



## REMOTE PROCTOR SYSTEM

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**ABSTRACT:** There has been huge increase in the field of education in the past 1–2 years. Schools and colleges are using online to provide more resources to their students. The COVID-19 pandemic has provided students more openings to learn and improve their skills at their own pace. Hence Remote Proctoring are also on rise and AI-based proctoring systems (henceforth called as AIPS) have taken the market by storm, Remote proctoring systems (henceforth called as RPS). in general, makes use of online tools to maintain the inviolability of the examination. Although many of this software uses various modules, the sensitive data they collect raises problems among the student community. There are various factors like psychological, cultural and technological parameters need to be considered while developing of AIPS. This paper selectively reviews existing AI and non-AI-based proctoring systems. Our 360-degree analysis on RPS and AIPS reveals that security issues associated with AIPS are multiplying and are a cause of legitimate concern. Major issues include Security and Privacy problems, ethical solicitude, believe in AI-based technology, lack of training among the usage of technology, price and many more other reasons. It is hard to know whether the advantages of these Online Proctoring technologies surpass the risks. The best ever conclusion we can reach in the present is that the proper justification of these technologies and their various capabilities requires us to hardly ensure that a balance is stuck between the problems associated with the possible benefits to the best of our competency. Our work further describes the problems in AIPS in human and general aspect. It also lists out key points and new technologies that have only recently been introduced but could significantly impact online education and RPS in the years to come.

**Keywords:** Remote proctor, Face Detection, AI, AIPS, Online Tests.

### I. INTRODUCTION

Over the previous couple of years, online education has advanced rapidly. Many students are taking benefit of Massive Open Online Courses (MOOCS) and other online certificate courses. Colleges are transitioning online to supply more resources to their students. There has also been an increase in individuals rolling out their courses. All of this offers students more opportunities to be told and improve themselves. within the past year, during the pandemic situation, most educational institutions are forced to transition to a web education form. Colleges started taking classes and tests online, for courses altogether fields. The COVID-19 Pandemic also affected entrance exams and therefore the hiring process, which filters students by taking a written test. We acknowledge that maintaining academic discipline and therefore the sanctity of testing within the exams is imperative. This sudden shift to online learning has different effects on students of every level. One cannot expect the identical level of seriousness and focus from a graduate-level student and a faculty student. Each student would have their learning, understanding, and data retaining capabilities. during this situation, malpractice during academic work would get on the increase, be it within the type of plagiarism or cheating during tests. We believe the implementation of a man-made Intelligence Based Proctoring System (AIPS) is that the need of the hour.

### II. LITERATURE SURVEY

Sr No.	Published Year [References]	Methodology	Description
1	(2020) [1]	An Evaluation of Online Proctoring Tools	The purpose of this is to discover and analyze all the proctoring methods.

2	(2018) [2]	Monitor Remote Mobile Examination System.	This paper aim to develop a mobile examination system helps to detect a wide variety of cheating behaviors during mobile examination session. In this paper, proposed model for mobile examination system to detect cheating behaviors during exam, using mobile camera, microphone to monitor the visual and audio environment of the exam, the proposed model using user verification and voice detection.
3	(2021) [3]	A Systematic Review on AI-based Proctoring Systems: Past, Present and Future	. Through the systematic search on Scopus, Web of Science and ERIC repositories, 43 paper were listed out from the year 2015 to 2021. We addressed 4 primary research questions which were focusing on existing architecture of AIPS, Parameters to be considered for AIPS, trends and Issues in AIPS and Future of AIPS. Our 360-degree analysis on OPS and AIPS reveals that security issues associated with AIPS are multiplying and are a cause of legitimate concern. Major issues include Security and Privacy concerns, ethical concerns, Trust in AI-based technology, lack of training among usage of technology, cost and many more. It is difficult to know whether the benefits of these Online Proctoring technologies outweigh their risks.
4	(2016) [4]	Online Student Authentication and Proctoring System Based on Multimodal Biometrics Technology	The authors analyzed how, the system presented contains artificial intelligence-based modules for user authentication as well as computer lockdown technologies for device monitoring.

### III. PROBLEM STATEMENT

Online examinations have become an important part of the education ecosystem. Specially in lockdown, remote proctor plays important role. There are some software's already developed for proctoring but they can only make sure that candidate is valid and his face is visible to webcam. But they can't detect the cheatings like if candidate is cheating from mobile, somebody is helping him behind backside, someone accessing his screen through HDMI port and many more.

