An Efficient and Secured Head Monitoring to Predict the Abnormal Behaviours in Online Exam

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Abstract**:** *This is a system which can be used for surveillance and monitoring applications. The development of an efficient real time video head detection system is motivated by their potential for deployment in the areas where security is the main concern. The proposed system presents a platform for real time video head detection and subsequent generation of an alarm condition as soon as the human head is detected. The prototype consists of a platform mounted with camera which provides continuous feedback of the online exam environment.*

Keywords: *Video Analysis, Anomaly detection, Eigen faces, alarm, Image block matching, gradient constraints.*

I. INTRODUCTION

The development of an efficient real time video head detection system is motivated by their potential for deployment in the areas where security is the main concern. The proposed system presents a platform for real time video head detection and subsequent generation of an alarm condition as soon as the human head is detected. The prototype consists of a platform mounted with camera which provides continuous feedback of the online exam environment. In the past few decades, vision-based surveillance has been extensively applied on industrial inspection, traffic control, security systems, and medical and scientific research. One of the application areas of video surveillance is monitoring the safety of elderly in home environments. In the case of elderly people living on their own, there is a particular need for monitoring their behavior, such as a fall, or a long period of inactivity. Fall in the elderly is a major public health problem and may lead to injury, restricted activities, fear or death. These autonomous sensors are usually attached under the armpit, around the wrist, behind the ear' s lobe or at the waist. These devices integrate accelerometer and/or inclinometer sensors and can monitor velocity and acceleration, vertical posture toward lying posture. However the problem of such detectors is that older people often forget to wear them, indeed their efficiency relies on the person' s ability and willingness to wear them. Moreover in the case of non contact sensors, they often provide fairly crude data that' s difficult to interpret. Although, computer vision systems try to extract some considerable features from video sequences of movement patterns to detect falls. The data provided by cameras are semantically richer and more accurate than standard sensors.

II.EXISTING SYSTEM

Kalman Filter: The two major limitations of Kalman filter are: It assumes that both the system and observation models equation are linear, which is not true in many real life situations. It assumes that the state belief is Gaussian distributed. Histogram of Oriented Gradient: The disadvantage is that the final descriptor vector grows larger, thus taking more time to extract and to train using a given classifier.

Temporal difference imaging: It cannot detect the object that moves in different direction such as moving in zigzag cannot be detected because it is assumed that the object within head motion moves in a consistent direction. Second, if the object stops for a moment, it will be lost. But it can be detected when it starts to moveagain.

III. PROPOSED SYSTEM

Unlike the traditional video surveillance systems which cannot trigger an alarm. The proposed system triggers an alarm and sends an siren indicating that head motion is detected. The system proposed by NavneetDalal, Bill Triggs stores all the videos which increases the need of storage space. The proposed system stores only relevant videos thus making it easy for the humans to makereview.

IV. REQUIREMENTS

FUNCTIONAL REQUIREMENTS:

The real time video of a human is extracted using a webcam. The video can be captured using OpenCV. OpenCV (Open Source Computer Vision Library) is a library of programming functions mainly aimed at realtime computer vision. The captured video must undergo some preprocessing steps. The extracted video will contain some noise as it is extracted in real time. The noise can be eliminated by blurring the video. Preprocessing, involves the correction of distortion, degradation, and noise introduced during the imaging process. This process produces a corrected image that is as close as possible, both geometrically and radio metrically, to the radiant energy characteristics of the original scene.

NON FUNCTIONAL REQUIREMENTS:

Non-functional requirements describe how the system works, while functional requirements describe what the system should do. This does not mean the latter are more important, but most requirement gathering techniques focus on functional requirements, so large gaps in non-functional requirements are common.

So, what exactly are we looking for here? Well, here are four examples of Non-Functional requirement groups; usability, reliability, performance, and supportability, as well as a few top tips on each one.

V. ARCHITECTURE

A system architecture or systems architecture is the conceptual model that defines the structure, behaviour, and more views of a system. An architecture description is a formal description and representation of a system, organised in a way that supports reasoning about the structures and behaviours of the system. An architecture description also indicates how nonfunctional requirements will be satisfied.

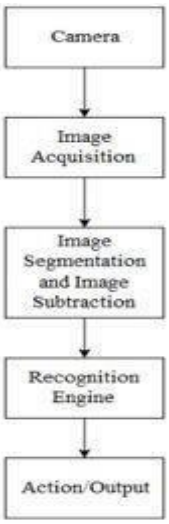
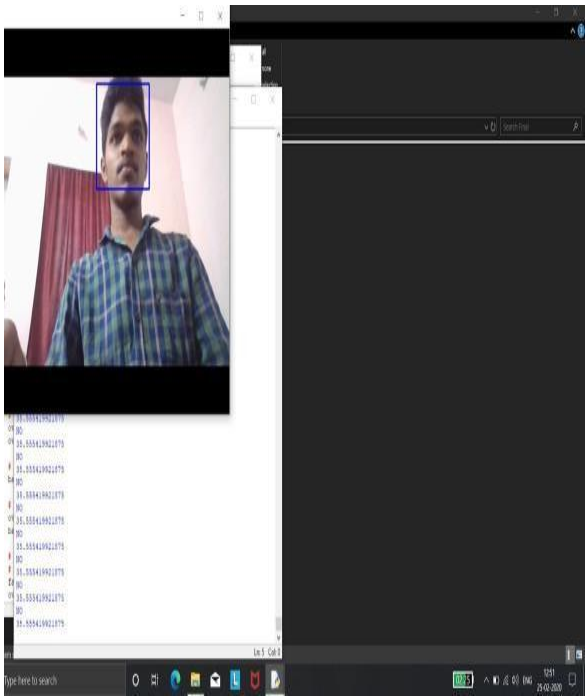


Figure 1: System Architecture

VI. RESULTS

If there are no abnormal behaviours during the exam, then the output is "**No**". Otherwise the output will be a siren.



VII. CONCLUSION

This project has developed a novel real-time video surveillance system principally dedicated to fall detection. We claim that the proposed system is not just an ordinary human fall detection system; it has many applicable properties and can be employed in different surveillance systems. Moreover while existing fall detection systems are only able to detect occurrence of fall behaviour, the proposed system is able to detect type of fall incident (forward, backward or sideway). Since temporal changes of the human shape give crucial information on human activities, we used combination of approximated ellipse around the human body, horizontal and vertical projection histograms and temporal changes of human head position as feature vectors.

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