

**SURVEY ON LUGAR MOTION AND ALERT SYSTEM**Mrs. K. Elavarasi¹, B. Priyanga², K. Radhika³, V.B. Revathi⁴

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Abstract — Video surveillance is a prominent mode of monitoring and the object detection plays a vital role in video surveillance. It is becoming increasingly important for crime investigation and the number of cameras installed in public space is increasing. Object detection is the human computer technology based on image processing for capturing the semantic object movements like human beings, vehicles or trees. In this paper, some of the methods used in video surveillance are Background Subtraction, Pixel Variant, Gaussian Mixture and Dynamic Saliency Map. This paper gives the overview of object detection and reporting through alert system. The manifest of this paper is to compare and differentiate some of the recent researches in embedded platform. The existing methodology is a switch attached to the door which detects any intrusion attempted by the intruders. Moreover there is no alert system to inform the admin when the unknown object is detected. The exact image cannot be retrieved at the time of target perception and the emotive target cannot be detected correctly. Intelligent and computerized security surveillance systems have become a wide research area in recent time due to an increasing demand for such systems in public areas such as airports, underground stations and mass events.

Keywords- Background Subtraction, Pixel Variant, Gaussian Mixture, Dynamic Saliency Map, Genetic Dynamic Saliency Map.

I. INTRODUCTION

Perception of human demeanor is an important enterprise which is enacted in video scrutiny system. For detecting the objects, complex algorithmic calculations are used which increases the complexity of the system. The Spanish word “Lugar” refers to “spot” which means, recognizing the object. However the existing system suffer from various limitations such as, cannot extract the relevant information and it has a very low level tracking. The antiquity of video scrutiny system has three originations such as 1GSS, 2GSS and 3GSS. The first generation is based on analog subsystem; second generation is based on both analog and digital system, end-to-end digital system was used in third generation system. System should be aware of QoS for configuration. It has real time and fault tolerance requirements. For object tracking old system used color scatter diagram. Defining an approach to the problem of axiomatically monitoring people and ascertain unusual or apprehensive alteration in Closed Circuit TV (CCTV) videos is our dominant aim. We are affirming a system that works for scrutiny systems installed in indoor environments like entrances/exits of buildings, corridors, etc. Our work presents a schema that computes video data seized from a CCTV camera anchored at an intrinsic locality. A cagey system is used to prevent the unauthorized appropriation of the valuable things. Classic system does not have flexibility and fault tolerance. Electronic article surveillance is a technology used for preventing shop lifting from super market, department stores, jewelry shop and reducing the property from official constructions. Object tracking is to monitor an object of spatial and temporal changes during a video sequence, including its posture, position, height, width, etc. This is done by solving the temporal correspondence problem, the problem of matching the focused region in successive frames of a sequence of images taken at closely-monitored time intervals.

II. METHODS OF OBJECT DETECTION**A. Background subtraction**

Identifying moving objects from a video surveillance is a fundamental and important task in many computer-vision applications. A traditional approach is to perform background subtraction, which identifies moving objects from the video frame that differs significantly from a background model. Background subtraction is the process of video progression to slice forepart image from the background image, but very sensitive to the changes in the external situation and has poor anti- interference capacity.

B. Frame difference

By calculating the difference between two related frames, the presence of moving objects is detected. Its calculation is very simple and anyone can implement. For a variety of changing situation, it is the strong solution but it is generally very difficult to obtain complete clear image of moving object. It results to the inaccurate moving object detection.

C. Dynamic Saliency Map

The consecutive immovable saliency maps are used in dynamic saliency map for analysis. It can pinpoint a deliberate area in aggressive progression to target on a peculiar moving object for traffic scrutiny uses. The candidate local area of an emotive object is followed by a blob detection process, including binarization, morphological closing and labeling process.

D. Sobel edge detection

Edge detection is one of the image processing tactics for finding the outline of objects within images in a video progression. It detects the discontinuities in brightness of video scrutiny. Edge detection is used for image detachment and data eradication in areas such as image estimation, computer technology, and machine perception

E. Optical Flow

The decoration of finding tendency of surfaces, objects, and edges in an optic progression caused by the allied tendency between an observer and a scene is called optical flow or optic flow. The concept of optical flow was given by the American psychologist James J. Gibson which describes the visual stimulus provided to animals moving around the world. The effusion trajectory of emotive objects over time for disclosure of emotive zones in an image is used by the optical flow method.

