

## AUTOMATED EXAMINATION SUPERVISION – A SURVEY

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**ABSTRACT:** "A person taught and reached his place through direct means. He leads the people to a better world". Education is one of the important aspects of a community. Through an educated person, the whole community evolves. Written examinations are slowly being replaced with online Choice based Tests. In this Survey paper, we have tried to study the various papers that deals with examination malpractice detection.

**Keywords:** examination, malpractice, detection, survey.

### I. INTRODUCTION

Examination has been the only criteria to test the candidate's skill required for awarding of a degree or appointing for a post. The higher, the degree or job position, the higher and tougher the competition gets.

Existing examination system in India is the same, over 70 years, which was devised by the leader of the independence time. The system had its advantages then, because education was precious, the system was strict. The teachers made sure the students received the necessary education before they get passed to the next class. Students were more than willing to study and if they failed, they tend to look for other profession.

Now-a days people don't want to do hard work to earn their rights. All they need is a degree, where they don't care if they have learned anything at all. This makes them take quick shortcut routes to reach their goal. A pass in the examination. The shortest route being malpractice. Over time, the theoretical examination has been mostly converted to objective type and then to online examinations.

#### Written Examination:

Theoretical explanation to answers has been the only form of examination from the historical period. It helps the teachers to assess the extensibility of the skillset of the student and helps to decide if the student is knowledgeable or not.

The advantage of objective type is that they are easy to grade, its easy for the teachers to identify where the student is lacking. In an array of grading options objective type answers is one.

#### Malpractice:

In the quest for degree, the candidate doesn't care for his/her moral issues and tries to cheat in the examination and take part in malpractice.

Examination malpractice is defined as any deliberate act of wrong doing, contrary to the rules of examinations designed to give a candidate an undue advantage. Examination malpractice also known as cheating is the illegal action that students take during their examinations to try to make good grades by cutting corners. [1]

Various forms of malpractice are:

- Leakage of question paper prior to exam,
- Candidate impersonating,
- Bringing in goods that should not belong to a exam hall or candidate,
- Copying,
- Exchanging information between the candidates in the hall,
- Tampering of answer sheet or marks after the end of examination,
- Sorting or blocking (through bribery),
- Misconduct or favoritism by the hall supervisor.

**Effects of malpractice:**

- Eligible candidates fail to get their recognition.
- The quality of the degree holder gets deprecated.
- This gives confidence to other students to follow the wrong path.
- Confidence in the examination system fails.
- The depreciation in quality reflects in the quality of the candidates work afterwards.
- As he himself got the post in a wrong manner, he indulges himself in further wrong doings(bribery) in his work.
- The ultimate issue being the quality and economy goes down the slope along the way.
- Increases the lack of confidence in the students when less eligible students get more marks than themselves.

The issues arising from all levels due to malpractice had led us to study the possible ways to curb such a heinous act. Apart from having strict code of conduct for the candidates, and examination conducting authority, there are additional methods to detect malpractice in real time. This survey lists all the approaches that have been tried to detect malpractice in different methods.

**Online examinations:**

Online exams, as the name suggests, is written (or rather select answer with a mouse) in a computer connected to Internet. The questions are downloaded directly to the computer before the time of examination. The candidate starts choosing the answers and at the end the system displays the statistics on answered and unanswered questions and gives choice to the candidate if he/she want to complete exam.

Every process is automated and the verification process is done at the entrance itself as to the identity of the student.

This system has numerous advantages. Some of them are hassle free exams, reduced use of paper, time, money and logistics, chance of favoritism in hall are less, processing of result is easy and quick, remote supervision, random generation of question papers and more.

At first, it seemed online exams are the solution to malpractice. But as time went by, the programmers found the loop holes in security and started to manipulate the system. Online examinations use commercially available web based software's to conduct exams. They are not universally accepted due to the vulnerabilities in the security system. There is a need for enhanced security in online examination software tools.

#### Factors to be taken care of in online examination:

- Disabling copy and paste function in the system
- Preventing users from opening new windows
- Preventing screen sharing
- Live monitoring of the candidate.

These factors may result in successful online examination.

## II. RELATED RESEARCH

When a person wants something badly, he tries his best to achieve what he wants. The way of approach was not always honest. Okoet. allin their paper[1] tries to find the causes for attempting malpractice, their effects on society and methods to curb the menace. The paper lists Impersonation, Makers Malpractice, Smuggling of Foreign Materials, Collusion, Leakage, Copying as forms of malpractice. Having a degree is more valuable than acquiring the skillset to deliver has prompted the students to attempt malpractice. Other reasons are moral issues, failure in preparation, laziness, poor self-confidence, lack of basic knowledge, poor supervision from parents, socio-economic facts, and more. Various actions performed in an exam hall are listed as misconduct that can lead to the expulsion of the candidate.

R. Mohanpriya et.al proposes a device to disable all electronic device inside the exam hall using Electromagnetic pulse(EMP). The designed device can be used in examination hall. If students use mobile phones, calculator, electronic watches etc., for malpractice then with the help of EMP the device can be damaged permanently.[2]

Nikhil Desai et.al proposed a novel application for smart surveillance system for exams using web camera to check for movements of the candidates, freezing access to other software's that may be stored in the computer prior to exam. The proposed study used Haar classifier algorithm, AdaBoost Training algorithm, Cascaded classifiers to design their system[3].

