

An Abandoned Object Detection from Real time video.

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Abstract— Video Surveillance system is one of the famous tool appointed for observing highly sensitive places. Advanced researches in field of computer vision technology supported and improves the performance of Video surveillance System. It is boon for post processing because of research in artificial intelligence it is possible to use video surveillance system for taking precaution than cure. The proposed system is useful for live processing as well as post processing of Video Stream. The proposed System Detects Abandoned object in Highly Sensitive Area .The System works on resolution of 320*240 (QVGA). The system is Interactive in nature and works with coordination of CCTV controller.

Index Terms Abandoned Object, CCTV, Object detection, Object tracking, QVGA resolution, Video surveillance.

1 INTRODUCTION

In last decade many terrorist attacks took place at railway stations, hotels, malls, Cinema halls, Parliament House and at many other crowded places. Many people lost their lives in this. To fight with such anti-social activities government appointed multiple Strategies. Video Surveillance System is one among them.

But the problem with CCTV system is they are fully controlled and monitored by Human. Survey on CCTV shows that they are mainly used for investigation of case rather than monitoring live footage of CCTV. That was primary issue why it didn't help to avoid the terrorist attacks. Another reason behind that was limitation of human to response highly sensible situation. Human eyes have some limits to process complex real time video. Human eyes are not effective for looking at multiple Displays at a time.

So to enhance the processing of CCTV system for real time video stream abandoned object detection System was introduced.

Many algorithms and techniques were suggested by many researcher, scientists to design Abandoned Object detection System. But most of them are practically more complex and more expensive to implement.

Some uses physical components such as highly expensive filters, lasers, sonic waves etc. it is not possible to install all those cause the cost factor.

The proposed System is simple and effective. It avoids the Use of above expensive physical components. It simply works on Dual background segmentation scheme. It is highly immune to various lightning conditions

2. OBJECT DETECTION

Object detection is a computer technology related to computer vision and image processing that deals with detecting instances of semantic objects of a certain class (such as humans, buildings, or cars) in digital images and videos. Well-researched domains of object detection include face detection and Abandoned Object detection from CCTV system. Object detection has applications in many areas of computer vision, including image retrieval and video Surveillance.

3 WHAT IS ABANDONED OBJECT?

In dictionaries an abandoned object is defined as the object which left back by someone with evil intention. Here we consider abandoned object as object which remains stationary or inactive for some predefined time interval. This time interval is varies as per the need of surrounding. The CCTV observer or controller have rights to modify the threshold value.

4 PROPOSED SYSTEM

The Proposed system is Software based system. The system is modular in nature. It consists 8 modules.

1. Control module.
2. Input selection module.
3. Data extraction.
4. Data conversion.
5. Background segmentation module.
6. Blob detection and analysis.
7. Abandoned Object Detection.
8. Display results.

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5 OVERVIEW OF MODULES

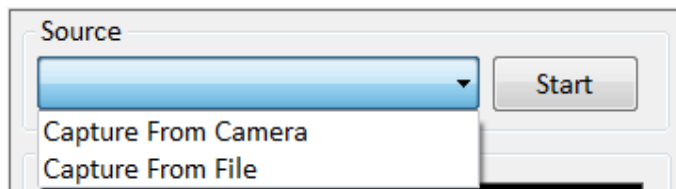
Module 1: Control Module.

Control module is the main module of the system. It initializes all the variables. It initiates the process when appropriate instruction is made by user. It controls all other module. To process multiple Video streams in parallel this modules generate Constructor for individual processes.

Module 2: Input selection Module.

In this module the process of choosing input method is initialized. It calls for the proper function as per input selected by user. There are two types of Input on which system can work.

1. Select video file from Disk.
2. Select live video stream.



Module 3: Data Extraction.

In this module important information about video is fetched. It includes video length, video type, frame rate, frame length, frame Height.

Module 4: Data Conversion.

