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**Research Article**

# EVENT DETECTION AND ALARM NOTIFICATION USING LIVE VIDEO SURVEILLANCE

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**A R T I C L E I N F O**

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**A B S T R A C T**

Due to increase in criminal and terrorist activities, general social problems, providing the security to citizens, private places, public places has become more important. Therefore watch for 24*7 is required in area of automatic monitoring. The video surveillance system does this job as accurately as possible. The video surveillance system described here is interfacing of camera and alarm system with the computer. Here the video is taken from camera and the unwanted entities are identified using controller and their actions are tracked and human is recognized using the database. In the project we are studying the different phases of the system with their detail explanations. The effect of this obstacle is minimized, in this work. The proposed system consists of two phases; the detection phase which is used to detect unwanted activity. The notification phase, and immediately after an accident is indicated, is used to send detailed information such as video, etc. to the emergency responder for fast recovery.



## INTRODUCTION

Cities are usually exposed to emergency situations, such as traffic accidents, terrorist attacks and crimes. Traffic accidents are a major public issue worldwide. The huge number of injuries and death as a result of road traffic accident uncovers the story of global crisis of road safety. Road collisions are the second leading cause of death for people between the ages of 5 and 29 and third leading cause for people between 30 and 44**.** According to statistical projection of traffic fatalities, the two-year comparison of total driver participation inmortal crashes presented a three percent increase from 43,840 in 2011 to 45,337 in 2012. Additionally 184,000 young drivers (15 to 20 years old) were injured in vehicle crashes, in 2012, an increase of two percent from 180,000 in 2011.

There are three types of methods mainly used in moving object detection. These methods are the frame subtraction method, the background subtraction method and the optical flow method [1]. In the Frame subtraction method [2] the difference between two consecutive images is taken to determine the presence of moving objects. The calculation in this method is very simple and easy to develop. But in this method it is difficult to obtain a complete outline of moving object; therefore the detection of moving object is not accurate. In the Optical flow method [1], calculation of the image optical flow field is done.

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The clustering processing is done according to the optical flow distribution characteristics of image. From this, the complete movement information of moving body is found and it detects the moving object from the quantity of calculation, poor antinoise performance makes it unsuitable for real-time applications. The background subtraction method [2] is the method in which the difference between the current image and background image is taken for the detection moving objects by using simple algorithm. But it is very sensitive to the changes which occur in the external environment and it also has poor anti interference ability. One advantage of this method is, it can provide the most complete object information in the case of the background is known [3]. In the background subtraction method, in a single static camera condition, the dynamic background modeling is combined with dynamic threshold selection method which depends on the background subtraction. The background is updated on the basis of accurate detection of object.

The rest of the paper is organized as follows: section II presents the literature survey in the field, section III describes the architecture of the proposed system, section IV presents the implementation of the proposed system, section V describes the application of the proposed system, and the last section VI is the conclusion.

### LITERATURE SURVEY

The early experiments with smartphone based accident detection systems are discussed as follows:

Zhenfeng Shao, JiajunCai, Zhongyuan Wang[1] the related work simply shows the overall description about the existing

working system. In contrast to the traditional video surveillance system, the proposed solution contributes to make full use of detected and alarmed events by smart monitoring cameras, which thus effectively improves the performance of intelligent surveillance system, promotes the ability to danger pre-alarming, and greatly saves the storage space for surveillance video data. Meanwhile, the surveillance video data relevant to specific cases will be scaled down, which will greatly improve the efficiency for discovering valuable investigation clues. Several practical cases demonstrate that our approach outperforms the existing solutions.

Narsing Rao, M1, Suresh Kumar,V2[2] develop car accident detection and notification system that combines smartphones with vehicles through a second generation of On-Board-Unit (OBD-II) interface to achieve smart vehicle modeling, offering the user new emergency services. The authors have developed an Android application that in case of accident detection sends an SMS to apre-specified address with relevant data about the accident and an emergency call is automatically made to the emergency services. The only requirement to achieve the goal of this system is that the vehicle supports the OBD-II standard. The OBD-II standard is mandatory since 2001 in U.S and there is also a European version of this standard, thus this solution is applicable to all vehicles in U.S and European countries and is not available in all vehicles in other countries. Besides that, the maintenance or upgrading process of this system is expensive operation.

