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ONLINE SURVEILLANCE FOR EXAM

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Abstract - In recent years, there has been an increase in video surveillance systems in public and private environments due to a heightened sense of security. The Proposed System ensures to annotate video and locally coordinate the tracking of objects while multiplexing hundreds of video streams in real-time. In the area of activity monitoring, video surveillance was mainly used for monitoring the scene by security personnel. This project aims to develop a system to automatically detect suspicious activity during online examination. This system will serve as a useful surveillance system for educational institutions. The objective of this project is to design and develop a video surveillance and monitoring system that will provide easy access to live frames during an online institutions examination. This system will help us by detecting the face moving out of the frame of the candidate applying for the online examination and the notification will be send to the admin. Along with this, a set of predefined software's in the system will help if the user opens that software during any examination, the process will be automatically killed and notification will be send to the admin. This system will serve as smart security module for monitoring.
Keywords- OpenCv, Haar, Cascaded, AdaBoost, morphological processing.

I. INTRODUCTION

As the Internet and web technology is growing faster in this highly IT-enabled world, today's student generation is getting more attached with the online resources more than the books. Surveillance is one of the important aspects in various fields such as banking sectors, military areas, or personal security. Due to ever increasing technology people are relying on advanced technologies for their purposes. Security systems such as CCTV have proven to be hugely popular for security purposes due to their cost efficient nature and easy maintenance. Surveillance systems have always been playing a vital role in dealing with the burglary cases, theft activities, etc.

Manual monitoring of students during exam through invigilators and manual monitoring through surveillance videos is performed throughout the world. Monitoring the activities of students during online exam is a very challenging task in terms of man power. Manual monitoring of examination halls may be prone to error during human supervision. So there is need an automatic suspicious activity detection system will not only help in detecting suspicious activities but also helps in minimizing such activities. Moreover the probability of error will be much lesser. This system will help us by detecting the face moving out of the frame of the candidate applying for the online examination and the notification will be send to the admin. Along with this, a set of predefined software's in the system will help if the user opens that software during any examination, the process will be automatically killed and notification will be send to the admin.

II. LITERATURE SURVEY

The most modern online education that uses Web- based commercial courses management software such as Web CT. This software is not used widely for online exams, due to security vulnerabilities, and the system must rely on student's honesty. Online course exam nowadays becomes more efficient than before; online course exam is a need for enhancing the security [1]

Jung I.Y proposed an enhanced secure online exam management environment mediated by group cryptography using remote monitoring and control of ports and input [2]

Holding the Online course exam for any substance requires more preparations, whether the teacher or through the support of university students. University on the duties assigned to it to provide the necessary environment entrusted to them. Everyone is there to serve the student and we have to encourage students and train them psychologically for a computerized exam, note that many universities in the world of the complexity of computerized tests on its campus. More of recent research shows the advantage and disadvantage of using online course exam, reached to good results showed that there was a positive perception towards the adopting of online exam. They measured student's perceptions toward the use of online exam as an assessment tool on university campus within a Decision Support System Course at Al Al-Bayt University [3].

A study has been conducted on online exam and traditional exam which indicates that an online exam has better results than traditional exams. Up to now various techniques are developed in order to surveillance the exams [1].

Akshada Deshmukh enhanced a system that monitors the area where no one is permissible to enter. A digital camera was used to detect if any motion has been done. The Camera is used to catch the live images of the area in which it is being implemented. As the software detects the motion, it sends the signal from a transmitter, which is connected to the PC. The transmitter will send the wireless signal to the receiver out somewhere else, in the form of radio frequency and thus provide security [4]

Tao Xiang and Shaogang Gong enhanced to address the problem of modelling video behaviour captured in surveillance videos for the applications of online normal behaviour recognition and anomaly detection. A novel framework is developed for automatic behaviour profiling and online anomaly detection without any manual labelling of the training dataset [5]

Amanze B.C. , Ononiwu C.C proposed that the post examination malpractices or irregularities are considered by the perpetrators to be the safest, surest and most reliable form of malpractices that are capable of achieving desired objectives examination bodies as well as those connected with the marking and co-ordination of candidates' scripts and storing of scores.

