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Disclosure and Sniff out of Moving Entity in Real World

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ABSTRACT

Entity disclosure & sniff out is being studied from years together and is one of the area where research is constantly carried out. In today's world it is a great challenge to generate an approach which is robust, accurate & high performing. How an entity is disclosed & sniffed out is defined as one of difficult task. One of the visual features, say a particular color is used as representation of an entity then the method discloses as a entity all the pixels with same color. On another side it is very hard to disclose accurately the face of particular person with full details (different actions & lightning changes) and to recognize, track. The biggest challenge is tracking entity in a video, since the entities are in motion. If a camera is fixed at appropriate point, as the entity moves in the area covered by it there is dramatic change in the entity image. This change occurs from three sources: if there is any change in the target posture, lightning changes and Due to change in camera setup property it is not possible either partially or fully to see what we wished to see.

The videos that are captured under various environment needs to be understood in order to know the activities of entity, the task is very challenging and is used by many applications for companies, scientific research, educational institutions. What motivated in studying this problem is to create a system where moving entity surveillance in real time can be disclosed and sniffed out.

I. INTRODUCTION

The information that are gathered from multidimensional data or images are used by computer vision for building artificial system and computer vision is more often studied for motion detection. There are two ways by which motion of an entity can be disclosed: Region-based approach and Boundary-based approach. Region-based approach do not use any model for motion disclosure, some of the technique are Background Subtraction [1] and Optical flow. The moving entity can be disclosed in Background subtraction by eliminating the calculated background model from the image. Lightning changes and any small movement in the background can be easily detected making the method more sensitive and time absorbing. The optical flow methods approximate constraint equation ignores temporal lightening changes making it unsuccessful.

Many of the boundary-based approaches make use of level sets, effective contours [2], margin based optical flow. Moving margin can be detected by calculating each pixels zero crossing from the complexity of intensity history with Gaussian function second order physical derivative. If the

image is not steady to sufficient amount, the results will be inaccurate because the velocity is computed without considering neighboring pixels spatial information

Random noise is experienced by many of the existing margin pixel based approach, matching of margin segment pixel by pixel results in high estimation cost. In the current margin pixel based method the margins that are not visible in the current frame might be visible in later frame and it is not possible at a time to apply different amount of transformation to different parts of pixels edges. As a consequence all parts of the object model cannot match accurately in subsequent frame. This phenomenon makes the disclosure of complex motion and shape change situation a difficult task

The proposed system is tough in different situations including indoor and outdoor locations and various kind of background location. The method proposed is tough because the method uses margin based features and then clustering is used which makes it unresponsive to lightening modifications. The area enclosed by margin based feature is lesser than region based feature and not computationally costly, hence making the method faster. The proposed application can be deployed in number fields such as:

- Bank survey, shopping marts, airports, private assets and parking zone
- To safeguard highways and detection of accidents in railway
- Checkup of the old age people's activities and to intimate for medical treatment.
- Accounting of Endangered species
- Logging tasks at nuclear and industrial facilities

2.1 A Motion and Shape based Pedestrian detection Algorithm, Hadi Elzein, Sridhar Lakshmanan and Paul Watta

In this paper [18] vision based pedestrian detection is investigated for the intelligent vehicle system design. The algorithm is feed with the video that is captured by camera placed on the vehicle. For the video frames wavelet transform is calculated and multi scale template matching is used to resolve pedestrian presence or absence in frame. Computational need can be reduced by motion detection and location. Results were given for various sequence of video and the method was able to accurately detect pedestrian in crowded scene.