There are always certain concerns in supervision during a virtual exam, but artificially intelligent systems with a combination of face-recognition, voice recognition and behaviour tracking algorithms using integrated web cameras and microphone provide immense opportunities for the evaluators who are virtual proctors, no matter where are the candidates located.

Online tests have become an integral part of the educational ecosystem. With the growth of academic competition, the industry has extensive research to develop strong platforms to deal with challenges such as cheating, we want to reduce its inefficiency and help universities conduct online tests, testing in a secure environment.

There are always some concerns in surveillance during visual inspection, but Artificially Intelligent systems have a combination of face recognition, voice recognition and behaviour-tracking algorithms using integrated web cameras and microphones that provide great opportunities for visual probation monitors, no matter where they are. existing candidates.

### IV. PROPOSED SYSTEM

In this work, we aim to develop a monitoring system to detect a variety of cheating behaviours during online testing. Our proposed online testing process includes two phases, the preparation phase and the testing phase. In the preparation phase, the test taker must verify himself before starting the test, using a password and facial verification. This section also includes measurement steps to ensure that all sensors (camera and microphone) are connected and working properly. In addition, the examiner reads and verifies the rules for using the BAS (behavioural algorithm system), such as, no second person is allowed in the same room, the examiner should not leave. Room during test phase, etc. In the test phase, the examiner takes the test, under the constant "monitoring" of our BAS system to detect cheating behaviour in real time. We use two sensors (i.e., web camera and microphone) to capture audible and visual signals of the test site and test taker. Sensory data was first processed using six components to extract the intermediate features. These components are: user authentication, text acquisition, speech detection, active window detection, view rating, and phone detection, written exam monitor. Thereafter, medium-level features within a temporary window are rejected to produce high-level features, which are then used to train and test the cheat separator. It is important to use a variety of rich features to improve the performance of BAS system acquisition, as the discovery of other cheating behaviour depends on the maturity of many behavioural symptoms.

## V. SYSTEM ARCHITECTURE

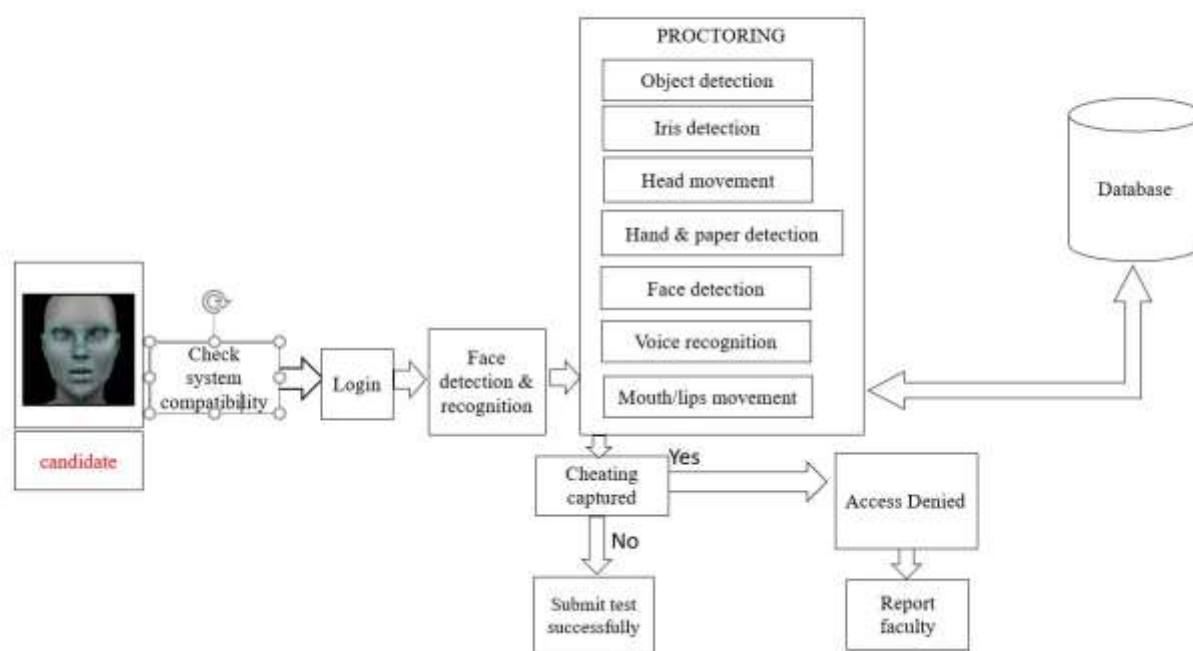


Figure 1: system architecture of rps

## VI. PARAMETERS COSIDERED FOR DESIGNING

The parameters are:

### Camera:

This is a device comes as a component of just about all laptops and is an easily available add-on for desktop systems. The webcam is employed to supply the proctoring authority (PO) with a live view of the user. this manner the user will be monitored to make sure that they're attentively giving the examination, while simultaneously checking for any attempts at cheating. Using face recognition technology, the system can ensure that only the registered in user is giving the exam and this manner prevent impersonation. The webcam may be wont to check for the other people within the background that try and help in cheating.

