Proctored Exam Platform

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Abstract— **Online education is trending worldwide and gaining tremendous popularity in India as well. Many schools, colleges and universities are switching over to the online mode of conducting classes and exams. During live or online classes, teachers and students interact virtually. Conducting classes online is an easier task as compared to conducting online exams. Conducting online exams and their supervision can be little tricky and cumbersome as the students need to appear for the exams from different/remote locations in different time zones or maybe in different languages. The traditional mode of conducting exams is not very efficient and hence a lot of malpractices can happen which will fail to uphold the rules and regulations. Hence there has to be a certain methodology to conduct exams. When it comes to the concept of proctoring and evaluation, there are very few technologies which are carrying out the process flawlessly. Secure Browser mechanism with Remote Proctoring, During an exam activity is going on, candidate might try to open a new browser or window to search for the answers on the internet. This hampers the integrity of the Online Exam. The secure browser mechanism prevents the user from opening any other window during examination activity. It ensures that candidate's browser windows are locked for other activities. Hence, this feature makes it impossible to even switch to a new window. This helps in securing the exam from unauthorized cheating.**
Considering the concept of prediction that is used in technology and the amount of data available today, we will be able to build an efficient model which handles both conducting and evaluating a student's performance in an exam. Since most of these problems are real world problems, it will act as a very useful contribution to the society. In an eagle eye's perspective, the domain of this project will be related to online exam Proctoring along with evaluation and prediction of marks.

Keywords—— **Online examination, remote proctoring, secure browser, face detection, image processing.**

I. INTRODUCTION

Currently there are very a smaller number of real-world applications where exams are being conducted safely as well as in an organized manner. Hence there is a requirement of a software which does all the work effortlessly. Since there is a requirement of software for conducting exams, there has to be a software which is capable of monitoring the exam process. It should provide a platform to access the tests and also perform checking, verification and evaluate the marks scored by the student. It should also be able to predict or track the marks scored and give the result. A student database has to be maintained in order the store the details and result of the student along with the teacher to store the subject taught and to which teacher the student belongs to. An additional feature is that the exam should be thoroughly proctored in order to avoid malpractices. The application must be capable of hosting exam separately for different students along with the proctoring. The proctored data is stored for future references in order to verify the quality of the exam conducted. There must be a separate admin who monitors all the processes along with the availability to edit the marks scored if there are any changes.using antibiotics. During the exam activity, the web camera is used to capture the photos of the candidate after certain intervals of time (approximately 30 to 60 seconds). These photos are compared with the one which is already scanned and stored in the system during validation. This helps to keep a check on the candidate who attempt for cheating with disguise. If the system finds any deviation, then it is flagged as an error and notified to the administrator. These photos are analysed by the proctor to ensure the security of the online exam. This mechanism is especially useful in the areas where internet stability is relatively low. Audio proctoring is another essential yet an underestimated mechanism of remote proctoring. This feature captures noise or voice such as voices of people talking or videos being played by the candidate during the online exam. It uses speakers for this purpose and it can record even the slightest deflation in the audio frequency coming from the candidate's environment. If there is any deviation in the audio, the system sends an error notification which can be analysed by the proctor for any suspicious voice notes or distortions. And this way, it can be counted as audio or voice based cheating. These were the key features of Remote proctoring. Let us understand more about AI based proctoring and its features. The project can directly be implemented as a real-world problem statement. You never have to print an exam for your students and hand them out. We will be able to setup an exam in such a way that it will auto-grade itself. If you only use multiple choice questions you never have to check an exam again. The online exam system will take care of that hassle. Safe mode since most of the work is automated. It saves more time. The distribution of the exam doesn't take more time. Just upload

the email address of the students and send them an invite. And after the exam they get their result instantly. Another point is that online examination is nature friendly. It doesn't require any sought of paperwork. Sending an email is free.