It is based on the assumption, intensity I of moving pixel is constant in subsequent cage.

$$I(x, y, t) = I(x + \delta x, y + \delta y, t + \delta t)$$

Domineering the agitation to be small, the image impulsion at $I(x,y,t)$ with Taylor constant expand to be

$$I(x + \delta x, y + \delta y, t + \delta t) = I(x, y, t) + dI dx\delta x + dI dy \delta y + dI dt \delta t + \text{Higher Order terms}$$

Finally, avoiding H.O.D we get,

$$I_x.V_x + I_y.V_y = -I_t$$

This is an equation has two unknowns and cannot be solved as much. This is called aperture problem of the optical flow procedures.

III. LITERATURE SURVEY

In 2012, Neelam patel, "Motion Detection based on Multi frame Video under Surveillance System", paper focuses on pixel divergent and plays a huge role in identifying the frame dissimilar of an environment. It detects the moving object by pixel base displacement algorithm. It describes the moving frames by gradient-based motion vector methods and constituent based method in multiple frames clip. A tripwire is used for alerting the user. Sensors which sends the signal used for alerting the user. Thresholding method is used for segmentation of image. This Proposed system is of 3 pace: Follow pace, Diagnosis pace, and Verification pace. Advantage of this system are, (1) It detects the moving object accurately. (2) It alerts the user through alarm by mechanical or electronic method. Disadvantage of this system are, (1) It does not have a alert system through handheld device. (2) It only detects the motion and gives alert through bells. In this method, if there is a little bit motion, it detect very easily by tracking pixel variance method of pair of frames.

In 2012, Hardik H. Joshi, Prof. N. N. Shah, Prof. P. D. Raval, "Automated Video Surveillance System for Human Motion Detection", this existed system can handle multiple methods. That are, background subtraction with alpha method and statistical method, temporal differencing approach and Eigen background subtraction approach and adaptive background mixture model to detect and tracking the moving object. The advantages of this system are, (1) it uses a highly adaptive approaches. (2) It is used to develop robust adaptive tracking system. Because of the background subtraction method, some consecutive frames will fail during in frame comparison and this is the main drawback of the system.

In 2013, Abhishek Kumar chauhan, Deep kumar, " Study of Moving Object Detection and Tracking for Video Surveillance", It uses a employ model based scheme to discover and chasing body parts in object chasing. It uses point detection, object segmentation, background subtraction and the forepart and background phraseologies for to take the object and can extract the object attributes. The main pros are that, it finds the exact object virtues. It is used in various utilization and real time scenario, data mining, neural network, artificial intelligence. Object detachment is a difficult and significant problem occurs. The main task of this paper is to detect the emotive object by using the video scrutiny. The computer vision and video compression and scrutiny, vision based control, human computer interfaces, medical imaging and robotics are uses the object detecting and chasing method.

In 2013, Jamal Raiyn, "Detection of Objects in Motion- A Survey of Video Surveillance", this system uses cognitive video surveillance system (CVS) which is based on mobile agents. It is used for negotiation, roaming, cloning and decision making. Few advantages are, (1) It uses a robust method of EMA(exponential Moving average)instead of background subtraction for detecting motion and (2) It detect based on human model and classifier model used. It is not commonly used method and the configuration is complex.

In 2014, Barga Deori, Dalton Meitei Thounaojam, “ A Survey on Moving Object Tracking in Video”, in this paper , in order to gain the discerning ability of potency based descriptors, color feature descriptors are used. To depict objects like anthropoid figure, shape/contour of the anthropoid figure is used in inclination based methods. Using Gaussian Mixture Model, dynamic entity handling in the first groundwork of the video series can be used, to restrict the entity in the next groundwork by ferret out its dissemination. The pros of the system are, (1) Easy to compute. (2) Reduces computational load. GMM endure from slow merging at the opening status of diagnosing backgrounds. Inaccurate flow diagnosis in complex framework, are the two cons of this system.