Gowsikha et.al proposes a human activity recognition tracking in indoor environment and has used this architecture to track many kinds of malpractices like peeping into another student's answer script, passing incriminating material, student position exchange, moving out/into the exam hall during exam and so on. With the help of a video surveillance, the author has used Gabor filter to preprocess the video, Artificial neural networks is used to detect human faces. Later head motion, edge detection, motion detection and skin color detection is performed to identify the hands of students. This system can alert the invigilator on any suspicious movements of the students [4].

Anuradha.S.Get.all proposes a model for automatic face detection and recognition to verify the candidates authenticity. The model uses Local Binary Pattern(LBP) for face detection. the images are captured from the video and is compared with the photos of the candidate already in the database.The model goes through an array of steps like Image acquisition, Image filtering and enhancement, Segmentation, background subtraction object of interest, featuring extraction and face detection.[5]

Saeed Ahmed et.all proposes a algorithm to detect abrupt changes in the classroom and then to evaluate the attention level of the students. It uses structural similarity index approach for key frame extraction is used.[6]

In biometrics method the samples are collected from candidate at the time of registration and is stored in a database.At the time of examination, this biometric authentication is carried out to verify the authenticity of the candidate. Biometrics authentication can be applied in the fields of facial recognition, finger prints, hand geometry, keystroke dynamics, hand vein, iris, retina, signatures, voice, facial thermo gram, Deoxyribonucleic acid (DNA).[7]

Bella SaryGold.Cet.all proposes a IOT based device to conduct the online exam. The system consists of two units-a master unit and a slave unit. Master unit acts as a back-end. A single slave unit consists of Raspberry Pi 3f module, PIR sensor, camera, 7inch touch screen LCD, WiFi dongle, HDMI cable. These combines to present a display to view the question and to record response.[8]

Gabriele Frankl et.all proposes a Secure Exam Environment(SEE) by locking down the students laptop by way of stand alone boot system and is based on KNOPPIX Linux Distribution.The model proposes a new bootable system that can be booted parallel to any existing OS with the help of a Flash Drive or DVD and PXE(Preboot Execution Environment). The new boot system denies access to local files and programs. A portable Safe Exam Browser is used to load the online exam. This results in reduced malpractice attempt in online exams.[9]

Lokesh Marne et.all proposes a system to design a Simulated Educational Exam System (SEES) that meets the distinct security requirements of m-learning environments and to integrate it with the current Moodle/Moodbile platform. This model is used to mitigate the unique exam securitythreats that exist in m-learning environments.SEES offers many exam services such as: secure and random distribution of exam questions, turbo-modeassessment, prevention of the unattended exam issue, biometric-based authentication service for anti-impersonation, preventing students from exchanging their devices during an exam, conducting examsecurely through online or offline strategies, and auditing. [10]

### III. FUTURE RESEARCH IDEAS

The solution in [3] seems like a punishment for the candidates who dare to bring in hidden electronic devices. The EMP range is small as the component used is weaker model. There is also a chance that the devices of hall invigilator may also be caught in the EMP Pulse. This cannot be used in Online examination since the computers may be affected by the pulse. The author herself says that the EMP can be replaced with other waves and more powerful ones.

Solutions in [2], [4], [5], [6] proposes facial and movement detection techniques implementing ANN and Image/Video Processing. The disadvantage with ANN in general is that they are unpredictable, when the range of data varies considerably. In the same time, both techniques require high computing power resulting in a dedicated system.

In [7] Biometric authentication has a promise of verification of the identity accurately with less stress on the system, but the continuous monitoring of the candidate using web camera for movement detections has numerous what-ifs where genuine movements can be flagged as suspicious movements since it constantly checks for the iris of the candidate.

In [8], a IOT based new device is created for the candidate to attend exam. Some of the issues that need to be noted are the cost of the unit, network security for the master, slave and WiFi network has to be adequate which is not the case. This kind of design can be implemented inside a campus where the number of students will be limited. For mass scale implementation, the system has to be highly refined and will possibly take precious amount of time.

In [9] and [10] the technical information to be handled for every exam is numerous. The system has to be platform independent. A recent study suggests that Microsoft's Edge Browser itself is not Secure enough. Therefore, in case of online examinations, the fact that the Safe exam browser will have enough security, so as to not to allow hacking of the system is pretty low.

Every study analyzed above have tried to cover almost all the factors related to malpractice. But if the hall invigilator turns a blind eye or plan to help any of the candidate there is slim chance to being detected.

The possibility of implementing IOT devices extensively in examination halls is a promising solution. Further research can be conducted for the possibility of using array of devices to handle the monitoring of Examination.

In the issue of Leakage of questions before the date of examination, it can be suggested that the exam proctor can type the question in live session and that question can be distributed to the students for them to answer. This again can be applied for descriptive type questions whereas objective questions can't be typed in live session. This can be suggested for class room descriptive examinations.

#### IV.CONCLUSION

Education is one of the important aspects of a community. Through an educated person, the whole community evolves. Written examinations are slowly being replaced with online Choice based Tests. Written exams are not only time consuming; they require lots of resources and man power. As with the competitions to get seat in universities of interview posts, this leads to higher chance of manipulation in examinations.

When examinations are conducted in online mode, the monitoring of the candidates, possibilities of attempting malpractice increases. So, there is a need for a robust system that can be used to conduct an online exam in a honest and secure way. This survey paper has studied some of the possibilities that can be used for online exams.

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