Track Real Time Object

Barkha Malkaniya[1], Ms. Shrusti[2]

[1]M.Tech. Scholar, CSE Department,

Jayoti Vidyapeeth Women's University, Jaipur, Rajasthan, India

[2]Assistant Professor, CSE Department,

Jayoti Vidyapeeth Women's University, Jaipur, Rajasthan, India

Shrusti72@gmail.com

ARTICLE INFO	ABSTRACT
  Corresponding Author: **Barkha Malkaniya** M.Tech. Scholar, CSE Department, Jayoti Vidyapeeth Women's University, Jaipur, Rajasthan, India **E-mail:** *barkha.malkaniya@gmail.com* 	This Paper explores the detection and tracking of single real time moving object from the sequence of the frame and also to extract, recognize, and tracking an object without changing its perspective, position, radiance and any deformity The central objective of thesis is to examine the difficulties carry out for classification of object detection and tracking methods.This paper defines the existence of moving object in the video frames and to keep the track of an object's motion and positioning. This paper basically defines an explanation of different object detection and tracking process method using different algorithms. Thus, this object detection and tracking carried into two steps such as frame subtraction using OTSU's thresholding technique. Object representation using point which is a centroid. Kalman filter for object tracking. The work motivated in this paper for relevant extraction of an object from its foreground and background interference using different subtraction and filtering methods. Where first step will be the object detection using frame subtraction method and tracking can be done using kalman filter. These steps will help in object detection and tracking. © IJICSE, All Right Reserved.

INTRODUCTION

Object tracking signifies an important role within the computer vision area. Object detection includes localizing objects in frames of a video sequence. Basically it is used to find the current position of the object in the successive frame. Tracking is the method of tracing the moving objects using a static camera.

To be precise, tracking is the method of approximating the path and the coordinates of an object in the frame as it travels around an area or scene. Using a high level computer with the accessibility of high quality and low-cost video cameras and the accumulative necessity for computerized video analysis has created a huge interest in object tracking algorithms. There are some major steps in video analysis:

- Detection of given moving objects in a particular frame.
- Tracking of the objects from previous frame to current frame using background technique.
- Analysis of traced object to identify their activities

because tracking usually starts with detecting objects, while detection can be done using background subtraction techniques etc.

Here are some steps for object detection and tracking using various methods:

- Video
- Frame Extraction
- Object Detection
- Object Tracking

METHODOLOGY:

Here we follow the process which helps us to track the object using the frame sequence.

In the object detection first technique we use is the OTSU's segmentation technique for the implementation. Using this technique we can detect the object by subtracting the previous frame to the successive frame.
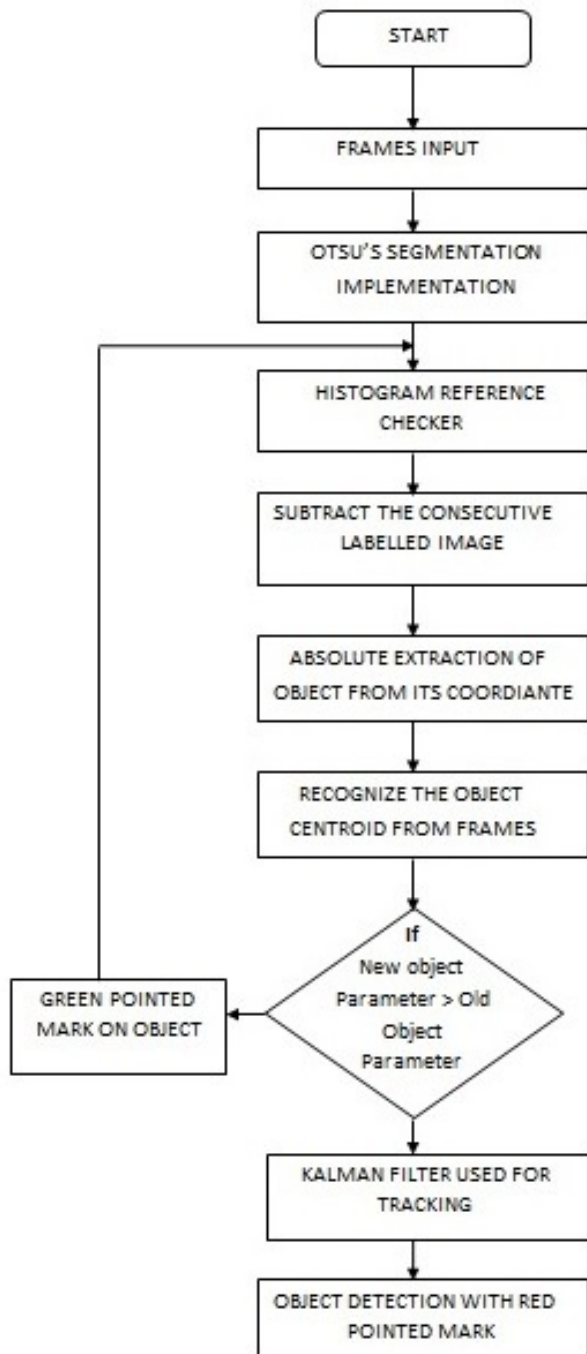
Figure 1 Object Detection and Tracking Flow Diagram

In this we know that the portion which has no movement known as background subtracted from the portion which has movement known as the foreground. This OTSU's thresholding technique is used for image segmentation. Segmentation is often considered to be the first step in image analysis which is generally used to define the background and foreground image pixels. Background subtraction is a extensively used method for detecting moving objects in videos from static cameras. Background subtraction method is basically used for the foreground detection where the foreground is extracted for the further processing such as noise removal and morphology. Object detection can be accomplished by constructing a representation of the view called the background model and then finding changes from the model for each successive frame. Any major change in an image section from the background model indicates a moving object. The pixels constituting the regions undergoing change are marked for further processing. This process is defined as the background subtraction.

Further we apply the histogram technique for the graphical representation of object in image processing; a histogram is a graphical representation of the distribution of colors and lightness at each pixel in an image. It plots the number of pixels in a graph for each character value of color. For digital images, a color histogram signifies the number of pixels that have colors in each of a static list of color range, that extent the image's color space, the set of all possible colors.

In the next level we subtract the consecutive labelled images So that we can find the difference between the previous frame and current frame. Subtraction is generally used for the detection of the object in frames. This technique is basically used for the absolute extraction of object from its coordinates. After this, we can classify the object according to its features and attributes such as color, edges, corners, size, position, lines, curves and regions. Object detection in videos is used to define the presence of an object in frame sequences. Further we apply the kalman filters to track the object. Where we represent the object using point which is a centroid. Object tracking is used to monitor spatial and temporal changes during a video sequence, including its features and attributes etc.

Object detection and tracking can be done by using frame differencing technique on the sequence of images which is taken at closely spaced time intervals. These two processes are closely related to each other because tracking usually starts with detecting objects, while detection can be done using clustering, frame subtraction techniques etc. So these steps are helpful to detect the object in more efficient way with more well-organized result.

CONCLUSION AND FUTURE WORK:

This paper is a detailed exploration of the object detection and tracking methods. In this paper various steps are explained which are helpful in detection and tracking of object. We have included discussion on popular methods for the same.it explains the process which we can use in object detection and tracking. It helps us to give a better result in the computer vision field. A detailed summary of standards object detection and object tracking methods is presented which can give valuable vision into this important research topic.

There is a huge future scope for the object detection and tracking method. There is so many different methods are available for object detection and tracking in the computer vision field.

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