In 2014, S. Shahid Ali basha, T.Senthil kumar,” Surveillance of Object Motion Detection and Alert using Android”, this paper uses reflection abstract method which snaps the shot and saved in the server automatically. The image is sent to a mobile phone as a alert using GCM. Background subtraction processes a video series to cut up forefront body from the backstage perception. Here, evaluation of BGS algorithms and experimental results in segmentation produce by BGS algorithm. The important way to detect the moving object in image series is to choose a referral skeleton while the scene is binder and diminution the observed frame. This uses mean and variance of Gaussian distribution-mixture. The back front image is ablated from the forefront image. This is called background subtraction. If the unknown object is detected, it will throw GCM alert to the end user phone. Disadvantages of this system are, (1) The is no accuracy in the captured image. (2) If the animal crosses, it will also detect and send message. (3) User can view the message only not an image.

In 2015, Giyoung Lee, Rammohan Mallipeddi, Gil-Jin Jang, Minhoo Lee,” A Genetic Algorithm - Based Moving Object Detection For Real-Time Traffic Surveillance”, this paper pact with the unmasking of moving objects from images captured by a fixed camera mounted on street light uses both the GDSM and BS. From the foreground pixels, the shadow pixels are removed. GDSM is combined with Background Subtraction (BS) in order to accurately detect the moving objects. The main goals achieved are, (1) Detects and identifies multiple object. (2) Detects and removes the shadow. (3) Less execution time. The main drawback of this system is, When objects stops in the middle of the road, GDSM fails to detect it. In previous method, dynamic analysis is done which uses a lot of computation because of entropy calculation where it is complex and expensive. But, in the proposed method, fast dynamic analysis is done which reduces the time complexity where variance replaces the entropy. DSM overcomes the drawbacks of BS. GDSM is the new version of DSM , which is designed with the help of Genetic Algorithm (GA) . GDSM is combined with Background Subtraction (BS) in order to accurately detect the moving objects.

In 2016, D. kavitha, E. Monica Rani, S.A. jagannathan, K. Gautham,” Optimizing Object Distortion in Motion Detection using Cauchy Distribution Model”, in the proposed system, object motion is first detected, then extracted and then the object is represented. In the object detection, initial frame and new frame are compared to detect the image. In object extraction, extracting foreground information from the scene of reference is done for motion detection. This clearly differentiates the pixel variation of images from one frame to another frame. Finally, object is represented. If any distortion occurs, it will be filtered by using some filters. We use GSC algorithm in the proposed system since, there is no limitation for this algorithm. Main goals achieved are, (1) Object can be detected without much mathematical complexities. (2) Reduces the memory and process time. (3) Differentiates the foreground object from background. Some of the drawbacks of this system are , (1) If the object is very small and far , then it will be ignored. (2) When similar colors are detected in the same region, it leads to overlapping.

In 2016, M.V. khadse, Pratik P. Nijampurkar, Yash D. Pardeshi, Neha S. Kale,” An Effective Object Detection Video Surveillance and Alert System”, This proposed system, uses the robust motion detection algorithm for real time motion detection. This algorithm only detect the motion from the lighting changes in the video and at the same time camera take the image of emotive object and it stores all the frame in that memory storage. The proposed system mainly uses the SOBEL filter that detects the edge and transmission of the image. The SOBEL filter working is based on the integer value of image in the filter that in horizontal and vertical direction so this way of computation is inexpensive. It uses a edge detection algorithm which is based on intensity of an image. The proposed system consistently perform well under different illumination condition like indoor, outdoor, sunny, foggy cases and suitable for detecting a moving object in real time video surveillance system. Time varying data from multiple cameras to obtain the point correspondences and it perform robust calibration is the main advantage of this system. Some of the cons of this proposed system are, (1) the edge detection algorithm only tracks the dots. (2) There is no provision for locating them within the scene. (3) The SOBEL filter method sensitive to the noise.

IV. CONCLUSION

In this paper, a new approach is used to; detect the moving object with the help of image Cauchy distribution model and GCM model. Video surveillance system is used for security reasons. Human activity and tracking the moving

object is identified by the video surveillance system with the use of motion detection and it also takes some information due to, the video surveillance distribute object classification, define the distinguish between the animals and humans, vehicles and humans. Cauchy distribution gives improvement over previous distribution models to reducing the computations for detecting an object. Here, when the threshold value is reaching the limit that time server detects the motion. Hence, this proposed system guarantees to give exact image from the video sequences and also provide high accuracy in capturing the image faster which enables good performance.

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