J. White and H. Turner[3] develope a smartphone based accident detection and notification system. In this system, a prototype smartphone based client/server application was developed and called WreckWatch that implements a mechanism to provide accident detection and notification by using the embedded smartphone sensors and communication interfaces. The main issue related with WreckWatch system is the deactivation of the system when the speed is below speed threshold since the detection process of WreckWatch begins to recording the accelerometer information and looking for potential accidents only if the speed of the vehicle (as well as the smartphone) is greater than speed threshold and thus, this filtering will shut off the detection process in case of low speed condition and cannot detect the accident in low speed.

Sneha R. Sontakke, Dr. A. D. Gawande[4] develop E-call system explores the possibility of implementing an automatic crash detection and notification service for portable devices (smartphone). This system uses the cellular network to communicate between the portable device and the Server Center. The main issue with this system is the E-call system uses smartphone built-in accelerometer sensor as a crash sensor, and in this case the E-call system subjects to high rates of false positives emerging while the user is outside the vehicle.

S.B.Argade, R.B.Bhor and T.M.Kamthe[5] develope an android application that is used to sense the accident using only the accelerometer sensors in the Android Smartphone. After sensing the accident, application automatically generates the geographical information by GPS and sends location information via pre-recorder voice message to 108 ambulance emergency response service that is running in India. The key assumption of this application is that the mobile phone should not be kept along with the person who is driving the vehicle; it must be docked inside the vehicle and the validation of the accelerometer sensor is performed by tilting the mobile left or right or free fall motion. The main issue with system is the smartphone may tilt or fall in any time inside the vehicle accidentally without having a real accident and thus, the probability of false positive will be increased and false alarm willbereported.

Sapana K. Mishra, Kanchan .S Bhagat[6] develop a video monitoring detecting system. In this paper a human body detection algorithm based on the combination of temporal information and shape information is designed. Firstly, moving objects are detected using the proposed background elimination technique. Secondly,shape information is used to distinguish human body and other moving object and the outside rectangle of moving object is computed using the max width and height value of the moving regions.Furthermore, occlusion during a short time is handled by detecting the shape of moving object in continues frames. The evaluation cases shows the accurate detection of moving object and the detection result do not effect by the body pose. Also, the shadow of moving object has been eliminated in detection step, thus human can be detected.

***Proposed System architecture***

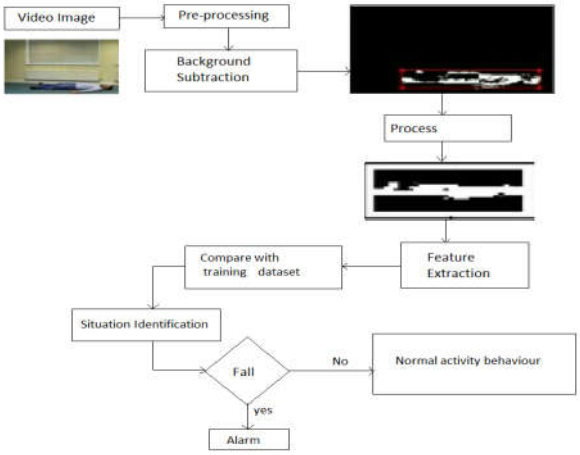


**Fig 1** Architecture

This section logically illustrates the mechanism of the proposed system structure together with each module that constructs the overall system architecture. The proposed system, called detection and notification system, consists of two phases; the detection phase, explained in the next section, is used to identify the occurrence of an accident, and notification phase, explained later in the section, is used to inform an emergency center for fast response and recovery.