In this module the video is converted into the frames. Frame is a simply image. Not every frame is selected but some about every 0.6 second is selected. This frame is initiated to background image and buffer background image. The images are stored in form of matrix with position and intensity of that pixel.

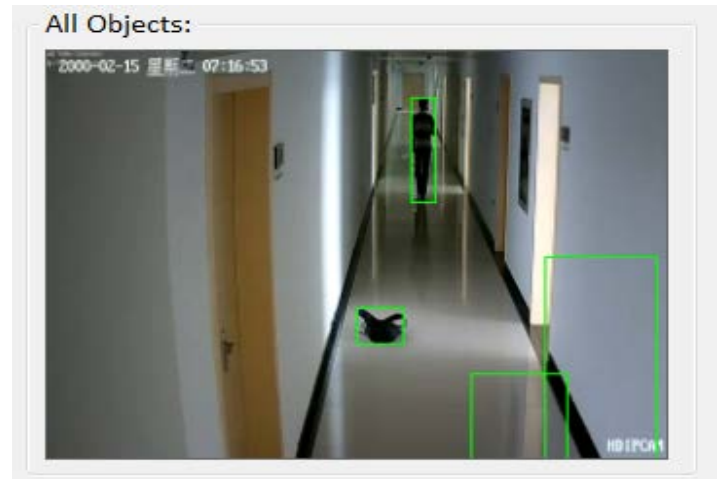
Module 5: Background Segmentation Module.

This Module is actual processing module. In this module the processing on the set of matrices is done. The binary image is generated by subtracting current image from background. As we are interested in all pixels that are remains stationary for some time; period binary image provide set of all stationary pixels. This pixels may or may not be part of abandoned object. This will be checked in next Module Blob analysis.

Module 6: Blob Detection and Analysis.

Blob is a rectangle shaped set of pixels. The blob have some properties such as centroid, the height and left value of top & leftmost pixel Area. Blob are considered as feasible solution for Abandoned Object. Blob detection simply detects

all objects.



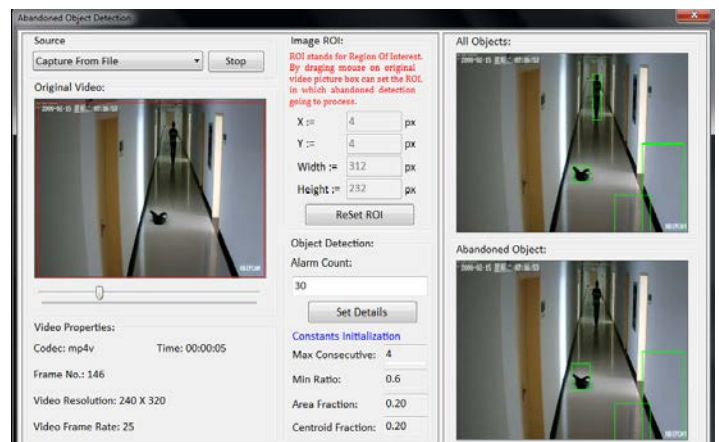
Module 7: Abandoned Object Detection

Abandoned object detection block simply put abandoned object in picture. It works with timer to process all detected blobs from previous unit. It checks time of particular blob for which it is stable. If it is grater or equal to value defined by user, blob is highlighted.

Module 8: Display Results

Display unit is last unit of object detection system. As its name suggests it simply display all the results. The result may include following:

1. All detected objects.
2. Abandoned object.
3. Alarm Count.
4. ROI (Region of Interest).
5. Timer.



6 CONCLUSION

Abandoned object system is implemented using dual background segmentation. The result is highly robust in nature. It is self-adaptive. The system costs lower as compared

to other systems which consists filters, infrared and noise detection and reduction techniques.

The Abandoned object detection system is very useful in multiple environment because of its portability. The simple mathematical processing make system to be available in real time environment along with post processing.

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