They are: Substituting a candidate's original script with a re-written one. Alteration of scores in favour of candidates, Falsification of statement of results forgery, Sorting or Blocking: This is a relatively new vocabulary in the examination malpractice lexicon meaning, the use of cash or kind or both by an Examinee to influence an Examiner to award an underserved marks [6]

Nan Lu, Jihong Wang, Q.H.Wu, Li Yang proposed a novel real time motion detection algorithm. It integrates the temporal differencing method, optical flow method, double background filtering (DBF) method and morphological processing methods to achieve better performance. This algorithm is used to separate the background interference and foreground information effectively and detect the moving object accurately [7]

Nwahunanya (ed-2004), Dr. Rita A. Ndifon, Dr. Bernedette U. Cornelius- Ukpepi defines examination malpractice as the act of commission intended to make a student pass examination without relying absolutely on his or her independent ability. It is therefore clear that examination malpractice is committed by a candidate single handedly or in collaboration with other people such as other higher education students, parents, lecturers, supervisors, invigilators, printers and anybody or group of people before, during or after examination in order to obtain undeserved marks or

grades. Fraud is defined as a deception deliberately practiced in order to secure unfair or unlawful gain or the use of dishonesty, deception, or false representation in order to gain a material advantage or to injure the interests of others [8]

Akshay Choudhari, Mahesh Pawar, Onkar Jadhav, Pranay Kadam proposed a paper which provides a model of surveillance system which gives artificial intelligence to the camera. They have given the camera an ability to move as per the movements of an intruder. This is called object tracking which requires object detection. There is a microcontroller and a computer in the system along with the camera which operate together to serve the cause. The main idea is to track an intruder and thereby ensure that a single camera covers more geographical area. They have implemented this system in ideal conditions consisting of a single dark object in presence of a constant white background. A thorough study of this paper would help the reader to implement a prototype of a camera surveillance system using motion detection and tracking [9]

Shridevi Soma, Vidyashree S.A. proposed an attempt to develop a novel system to authenticate a person to appear exam by comparing name, seat number, and photograph images on the hall ticket. The main aim of the proposed work is providing security technique for offline conduction of exams using hall ticket. The problem of fraud in hall ticket detection and recognition is of great interest in the document domain as it enables us to identify the ownership of the document. In the context of document image retrieval, hall tickets provide an important form of indexing that enables effective exploration of data. The main focus of this paper is to detect fraud in the exam hall tickets which consists of textual elements like name, register number, etc. and graphical elements like photo of the candidate. The system is aimed to detect unauthorized person appearing for examination i.e., by replacing the original candidate photo with an unauthorized person [10]

III. PROPOSED SYSTEM

The aim of the project is to develop a smart surveillance system for exam. The major problems occur in examination systems are malpractices. The fundamental Problem identified is the absence of a credible identity verification system for online examination system. In this we will be creating an application where student will give a test. Whenever the student is giving the test there will be a web camera which will be continuously monitoring the student's activity. If any Malpractice action is found an alert will be send to the admin.

Modules

I. Face Detection

After the student is logged in, the student face is detected and the frame is set as per the student face positions.

II. Freezing Background Applications

All Real-Time Background Applications are been freeze within a whole Online Examination.

III. Live Time Notifications

All the suspicious activity within the Frames and Forcing to open the Applications will provide the live notification to the Admin and the BEEP Sound occurs.

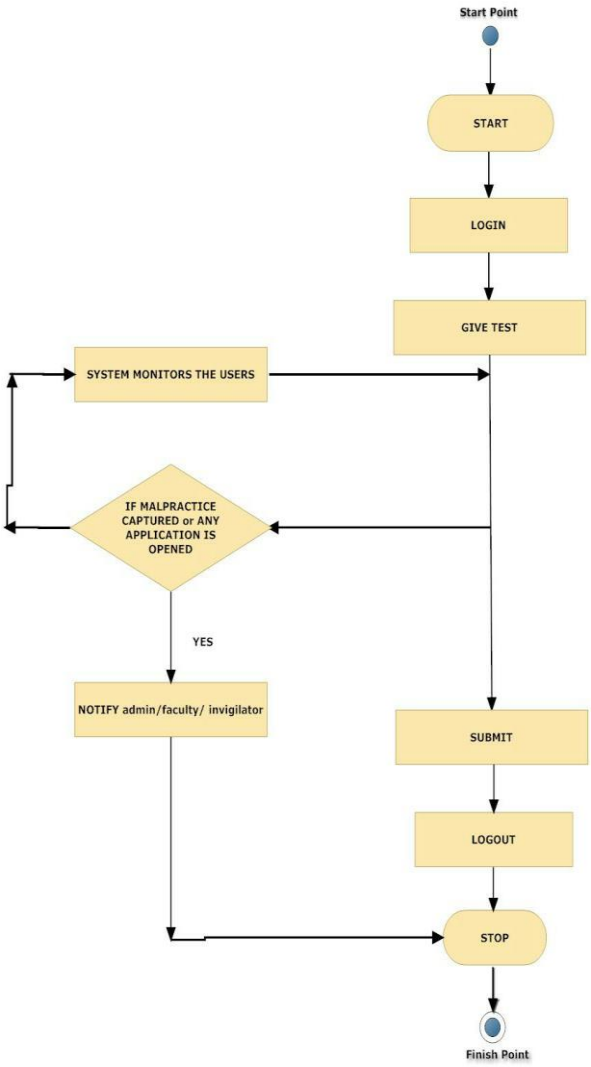

Fig1. Flowchart for surveillance and monitoring

Algorithm:

1] Face Detection Algorithm:

The Haar classifier algorithm proposed by Viola and Jones is applied here in OpenCv. Haar like features are measured which are determined by contrasting the pixel variation in nearby pixel groups. The algorithm has mainly 4 stages:

[1]Haar Features Selection
[2]Creating Integral Image
[3]AdaBoost Training algorithm
[4]Cascaded Classifiers

Haar features are being characterized by dividing the human face into different regions.

Value = Σ (pixels in black area) - Σ (pixels in white area)

Fig2. Pixel Detection in Haar Cassifier

The integral image at a pixel at location (x,y) is calculated which adds on to the efficiency of the algorithm.

The AdaBoost training algorithm is a machine-learning algorithm, short for Adaptive Boosting is formulated by Yoav Freund and Robert Schapire. It can be used in conjunction with many other types of learning algorithms to improve their performance. The output of the other learning algorithms is combined into a weighted sum that represents the final output of the boosted classifier. It builds a strong classifier with multiple weak classifiers. The different regions are being separated as facial as well as non-facial in each window.

Further, cascading is done with each window to improvise face detection.

Thus, to achieve a high detection the classifier must cascade and reach detection rate approximately 90%. Hence the image is being detected and identified.

IV. RESULT AND DISCUSSION

Number	Rules	Decision
Rule 1	Detected face missing from the frame at any point of time during the examination.	Malpractice
Rule 2	Face moving far away from the initial position for more than 2 times.	Warning
Rule 3	Face moving far away from the initial position for more than 4 times.	Malpractice
Rule 4	Open any other window in the system other than the online examination browser window.	Warning

Table 1: suspicious activities and decisions

V. CONCLUSION AND FUTURE WORK

It can be concluded that the proposed system can be very useful for the monitoring of students during online examination. Online surveillance for exam system is developed and employed for detecting impersonation of Candidates in the examination system. It can be very useful to reduce the burden on the exam administrators. So, this system-"To develop a system to automatically detect suspicious activity during online examination" can serve as a useful surveillance system for educational institutions.

In the future scope, autonomous facilities such as object moving tracking algorithm will be considered in the framework to carry out an intelligent surveillance system. In addition, high quality frames can be captured with more intelligent web devices.

REFERENCES

I. J. C. Adams and A. A. Armstrong, “A Web-based testing: A study in insecurity”, World Wide Web, 1998.
II. Jung, I.Y, “Enhanced Security for Online Exams Using Group Cryptography”, IEEE vol52, 2009.
III. Al-Mashaqbeh, I.F. Al Hamad, A., “Student's Perception of an Online Exam within the Decision Support System Course at Al al Bayt University”, IEEE International Conference on Computer Research and Development, 2010.
IV. Akshada Deshmukh, Harshalata Wadaskar, Leena Zade, Neha Dhakate, Preetee Karmore, “Webcam Based Intelligent Surveillance System”, International Journal Of Engineering And Science, 2012.

V. X. Tao, G.Shaogang, "Video behaviour profiling for anomaly detection", IEEE Transactions on Pattern Analysis and Machine Intelligence, 2008.
VI. Amanze B.C , Ononiwu C.C , Nwoke B.C, Amaefule I.A,"Video Surveillance And Monitoring System For Examination Malpractice In Tertiary Institutions", International Journal Of Engineering And Computer Science, 2016.
VII. Nan Lu, Jihong Wang, Q.H.Wu, Li Yang, "An improved motion detection method for real time surveillance", IAENG International Journal of Computer Science, 2008.
VIII. Dr. Rita A. Ndifon, Dr. Bernedette U. Cornelius-Ukpepi, "Examination Malpractice in the Primary School: Problems and Prospects", International Journal of Humanities Social Sciences and Education,2014.
IX. Akshay Choudhari, Mahesh Pawar, Onkar Jadhav, Pranay Kadam, "Camera Surveillance System Using Motion Detection and Tracking", International Journal of Innovative Research in Advanced Engineering, 2014.
X. Shridevi Soma, Vidyashree S.A., "An Automated Fraud Detection of Hall Ticket in an Offline Examination System using ANN Classifier", International Journal of Computer Applications, 2015.

