**ONLINE EXAM SURVEILLANCE USING IMAGE PROCESSING**

**ABSTRACT**

Online examinations are conducted throughout the world in order to assess the students/participants in terms of various metrics. To grade the participant examination marks will be used by the evaluator. According to the student’s perspective they used to do some malpractices to boost their marks. To avoid and monitor such malpractices the automatic alarm system using image processing is proposed in this work. First the input frame is extracted from video and face will be recognized. In order to check the students’ attention, students’ eyes are tracked. If any tracking abnormalities defected then a tolerance Score will be increased. Once the tolerance score reaches the threshold subsequently alarm will be raised. So this alert system is extremely useful for the online examination for surveillance purpose.

**INTRODUCTION**

Online tests can detect cheating if students cheat or violate their academic integrity policies. They catch cheats by using proctoring software, cameras, and IP monitoring. However, without proctoring, online tests cannot detect if you cheated if you do it smartly or involve professionals to write your work. Online examinations are conducted throughout the world in order to assess the students/participants in terms of various metrics. To grade the participant examination marks will be used by the evaluator. According to the student’s perspective they used to do some malpractices to boost their marks. To avoid and monitor such malpractices the automatic alarm system using image processing is proposed in this work. First the input frame is extracted from video and face will be recognized. In order to check the students’ attention, students’ eyes are tracked. If any tracking abnormalities defected, then a tolerance Score will be increased. As a result, some students will write exams online via remote proctoring platforms that surveillance their activities. Proctoring tools can monitor eye movements, capture students' keystrokes, record their screens and track their searches as well as their home environments and physical behaviours. This is very similar to eye detection. If the user turns his/her head the distances between the points increases and if the increase in distance is more than a certain value for at least three outer pairs and two inner pairs then infringement is reported. If the count is not equal to an alarm can be raised.

**LITERATURE SURVEY**

**Online Surveillance For Exam-** Nikhil Desai , Komal Pathari , Juiee Raut , Prof. Vivek Solavande4

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

**Online Surveillance and the Commodification of Privacy-** *Journal of Broadcasting & Electronic Media* 46.4 (2002): 586-606.

We explore how marketing imperatives shape the employment of information technologies for the surveillance of individuals online. Informed by political economy theory, we analyse the discourse surrounding marketing models of the World Wide Web, specifically Internet ad servers and infomediaries, in an effort to understand the social implications of online corporate surveillance. Drawing upon the work of Foucault, we consider the usefulness of the metaphorical Panoptic on in conceptually apprehending online surveillance and power relations in cyberspace. We argue that the participation of individuals in the online gathering of data about themselves as economic subjects results from the commodification of privacy.

**Automated online exam proctoring**.- *IEEE Transactions on Multimedia* 19.7 (2017): 1609-1624.

Massive open online courses and other forms of remote education continue to increase in popularity and reach. The ability to efficiently proctor remote online examinations is an important limiting factor to the scalability of this next stage in education. Presently, human proctoring is the most common approach of evaluation, by either requiring the test taker to visit an examination centre, or by monitoring them visually and acoustically during exams via a webcam. However, such methods are labor intensive and costly. In this paper, we present a multimedia analytics system that performs automatic online exam proctoring. The system hardware includes one webcam, one wearcam, and a microphone for the purpose of monitoring the visual and acoustic environment of the testing location. The system includes six basic components that continuously estimate the key behavior cues: user verification, text detection, voice detection, active window detection, gaze estimation, and phone detection. By combining the continuous estimation components, and applying a temporal sliding window, we design higher level features to classify whether the test taker is cheating at any moment during the exam. To evaluate our proposed system, we collect multimedia (audio and visual) data from 24 subjects performing various types of cheating while taking online exams. Extensive experimental results demonstrate the accuracy, robustness, and efficiency of our online exam proctoring system.

**Evidence‐Based Approach To Developmental And Behavioural Surveillance Using Parents’ Concerns**.- Child: care, health and development 26.2 (2000): 137-149.

Half of all children with disabilities are not identified before school entrance, which precludes their participation in early intervention programs. Such programs have known value in reducing high school drop‐out rates, increasing employment, delaying child‐bearing and reducing criminal behaviour. Although there are many screening tests that can greatly improve detection rates, these have not been popular in primary care due to test length, difficulty managing children’s behaviour, etc. An alternative is to carefully elicit and interpret parents’ concerns. Research shows that parents’ concerns are as accurate as quality screening tests and that parents are equally able to raise important concerns regardless of differences in education and child‐rearing experience. Parents’ concerns can be elicited quickly and 92% of parents can answer questions in writing while in exam or waiting rooms. Unlike screening tests, use of parents’ concerns facilitates an evidenced‐based approach to comprehensive surveillance and aids in making a range of other important decisions about children’s developmental and behavioural needs. These include when to: offer suggestions on developmental promotion; watch children more vigilantly; screen for emotional and behavioural problems; advise families about behaviour management; offer reassurance and routine monitoring of development that is likely normal; administer a second screening test; or refer for additional testing and the kinds of testing needed.