### Mic:

This is again a device that comes attached to most systems. The mic is often wont to record audio and analyse it. The analysis can then be accustomed determine whether the user is being assisted by someone out of the sphere of camera view or via a invoke another device. As background noises may also be considered as dishonest activities, the software has to be trained to forestall false positives accordingly.

### Human Proctor:

The systems in use today don't have 100 percent accuracy rate. These require human oversight for addressing false positives and to help with grievance redressal. this fashion the systems may be continuously trained to higher the AI working within the backend. The PO will analyse the report generated by the AIPS to render final judgement regarding the malpractice.

### Preventing Mobile Phones:

In this method, the preventive measures are taken to access the test answers using mobile phones and blocking a number of the sites that are happening which generally contains the answers for sure questions. Almost 35% of scholars use mobile phones for cheating in online exams. The technology detects devices that are under usage, trying to find similar content associated with the examination and can be flagged if detected with some activity. It also scans internet browsers and blocks the sites that are browsed for answers and reports the identical which contains the related test questions and answers. this method helps to avoid any quite leakage of online question papers.

### Hand detection:

We are introducing one more important feature in this project which will be also helpful in online handwritten examination. In this pandemic, many of the school's colleges need to take an exam online by students and teachers proctor them on video meet or even if they use any remote proctor software, that software cannot detect the cheating in handwritten examination. So, we find out solution that we will let the students put the camera in such a way that they're both hands and paper will be visible in camera and in background we will use our proctor which will consist of one more feature called hands and paper detection. Let's take one example to understand this feature. In this example students are attending the handwritten exam in video meet where their supervisor is watching them and suddenly, they have seen that one of the students whose only one hand is visible and another hand is not visible. So now supervisor have doubt on him that he may be using his mobile or book. So, supervisor will ask him to show the room. The same thing hand detection will do in case of all students. One single supervisor can't watch so many students. So, this proctor will record all the misbehaviour of student and notify to the supervisor.

### Mouth Opening detection:

In many proctors, we have the feature of recording the audio, so that we can find out student is cheating by talking with someone. But now-a-days, we found that if we talk with mouth movements without any voice, it will also audible to the next person. And also, students use one

more trick that is they use their Bluetooth headphones and keep them away in cupboard or out of room, so that whatever they talk will not audible to the proctor. For this purpose, we are introducing the mouth opening detector. This detector will detect the mouth movement if student opens his mouth and try to speak something. Then proctor will notify to the supervisor and then supervisor will take an appropriate action.

## VII. PROBLEM ASSUMPTIONS

In this research, certain assumptions are made for the students attending Exam

- Students must be alone in the room where the test is given and away from any kind of communication with parents, family members, and friends. (Security measure)
- Student needs to sit in front of the computer with no electronic gadgets such as mobile phones, pen drives, flash memory cards, etc. during the exam (to avoid cheating)
- Students can use writer material such as a book, paper, pen, and pencil
- Throughout the examination process the environment must be same, i.e., the desk, chair, clothes and system related peripherals such as the keyboard, mouse, etc. must be same (to check the consistency of environment).
- Student needs to arrange the webcam in such a way that it is showing the same images repeatedly.

The lighting of the room must be same throughout the examination duration (for better detection of cheating from images).

## VIII. CONCLUSION AND FUTURE SCOPE

There is a need to know if the student who enrolls in an e-learning course is the same student who completes the learning process and receives academic credit. In this work we present an application which offers a continuous authentication identity service of online student through constant biometrics (face, voice, typing) recognition system and a continuous online proctoring and monitoring system. Allowing online courses to take advantage of something that benefits both institutions and students.

The technical results shows that fully automated, continuous (not scheduled), passive (for students), scalable, fully integrated in LMS (with few HW requirements), secure and private biometric authentication and proctoring solutions are affordable and reliable. Furthermore, they exist in the current e-learning supplier market. As future work, more robust biometric models are needed to avoid undesirable deviations due to variance in face pose and light and noise conditions, and reduce human cross-verification needs only for quality warranty purposes (not to complement automatic system limitations).

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