2.2 Split and Merge data association filter for dense multi-target tracking, A. Genovesio and J. C. Olivo Marin

In this paper [11] Bayesian target tracking method, filter the subsequent measurement from detector. If there are multiple targets or crowd, then the filter must be connected with association scheme. In classical Bayesian multi target sniff out method depend on assumption that a destination can make at most one evaluation per scan and a evaluation emerge from at least one destination. When a large number of changing sources are tracked .The assumption mentioned before are not meet leading to failure of existing method. Here, an algorithm has been proposed which allows tracking when individual destination generates many measurements or many destinations generate individual measurement. Here, a virtual measurement set displace and enhance the measurements and is done in two steps: i) By dividing and integrating the actual measure a viable joint association is built .ii) Among all the viable joint association the joint probability is raised. The method was tested on teeny image sequence which contained more moving object.

2.3 Multi target tracking with split and merged measurement, Z. Khan, T. Balch, and F. Dellant

In computer vision many of the multi targets tracking application provide a detection algorithm that could locate potential targets. The measurement is coupled with target trajectories that are predicted long ago in data association step. The output from the detector is not perfect and multiple divided measurements is generated from individual destination and single combined measurement from many destinations. This problem can be solved in the

paper [14] by introduction of multiple hypothesis trackers for cooperating targets that produce split and merged measurement. The tracker is based upon Markov Chain Monte Carlo particle filter. Particle filter is Rao-Blackwellized such that state parameters which are continuous are analytically calculated and MCMC sampler produces samples from data association

2.4 A real time object detecting and tracking system for outdoor night surveillance, Kaiqi Huanga, LiangSheng Wang, Tieniu Tan, Steve Maybank

In this paper [15] we study detection and tracking of objects during night. There is a rich history on independent video supervision and monitoring. Number of setup systems, reliably traces the movement of humans in indoor and guarded outdoor environment. The detection and tracking during night is one of the major problems in visual surveillance. The objects to be detected are far away, very teeny and their signature have less distinction across the background. In this paper an algorithm for night time visual surveillance has been proposed for detection of objects in real time and is based on variation analysis. In the initial step the variation over time is used for detecting possible moving objects. False alarm could be suppressed by predicting the motion and data of nearest neighbor. Experimental results show the effectiveness of algorithm in detecting and tracking of objects in night time

2.5 Fitting multiple connected ellipses to an image silhouette hierarchically, Richard Yi Da Xu and Michael Kemp

In this paper [3] we pursue to fit model of united ellipse to an image silhouette. Some of the algorithms who have tried are sensitive to guesses and meet in wrong solution while attempting to reduce objective function in one step for the whole ellipse structure. We have presented an algorithm which swamped these issues. In the first step connections are ignored temporarily and initial guess are refined by making use of uncontrolled Expectation –Maximization (EM) for a variety of Gaussian densities and the ellipses are reunited linearly. At last Leven berg-Marquardt algorithm is applied to ellipse shapes for fine tuning and is aligned with contour. Experimental result showed that algorithm is able to fit robustly the ellipse structures which are complex to the respective shape for many applications

2.6 Automatic detection and tracking of pedestrian from moving stereo-rig, Konrad Schindler, Andreas Ess

In this paper [6], the 3Dimensional pedestrian detection and tracking is performed in urban traffic scenes on a stereo system. The probabilistic environment model blends the dense 3D reconstruction evidence and detection of pedestrian which are image based into constant classification of the scene observed and tracking for the reconstruction of trajectories of pedestrian in 3D coordinates. Experimental results on busy inner city are presented where promising results were achieved.

2.7 Bayesian visual Surveillance: Model for detecting and tracking a variable number of moving objects, C.R. Del Blanco, F. Jaureguizar and N. Garcia

This paper [8] detects and tracks the objects in visual surveillance system where it can hold number of moving objects. The tracking task becomes difficult when the detector generates a noisy, improper and misplaced, split and merged measurement of the video objects. The detections of split measurement is a challenging task where a single object is separated into many measurement and merged detections where many objects are combined into single detection. Some of the approaches were able to address the problem straightly and current one use interesting methods say by assuming number of objects but are not applicable for online applications .The stochastic process handles the split and merged measurements by making use of particle filter approach interference is exactly measured. High performance is achieved in the real time.