**IMouse: An Integrated Mobile Surveillance And Wireless Sensor System.** - Computer 40.6 (2007): 60-66.

Incorporating the environment-sensing capability of wireless sensor networks into video- based surveillance systems can provide advanced services at a lower cost than traditional surveillance systems. The integrated mobile surveillance and wireless sensor system (iMouse) uses static and mobile wireless sensors to detect and then analyse unusual events in the environment.

**Participatory Online Surveillance As A Supplementary Tool To Sentinel Doctors For Influenza-Like Illness Surveillance In Italy.** - PloS one 12.1 (2017): e0169801.

The monitoring of seasonal influenza yearly epidemics remains one of the main activity of national syndromic surveillance systems. The development of internet-based surveillance tools has brought an innovative approach to seasonal influenza surveillance by directly involving self-selected volunteers among the general population reporting their health status on a weekly basis throughout the flu season. In this paper, we explore how Influweb, an internet-based monitoring system for influenza surveillance, deployed in Italy since 2008 has performed during three years from 2012 to 2015 in comparison with data collected during the same period by the Italian sentinel doctors’ surveillance system.

**Good proctor or Big Brother? AI Ethics and Online Exam Supervision Technologies.**- arXiv preprint arXiv:2011.07647 (2020).

This article philosophically analyses online exam supervision technologies, which have been thrust into the public spotlight due to campus lockdowns during the COVID-19 pandemic and the growing demand for online courses. Online exam proctoring technologies purport to provide effective oversight of students sitting online exams, using artificial intelligence (AI) systems and human invigilators to supplement and review those systems. Such technologies have alarmed some students who see them as `Big Brother-like', yet some universities defend their judicious use. Critical ethical appraisal of online proctoring technologies is overdue. This article philosophically analyses these technologies, focusing on the ethical concepts of academic integrity, fairness, non-maleficence, transparency, privacy, respect for autonomy, liberty, and trust. Most of these concepts are prominent in the new field of AI ethics and all are relevant to the education context. The essay provides ethical considerations that educational institutions will need to carefully review before electing to deploy and govern specific online proctoring technologies.

**SYSTEM ANALYSIS:**

**HARDWARE REQUIREMENT:**

* Processor - Pentium –IV
* Speed - 1.1 GHz
* RAM - 512 MB (min)
* Hard Disk - 40 GB
* Floppy Drive - 1.44 MB
* Key Board - Standard Windows Keyboard
* Mouse - Two or Three Button Mouse
* Monitor - SVGA
* Camera - Web Camera

**SOFTWARE REQUIREMENTS:**

* Operating System: Windows XP or Win7
* Tools: Python, OpenCV
* Document: MS-Office 2007

**Project Description:**

As a result, some students will write exams online via remote proctoring platforms that surveillance their activities. Proctoring tools can monitor eye movements, capture students' keystrokes, record their screens and track their searches as well as their home environments and physical behaviours. This is very similar to eye detection. Students facial key points are again used for this task and the test-taker is required to sit straight (as he would in the test) and the distance between the lips key points (5 outer pairs and 3 inner pairs) is noted for 100 frames and averaged. If the user turns his/her head the distances between the points increases and if the increase in distance is more than a certain value for at least three outer pairs and two inner pairs then infringement is reported. If the count is not equal to an alarm can be raised.

**ARCHITECTURE DIAGRAM:**

**Malpractice Detection**

**Warning Alarm System**

**Continues Alarm Stop the Exam**

**Start Camera**

**METHODOLOGY**

**Modules:**

* INPUT CAMERA VIDEOS
* FACE DETECTION METHOD
* EYE TRACKING METHOD
* MALPRACTICE DETECTION

**INPUT CAMERA VIDEOS**

After the student is logged in, the student face is detected and the frame is set as per the student facePositions. First, we defined the hardware on which the video analysis will be done. From this, we captured the video in real-time, frame by frame

**FACE DETECTION METHOD**

we processed each frame and extracted the locations of all the faces in the image. Finally, we rendered these frames in video form, along with the face locations

**EYE TRACKING METHOD**

Eye localization.Thresholding to find the whites of the eyes.Determining if the “white” region of the eyes disappears for a period of time (indicating a blink).The eye aspect ratio is instead a much more elegant solution that involves a very simple calculation based on the ratio of distances between facial landmarks of the eyes.This method for eye blink detection is fast, efficient, and easy to implement.

**MALPRACTICE DETECTION**

Students facial key points are again used for this task and the test-taker is required to sit straight (as he would in the test) and the distance between the lips key points is noted for averaged. If the user turns his/her head the distances between the points increases and if the increase in distance is more than a certain value for at least three outer pairs and two inner pairs then infringement is reported. If the count is not equal to an alarm can be raised.

**CONCLUSION**

To avoid and monitor such malpractices the automatic alarm system using image processing is proposed in this work. First the input frame is extracted from video and face will be recognized..Political economy theory, we analyse the discourse surrounding marketing models of the World Wide Web, specifically Internet ad servers and infomediaries, in an effort to understand the social implications of online corporate surveillance. Drawing upon the work of Foucault, we consider the usefulness of the metaphorical Panoptic on in conceptually apprehending online surveillance and power relations in cyberspace.