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"AN OBJECT DETECTION, TRACKING AND PARAMETRIC CLASSIFICATION"

– A Review

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Abstract - ***Now days trends going towards automation for getting the result accurate and efficient. In scenario like observing and tracking one and multiple object in video at a time is difficult to do it manually. Video surveillance is a camera surveillance in which observation is takes place by cameras. But it's difficult to observe video very accurately by manual ways that's why there is need of Automatic video surveillance for observe analysis and computation. So researchers findings the way to solve such problem by computer vision. As we know number of application are present like video conferencing, traffic analysis and security, human motion analysis, video surveillance, event detection, robot navigation, anomaly detection.***
It is very complex to operate on video and performs various operations on that. Such operation include object detection, tracking the detected object, calculation and calculation on the basis of the different parameters. In this paper we surveying about the video processing in which, how to detect object in the video. In video processing object detection is the very consequential, momentous and weighty. Then on next we are giving the overview on tracking and parametric classification. Classification is very tedious because it needs the parameter for the good and efficient classification on the behavior of object. So here we are surveying the techniques for parametric classification of object and on the basis on object behavior. Classification part is totally depend on the behavior of object which are detected in the surveillance. In this paper we focus on the object detection and no of technique is used in now days.

Keywords: *Classification, Moving-Object-Detection, Velocity, Speed, Measure, Tracking, Video surveillance.*

1. Introduction

Video is the basically the time wise collection of image frame with audio data. Frame is the unit of the video. Video processing is the image by image processing. As per the motion detection and tracking concern its deals with frames. For the motion detection frame processed one by one from video. Identifying the moving object is the basic operation in video. As object is detected we can operate that object by using there characteristic & parameter. In any video, for the processing we have to follow the step,

1. Identification of the Moving Object.
2. Tracking the object in the all frame of video where that object presents.
3. Perform analysis on that object and take action as per the requirement like estimation of velocity, classification on its behaviour, study of characteristic etc.

For identify he object in the video frame number of technique are present now das but they deals with the problem of false detection. When we talk about the moving object then moving of tree also consider as a moving object i.e., slightly change in the background also gives the result as the object detection which are not true in case of object detection. Another problem is the getting the structure of object is difficult due to effect of light. Different type of light gives the different type of shadow and shadow is always moving with the object. There is need of efficient and accurate method to detect object.

So the detection of object is very basic and important step for any video processing. If false object is detect , never get the optimum result for processing.

2. SOME APPROACHES FOR OBJECT DETECTION

2.1 Background Subtraction:

Background Subtraction Method is considered to be one of the most reliable method for moving object detection. Background subtraction works by initializing a background model, then difference between current frame and presumed background model is obtained by comparing each pixel of the current frame with assumed

background model color map. In case difference between colors is more than threshold, pixel is considered to be belonging to foreground [2] . Performance of traditional background subtraction method mainly gets affected when background is dynamic, illumination changes or in presence of shadow. Numerous methods have been developed so forth to upgrade background subtraction method and overcome its drawbacks.

2.2 Frame Differencing:

Frame difference method identifies the presence of moving object by considering the difference between two consecutive frames [4]. The traditional approach makes use of image subtraction operator that obtains output image by subtracting second image frame from first image frame in corresponding consecutive frames. Frame differencing not giving the contour as same as object for a better result morphology operations are general used.

2.3 Optical Flow:

Optical flow approach [5] of moving target detection is based on calculation of optical flow field of image (or video frame).Clustering is performed on the basis of the obtained optical flow distribution information obtained from the image (video frame).This method allows obtaining complete knowledge about the movement of the object and is useful to determine moving target from the background. However, this method suffers from some of drawbacks like large quantity of calculations are required to obtain optical flow information and it is sensitivity to noise.

2.4 Temporal Differencing :

Temporal differencing method detects the moving target by employing pixel-wise difference method among two successive frames [2]. Traditional temporal difference method is flexible to dynamic changes in the scenes but results degrade when moving target moves slowly since due to minor difference between consecutive frames, object is lost. Moreover, trailing regions are detected wrongly as moving object (ghost region) because of fast movement of object, additionally incorrect detection will result where objects preserve uniform regions [1].

3. TRENDS ON OBJECT DETECTION

In IEEE 2009 ,paper titled Moving Object and Shadow Detection Based on RGB Color Space and Edge Ratio[6]gives the overview on Separation of object, shadow and background using RGB color space model considering chromaticity and brightness ratio model combined with edge ratio model for treatment of misclassified object and shadow having positive aspect as Moving object and shadow are determined separately and Fast enough for utilization in real time analysis but having negative aspect as Darker shadow areas or moving target having similar color information to that of background area will lead to failure.

