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Survey on Human Motion Detection In Static Background

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Abstract: - Nowadays, computer vision has increasingly focused on building systems for observing humans and understanding their looks, activity, and behavior providing advanced interfaces for interacting with human beings, and creating models of humans for various purposes. For any of the system to function, it requires methods for detecting people from a given input video or a image. Visual analysis of human motion is presently one of the most active research topics in computer vision. Here the moving human body detection is the most important part of the human body motion analysis, thus the need of human body motion detection is to detect the moving human body from the background image in video sequences, and for the follow-up treatment like target classification, human motion tracking and behavior understanding and its effective detection plays an important role. Human motion analyses are concerned with the detection, tracking and recognition of human behaviors. According to the result of human motion detection research on video sequences, this paper presents a new algorithm for detecting human motion from a static background based on background subtraction.

Index Terms: - *Human body tracking, Behaviors understanding, Human motion analysis.*

I.   INTRODUCTION

One of the important streams of research within computer vision that has gained a lot of priority in the last few years is the understanding of human activity from a video. The increasing interest in human motion analysis is effectively motivated by recent improvements in computer vision that is according to the availability of low-cost hardware such as video cameras and a variety of new promising applications such as personal identification and visual surveillance. The aim is to automatically guess the motion of a human or a body part from monocular or multi-view video images. The interesting research for various application in human body motion analysis are physical performance, evaluation, virtual reality, and human machine interface. Thus in general, three aspects of research directions are considered in the analysis of human body motion: tracking and estimating motion parameters, analyzing of the human body structure, and recognizing of motion activity.
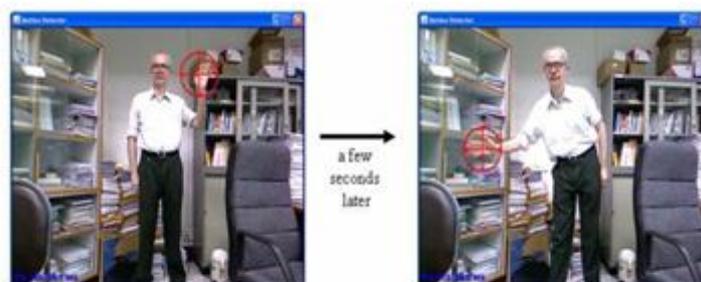
Figure 1. Motion Detection over Time

II.   LITERATURE SURVEY

Xiaofei Ji, Honghai Liu[5],proposed that view-invariant human motion analysis can be characterized by two classes of methods.The former class is view-invariant pose representation and estimation and the later one is view invariant action representation and recognition. The difference between the two classes are the first class

gives priority to the problems of how to estimate 3-D pose from individual image in a sequence and the second class focused on the problems of how to understand and infer human activity patterns.

Adrien Descamps, Cyril Carincotte, and Bernard Gosselin[4], address the problem of human detection in indoor video surveillance information. Here they introduce a new method which is based on the state of the art integral channel features. This method is extended to allow the use of temporal features other than the appearance based features.The robust background subtraction method is integrated by the temporal features. Thus their method is then evaluated on several datasets for presenting various and challenging conditions those are typical of video surveillance context. Finally the evaluation result that the additional temporal features are efficient and improve strongly the performance of the detector.
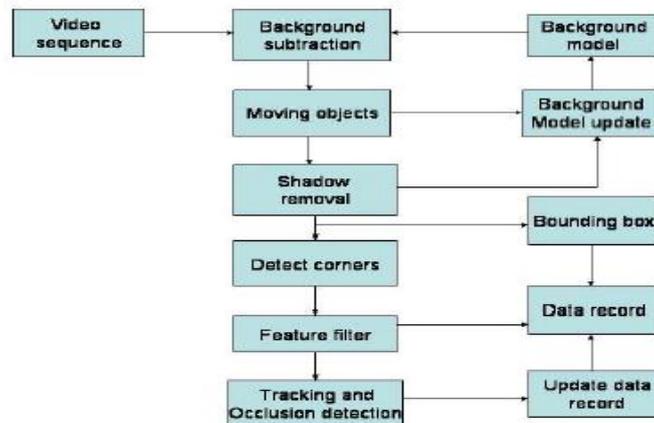
Fig:Flow chart for the proposed approach

