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A Hybrid approach to identify event detection in video Surveillance

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Abstract

Event detection in video surveillance has an important task nowadays. Video surveillance will give a continuous monitoring facility to observe normal and abnormal activity in real-time. The current century without the interaction of human surveillance will do but their challenge to identify the events in this paper survey of methods was discussed with their possible successful scenario. The System aims to identify human behavior in particular public premises, by analyzing live video feed from CCTVs. The main focus is that, as a human pedestrian walking on the road may have some continuously changing habits which may affect algorithm working on event detection, and such unforeseen behavior may be flagged anomalous by system wrongfully. In a unified approach for abnormal behavior detection and group behavior analysis in video scenes, current approaches do either use trajectory-based or pixel-based methods. The main objective of to predict the abnormal activity with clear evidence so we can propose the hybrid (integration) architecture with working conditions.

Keywords*: CCTVs, Object Detection, Pattern Recognition, object trajectories, anomaly plane, normal plane, object trajectory analysis, pixel-based analysis.*

I Introduction

The Proposed Architecture Lead to more focus on Detecting Abnormal Activity of changing object (behavioral). Which procedure a wrong prediction so false alarm was generated To solve this hybrid architecture will be more precise before predicting abnormal event issue, Architecture needs to develop of integration of two available methods to produce more accurate results first system to use of two sets of data, Anomaly plane and Normal plane, both are continuously updated and learned throughout. This method of continuous learning is useful than static learning as it helps the system to adapt to changes continuously and generate accurate results for dynamic behavior [1]. The second system is focused on the use of detecting the moving object behavior on trajectory-based to simplifying normal & abnormal identification with possible behavior data sets it uses the pixel-based method and Grid- Based analysis with help of trajectory filtering [2].

II Overviews:

R.A. Rupasinghe et. al. (2017) explained the system has uses Anomaly plane and Normal plane, both are continuously updated and learned throughout. This method of continuous learning is useful than static learning as it helps the system to adapt to changes continuously and generate accurate results for dynamic behavior[1]. In the paper they have used a dynamic approach rather than static, it removes the limitations of the existing system. Dataset is divided into separate two sets normal & anomaly plane. In object behavioral Pattern is a key concept in video surveillance. In video surveillance anomaly detection is the biggest challenge [4 6]. Event is any action performed any object after the event is performed the event detection concerning time, workspace & time constraint, Most of the existing system is updated once [7 15]. Automated Video surveillance includes preprocessing event detection and classification of a detect abnormal event[3][5]. Learning through behavioral pattern lead to anomaly detection is continuous updated[4][6]. Architectural design as shown in fig 1.

S. Coar et. al. (2017) present a system is the hybrid of Pixel-based and trajectory-based object detection in the concerned with the static data set, the system does not use the dynamic data set not updating.

anomalous behavior detection and group behavior analysis is an important problem in video surveillance[8 14]. The second category includes approaches developed for specific applications using knowledge-based systems, representing a specific abnormal behavior manually defined by the user, as for instance, detecting threats for cargo video surveillance [9]. They analyze the optical flow and acceleration, which is very discriminative among these objects [10 16]. object detection is carried with bounded the object as shown in the architectural view fig 2 [2].