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In ELSEVIER 2011 ,paper titled Robust moving object detection against fast illumination change [7]gives the overview on Identification of moving target under fast illumination variations using Gaussian mixture model for object detection and chromaticity and brightness ration model for elimination of false foreground pixels. Having positive aspect Does not require training sequence and Automatic adjustment of the parameters but having negative aspect as Results degrades in complex environment that has piled snow, puddles or in specular regions.

In IEEE 2012 ,paper titled Spatio-Temporal Traffic Scene Modelling for Object Motion Detection [8] gives the overview on Approach for traffic surveillance using Bayesian fusion method where in kernel density estimation is used for background modelling and Gaussian formulation is carried out for foreground model. Having positive aspect Requires less computational time and Works well with rapidly and slowly changing background but having negative aspect as Object's feature identical to that of background are abolished.

In IEEE 2013 ,paper titled An Improved Moving Objects Detection Algorithm [9] gives the overview on Enhanced three frame differential method combined with canny edge detection to gain complete information related to moving target having positive aspect Ghosting effect is eliminated and Algorithm beats the empty phenomenon and edge deletion problems of standard three-frame differential method but having negative aspect as The result is not ideal in the environment with strong light and obvious shadow also Results degrade for dynamic background.

In IEEE 2013 ,paper titled A Moving Target Detection Algorithm Based on Dynamic Scenes [10] gives the overview on Five frame differential approach combined with background subtraction method for detection of target in motion having positive aspect Moving target can be extracted more accurately and completely from dynamic scenes but having negative aspect as It cannot eliminate leaves flutter noise and Cannot identify multiple moving targets.

In ELSEVIER 2014 ,paper titled The 3dSOBS+ algorithm for moving object detection [11] gives the overview on Moving target is detected by Neural background model which is automatically created by self-organizing method having positive aspect Works well with dynamic

backgrounds and not only Accurately adjust with gradual illumination variations, and shadows cast by moving objects but also Robust against false detections but having negative aspect as Accuracy cannot be obtained in case of sudden illumination variations and reflection.

In IEEE 2014 ,paper titled Image Processing Based Vehicle Detection and Tracking Method [12] gives the overview on Vehicle recognition and tracking using Gaussian mixture model and blob detection having positive aspect Vehicle counting is done automatically Also a Robust for low and medium traffic but having negative aspect as In case of overcrowding and high traffic flow situation performance breaks down and not efficient to obtain best performance significant amount of parameter tuning is required.

In IEEE 2014 ,paper titled Moving Object Detection Based on Temporal Information [13] gives the overview on Makes use of temporal information for generation of motion saliency which is then followed by maximum entropy and fuzzy growing method to identify moving target having positive aspect No prior knowledge of the background model is required and Robust to mild background motions and camera jitters, No user interaction for parameter tuning is required and very Efficiently deals with the perturbations of the background but having negative aspect as Shadow is determined along with moving object which may be misclassified as object itself.

In HINDAWI 2014 ,paper titled Moving Object Detection and Shadow Removing under Changing Illumination Condition [14] gives the overview on Local intensity ratio model used for elimination of shadow followed by Gaussian mixture model for moving object detection having positive aspect as Successful moving target identification without shadow and changing illumination condition but having negative aspect as Performance drops significantly in case where background is same as foreground and foreground is similar to shadow and cannot accommodate with back to back illumination changes like light on/off.

4. CONCLUSIONS

Motion detection of object is very critical task in which we need an shape of particular object and then have to track and trace that object in the motion video frame. In this paper we focus on the object detection which is most efficient task in video analysis and processing on the basis of number of paper published.

When we looking at temporal information of moving object we having no of methods like background subtraction, frame difference and temporal difference but its gives you very different shape object from the original object. By using of temporal approach we can detect moving object but can't get the original figure of object because temporal not differentiate between object and its shadow. So in survey we conclude that dynamic background, shadow and illumination variation are the major problems in object detection with respect to temporal methods, but still temporal methods required less computational time.

As per survey there is some spatial method to detect an object. As spatial histograms is a distributions of consist of margin of an image over local patches. They can preserve shape and texture information of an object at a glance so object can be detected properly but in this case we need more computation time and quality and intensity of video maters. For the best and optimize result we are going through spatial and temporal method together. By this we can overcome the problem facing in the objects detection.

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