***DetectionPhase***

Main components used in the detection phase. This phase constitutes the main objective of this work which is responsible for discovering the existence of car accident. The detection phase relies on the information extracted from sensor, and built-in todetermine the occurrence of car accident.

***NotificationPhase***

Accident detection phase and unwanted activity without notification phase is like doing nothing. Logically the most important task of the detection phase is the accuracy of the detection process.

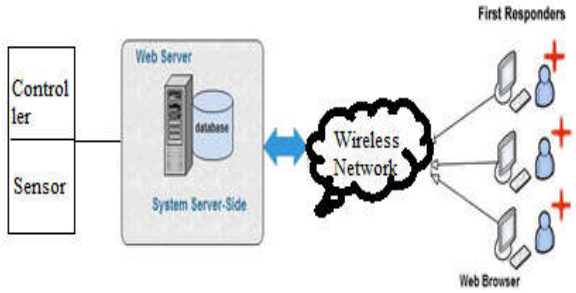


**Fig 2** Notification Phase Components

***Proposed Implementation***

As system consists of detection phase and notification phase. The detection phase is fully implemented as an application running on Smartphone while notification phase is implemented on two sides, the Smartphone side and the system server side respectively.

The all useful, new web technologies, are used to develop the system server side, are listed as follows:

- Apache is chosen as a web server.
- MYSQL is chosen to be the maindatabase.
- JavaScript and CSS to develop the web pages.

***Application***

For an intelligent video surveillance system, the detection of a human being is important for abnormal event detection, human gait characterization, people counting, person identification and tracking, pedestrian detection, gender classification, fall detection of elderly people, etc.

1. Abnormal event detection: The most obvious application of detecting humans in surveillance video is to early detect an event that is not normal. Abnormal events can be classified as singleperson loitering, multiple-person interactions (e.g. fighting and personal attacks), person-vehicle interactions (e.g. vehicle vandalism), and person-facility/location interactions (e.g. object left behind and trespassing).
2. Human gait characterization: Detection of humans in walking can be carried out by extracting double helical signatures (DHS) from surveillance video sequences. DHS is robust to size, viewing angles, camera motion and severe occlusion for simultaneous segmentation of humans in periodic motion and labeling of body parts in cluttered scenes.
3. Person detection in dense crowds and people counting: Detecting and counting persons in a dense crowd is challenging due to occlusions. Multiple heightshomographic for head top detection can be used to overcome this problem. Advantage of the stationary cameras to perform background subtraction and jointly learn the appearance and the foreground shape of people in videos can be taken.
4. Person tracking and identification: A person in a visual surveillance system can be identified using face recognition and gait recognition techniques. The detection and tracking of multiple people in cluttered scenes at public places is difficult due to a partial or full occlusion problem for either a short or long period of time.
5. Pedestrian detection: Pedestrian detection is another important application of human detection. A pedestrian detection system can be described by integrating image intensity information with motion information. The detector can be built over two consecutive frames of a video sequence and can be based on motion direction filters, motion shear filters, motion magnitude filters and appearance filters.
6. Fall detection for elderly people: Automatic detection of a fall for elderly people is one of the major applications of human detection in surveillance videos. Projection histograms of segmented human body silhouette can be used as the main feature for vector posture classification and the speed of fallcan be used to differentiate real fall incident and an event where a person is simply lying without falling.
7. Consumer Surveillance System: Automat surveillance requires a sufficiently high accuracy and the computation complexity should enable a real-time performance. For such a system, we need to analyze notonly the motion of people, but also the posture of the person, as the postures of the persons can provide important clues for the understanding of their activities. Hence, accurate detection and recognition of various human postures contribute to the scene understanding.

## CONCLUSION

A video monitoring detecting system can be developed successfully by using this project. This system mainly provides an efficient method for surveillance purposes and is aimed to be highly beneficial for any person or organization. As this innovation is used to detect suspicious objects at public place like railway stations where huge number of people gather, it will have a great impact on social security aspects of the people.

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