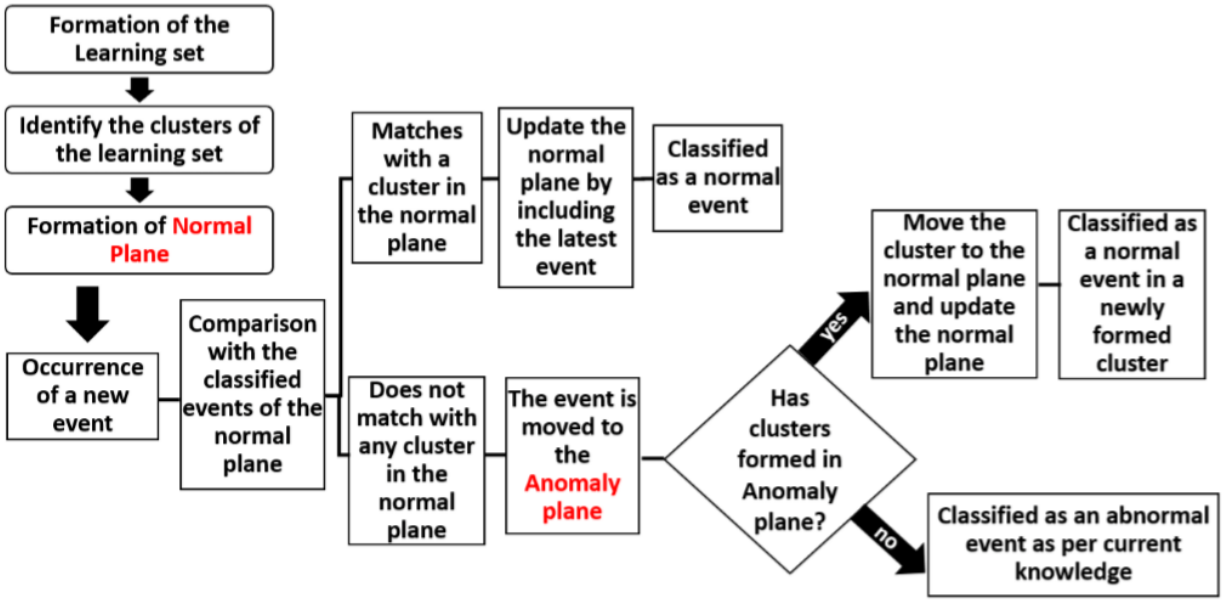


Figure 1: Basic Functional Architecture of System[1]

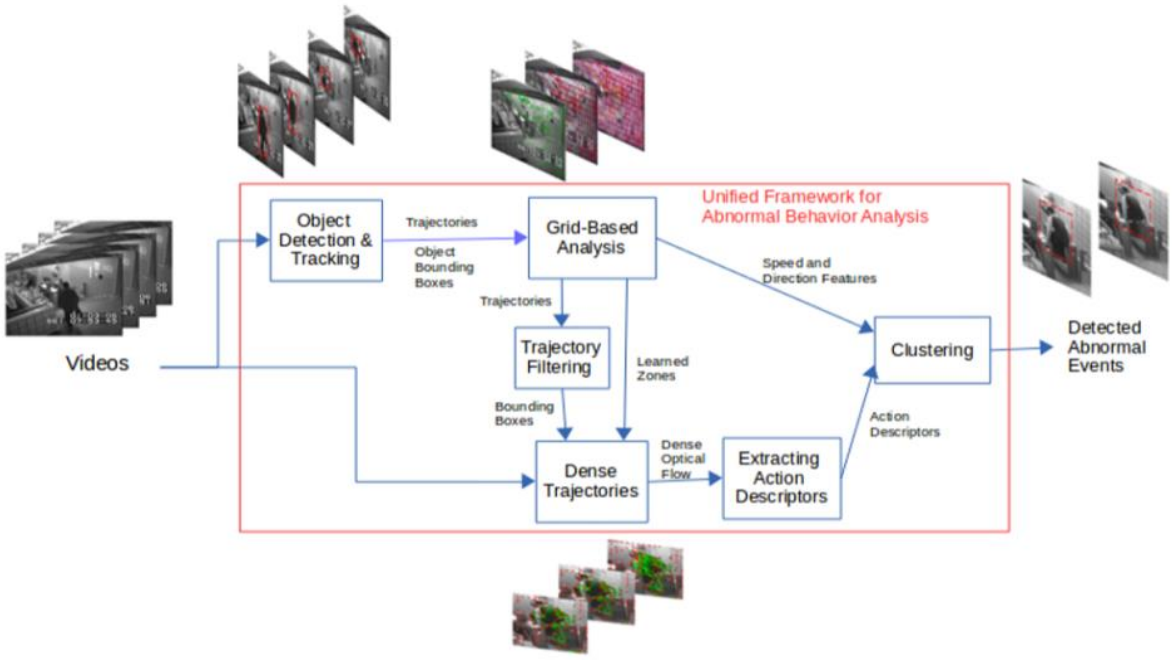
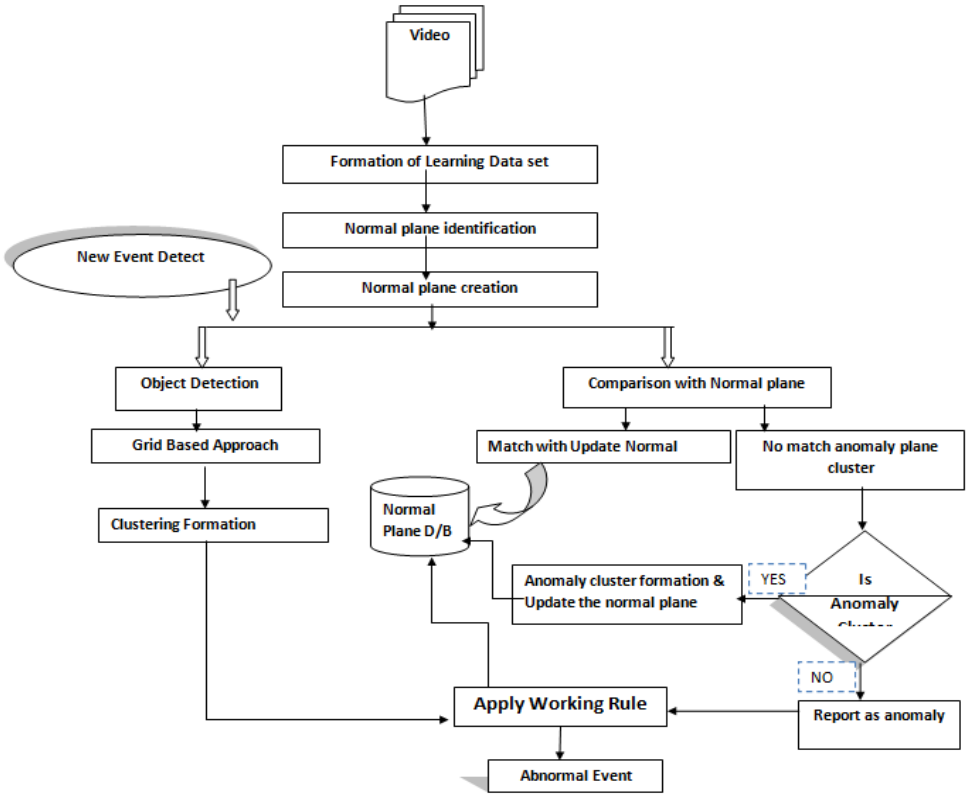