2.8 Visual Tracking of Multiple Interacting objects through Rao-Blackwellzed Data Association Particle filtering, Carlos R.del Blanco, Fernando Jaureguizar and Narciso Garcia

This paper [10] presents multiple objects tracking with capability to handle interaction among complex objects, detections of missing and clutter data. The proposed system is able to handle complex condition where the objects that are interacting change their gesture while obstructed. This is estimated by assuming the location of obstructed objects. Rao-Blackwellized Data Association Particle Filter (RBDAPF) is used for designing tracking. RBDAPF consists of compliant substructure to calculate the position of object. Measurement of the objects is approximated using particle filtering. The computational cost can be reduced by using filter decomposition because as the number of objects increases the complexity becomes linear than exponential. Particle filter manages to efficiently measure the objects in visible and obstructed scene. The Result shows that RBDAPF tracks many collaborating objects under complex locations.

2.9 Fast and robust algorithm of tracking multiple moving objects for intelligent video surveillance systems, J. S. Kim, D. H. Yeom and Y. H. Joo

In this paper [7] study of video supervision systems is being carried out which deals with intelligent image processing. Technology of detecting and tracking moving objects is made use in customer electronics like home and business supervision system subsisting of IP camera and NVR.A real time supervision system must robustly detect objects that are moving in noisy environment. Proposed method make use of Red-green-blue (RGB) background modeling to select moving sector with the help of susceptibility parameter, the noises and blob-labeling are ignored and analyzed in order to group objects that are in motion. Faster tracking of moving objects can be achieved by predicting the acceleration and the order of group setup by moving objects. The experimental results show that the method is tough across the environmental effect and quickness, which is applicable to the real time supervision system

2.10 Behavior Subtraction, Pierre-Marc Jodoin, Venkatesh Saligrama, Janusz Konrad

In this paper [17], Background subtraction is a driving engine for video analysis and computer vision. Many variants of background subtraction exist, which is based on hypothesis that photometric scene effects are stationary or show temporal stationary. The model fall's when one is excited in identifying variations in the scene gesture rather than variations in the photometric characteristics, for example detection of pedestrian exhibiting unusual activity or vehicle traffic. The paper proposes a model and framework which considers the gesture of the scene not its brightness, to be static, i.e a changing background play as reference for the gesture grabbed over a time period at a particular location in the camera field of view. Compared to the earlier work vector object descriptors compute events by combining multiple features like object size, order of movement, speed. Events are handled probabilistically with low memory, low complexity. A new algorithm behavior subtraction is effective & efficient inconsistency detection and localization. Behavior subtraction is volatile to false background movement, say camera jitter & content blind. Behavior subtraction opens new possibilities to video analytics by treating video group of events than colored pixels.

II. CONCLUSION

Disclosure of multiple moving entities can be achieved by the new algorithm which is tough and accurate. The proposed algorithm consumes small amount of memory and complexity involved in calculation is also small. The power of proposed method deceit in capacity to sniff segments in consecutive frames .The margin segments size and configuration vary from one frame to another and in certain case few segments may screen for one or many frames and returns back by its own.

The proposed method handles fluctuation in margin successfully by making use of weighted margin segment .By the introduction of limited margin segment matching, entity sniffing helps in construction of association among frames with in margin segment. The accumulation of knowledge about the changing margin shape within each array is done by prediction and inter frame model. Among the successive frame definite array location can be determined. While clustering the margin segment some of the array combines when there is a overlap between array boundary which is having same weight and motion order. The clustering algorithm is suitable for broader database and can be used for huge number of array; there is less time and space complication.

In sniff out algorithm, full blockage of moving entity cannot be handled, which is one of the future work. Incorporation of model that process arrays can be made use as well necessary movement can be extracted from scene and the number of entities can be calculated in the scene. By incorporating the color of margin side into array together with its quality, will help sniffing various overlapping arrays correctly

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