Qi Zang and Reinhard Klette[2] gives the idea about video surveillance system, in which the system combines three phases of data processing.The three phases of data processing are moving object extraction, recognition and tracking, and decisions about actions. The former one that is the extraction of moving objects are followed by the object tracking and recognition and can often be defined in general terms. The final component which is largely depended upon the application context,such as the traffic monitoring or pedestrian counting .And in this paper, they focus on moving object tracking techniques and then they analyze some experimental results finally they provide conclusions for improved performances of traffic surveillance systems.For this they use stationary camera.

Murat Ekinci,Eyup Gedikli[3] they suggested that the real-time background modeling and maintenance based human motion detection and analysis in an indoor and an outdoor environments . To detect foreground objects, first the background scene model need to be statistically learned by using the redundancy of the pixel intensities in a training stage.Then this redundancy information of the each pixel is separately stored in a history map, that shows how the pixel intensity values can change.And they also describe about automated surveillance systems. Understanding human behavior from motion imagery involves four steps,which includes extraction of visual information from a video and their representation of information in a convenient way and interpretation of visual information for the purpose of recognition and learning about human behavior.

Sumer Jabri, Zoran Duric, Harry Wechsler[1],proposed new method of finding humans in video images. Detection is based on background modeling and subtraction approach. For the detection purpose they used both color and edge information. They also introduce confidence map or gray-scale images whose intensity is a function of their confidence where a pixel has changed to fuse intermediate results and then to represent the results of background subtraction. Thus the background subtraction is used to delineate a person's human body by guiding contour collection to segment the human from the background. Thus this method is tolerant to image/video clutter, illumination changes, and camera noise, and then runs in near real time on a standard platform.

Fig:Collected contours for frames

III.   MODULES

1.Background Image Initialization

There are many civilizations to obtain the initial background image. For instance, with the first frame as the background or the average pixel brightness of the first few frames as the background or using a background image sequences without the hope of moving objects to approximate the background model parameters. From these average method is commonly used for background image initialization , but there are many shadow problems will occur which can be removed by median method, So the median method is selected in this paper to initialize the background

2.Moving Object Mining

Background subtraction is a popular technique to fragment out the interested objects in a frame. This technique involves subtracting an image that contains the object, with the former background image that has no foreground objects. The area of the image plane where there is a significant difference within these images indicates the pixel location of the moving objects. These objects, which are represented by groups of pixel, are then separated from the background image by using threshold technique.

3.Noise Removal

Since the difficulty face due to the background details , the discrepancy image obtained contains the motion region as well as large number of noise. These noises might be included in the image due to some environmental facts and illumination changes, which occurvduring the transmission of video from the camera to the further processing. Therefore the noise need to be avoided. Here we adopts median filter with the 3 X 3 window for filtering noise

4.Extraction of Moving Human Body

Some accurate edge regions will be got after median filtering, corrosion and expansion operations, but the region belongs to the moving human body could not be determined. Through inspection, we can find out that when human motion detected, shadow will appear in some regions of the scene. Accurate mining of the moving object affected by the presence of shadow. By analyzing the characteristics of human motion detection, we can merge the projection operator with the previous methods.

IV.   CONCLUSION

Thus our proposed method of human motion detection will help us to detect the human motion perfectly in the approved manner. To avoid or minimize the problem that are approaching in human motion detection, we use the threshold method to detect human, background initialization and update the background in real time. Then at last, the shadow effect are removed by combining projection analysis with shape analysis. This method also has an impact on the elimination of noise and shadow, and can be able to extract the complete and accurate picture of moving human body.

V.   FUTURE IMPROVEMENT

According to this paper, we have considered static background. We hope in future the human motion detection can be improved for changing or non-static background.

REFFERENCE

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