Figure 2: Basic Functional Architecture of System[1]

III Analysis of Existing system

Objective	Algorithms/Methodologies used	Proposed New Methods (Algorithms) /Future Prediction
Learning continuously changing constraints like human behavior etc.	Use of Dynamic clustering algorithm to study changing environment constraint and learn newer normal behavior patterns Boundless learning can be chaotic; it will go on endlessly reducing efficiency and raising false results.	We can deploy a method for updating the Normal Plane in the nature of a **sliding window algorithm.** Hence after this, our system will have some limited learning curve and work efficiently.
Easy integration of multiple algorithms for accurate results.	We can integrate pixel-based and trajectory analysis for anomaly detection algorithms into one system to get more accurate anomaly detection. The only issue with this approach is that depending upon the selection of algorithms their compatibility and integration can be cumbersome and complex and lead to inconsistencies	We can deploy the **Hybrid Proposed Architecture** for the integration of various image sensing algorithms. This approach will exponentially reduce integration overhead and complexity. Also as this method is real-time it will help very much in our system.

Table 1.0 : Details Study of previous System



Fig; Hybrid Proposed Architecture

IV. Hybrid Proposed Architecture

Proposed Architecture uses the Hybrid (integration) use of the advantage of two available methods. The approach of Pixel Based dynamic Clustering to more precise to detect the abnormal activity. To use pixel-based,trajectory-based in terms of speed & direction Clustering is formed. Dynamic clustering will emphasize the behavior of an object in terms of Time & workspace allocated.

1. Availability of continuous Video source.
2. Identification &Formation of Normal plane.
3. If New Event is counted then
   - I. It passes through the Integrated system.
   - II. It passes to the pixel-based method .
   - III. Dynamic clustering methods simultaneously.
   - IV. If event normal then normal plane updated dynamically.
   - V. If the event is in an anomaly plane then it follows the working condition as shown in Table 1.0.

Objective: To Develop the system having Strong Evidence to predict the abnormal activity more correctly.

V. WORKING ASSUMPTION

1.If Pixel Based Clustering is formed and in a dynamic approach, anomaly Clustering formed the and then only we measured the event as normal.

2. If Pixel Based Clustering is formed and in dynamic approach anomaly Clustering not formed and then only we measured the event as an abnormal.

3.If Pixel Based Clustering is not formed and in a dynamic approach, anomaly Clustering formed the and then only we measured the event as normal.

4.If Pixel Based Clustering is not formed and in a dynamic approach, anomaly Clustering formed the and then only we measured the event as a normal as shown in table 1.0.

Sr No	Pixel Based Clustering Is Cluster formed	Dynamic Clustering approach Is the anomaly Cluster formed	Prediction Used
1	Yes	No	Normal Activity
2	No	Yes	Normal Activity
3	Yes	Yes	Normal Activity
4	No	No	Abnormal Activity

Table 1.0: Prediction Table

The further study involves Pattern Recognition of object recognition and object detection that needs to critical through the use of neural networking and learned data set the help of data mining[11- 13].

VI .Conclusion

The system may require high-density storage and processing equipment as continuous learning is to be performed. There has to be certain bound that should be maintained as to what is the limit of the learning curve and when to stop. Initial installation cost to results ratio is poor although the system will be future proof and stable as time goes on in the second system Due to the integration of two algorithms, longer than usual time for computation is required, so delay could be higher. To reduce delay we have to employ better H/W and to perform complex integration which can turn out to be more expensive than traditional approaches. We can employ a strategy like crowdsourcing, where we will train our system in various environments beforehand submitting to a user which will increase the initial cost to results ration greatly,

and resulting in more user acceptance and positive feedbacks. Deep learning and machine learning methodologies can be applied to our system to make the system more resilient and complete. The system effectively combines the pros of two algorithms and also eliminates their drawbacks at the same time. With correct H/W support and integration, the system can yield almost completely accurate results. Hence very high reliability.

VI. REFERENCES

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