II. RELATED WORK

Paper mentions a technology which propagates the use of webcam for automated online procturing

In 2019, Hadian and Yoanes proposed a way to learn online called as m-learning. It states that using m-learning or remote education can increase ability to reach people who don't have an access to campus. Exams are important components of educational programs as well as on an online learning program. In an exam, a proctoring method to detect and minimise the cheating possibility is very important to ensure that the students have learned the material given. Various other methods had been proposed to provide an efficient, comfortable online exam proctoring. Start with implementing an exam design with hard constraints in a no proctoring exam, a remote proctoring using a webcam, a machine-based proctoring and finally research on automated online proctoring. A visual verification for the whole exam session is needed in an online exam, therefore a face verification is needed. A remaining problem in face recognition area is the system robustness for pose and lighting variations.

In 2016, Yuan Zhenming, Zhang Liang and Zhan Guohua proposed that a Web-based Examination System is an effective solution for mass education evaluation. They developed a novel online examination system based on a Client/Server framework which carries out the examination and auto-grading for objective questions and operating questions, such as operating Microsoft Windows, editing Microsoft Word, Excel and PowerPoint, programming, etc. It has been successfully applied to the distance evaluation of basic operating skills of computer science, such as the course of computer skills in Universities and the nationwide examination for the high school graduates in Zhejiang Province, China.

In 2016, Jin, Jian, Feng, Huihui, Gu, Liubao developed an intelligent exam management system based on the Browser/Server structure for Hebei University. The system was integrated with three levels: user interface, business logical, and data access. These levels manage the test arrangements and performance of students through intelligent data processing. Three function modules based on ADO.NET, C#, and ASP.NET technology and business demand were developed; the modules were user, exam arrangement, and performance management. 10 sub-function modules, including the exam arrangement module and the score registration module, were realized. The practical operation results show that the established intelligent exam management system can efficiently achieve education informatization and plays a significant role in educational administration and management system. Consequently, the efficiency of

examination work and the safety of the exam management system can be enhanced.

In 2018, V. Nandini strived to build system that can evaluate descriptive answer. The report said that there lie many challenges in recognising natural language answers and extracting the precise meaning from the answer given by the student. A syntactical relation-based feature extraction technique is proposed for automatic evaluation of descriptive-type answers. The system has also adopted a cognitive-based approach where the student answers are judged for its correctness based on the phrases used for answering the questions.

III. METHODOLOGY

Design and implementation projects require a range of methodologies to be followed systematically and precisely for a robust, reliable and a repeatable outcome. Incremental Model is a process of software development where requirements are broken down into multiple standalone modules of software development cycle. Incremental development is done in steps from analysis design, implementation, testing/verification, maintenance. Each iteration passes through the requirements, design, coding and testing phases. And each subsequent release of the system adds function to the previous release until all designed functionality has been implemented. One of the most important things that will be covered is that when the exam is hosted in a browser, the student must not be able to switch between other tabs for a specific time interval. If he/she tries to switch tabs, one must be restricted to the current as well as other exams. One of the most important things that will be covered is that when the exam is hosted in a browser, the student must not be able to switch between other tabs for a specific time interval. If he/she tries to switch tabs, one must be restricted to the current as well as other exams. One of the most important things that will be covered is that when the exam is hosted in a browser, the student must not be able to switch between other tabs for a specific time interval. If he/she tries to switch tabs, one must be restricted to the current as well as other exams.

To start off with any project we have to understand we need it to do and also the specifications of the project. Without knowing this we may never start any project. A software requirements specification is the basis for your entire project. It lays the framework that every team involved in development will follow. A software requirements specification (SRS) is a document that describes what the software will do and how it will be expected to perform. Software Testing is a method to check whether the actual software product matches expected requirements and to ensure that software product is Defect free. Software Testing is a method to check whether the actual software product matches expected requirements and to ensure that software product is Defect free. It involves execution of software/system components using manual or automated tools to evaluate one or more properties of interest given to the

approval set to expand the precision of the undertaking. The project can be divided into few subcategories like user or student interaction, hosting an exam, client or server, proctoring or evaluation etc.
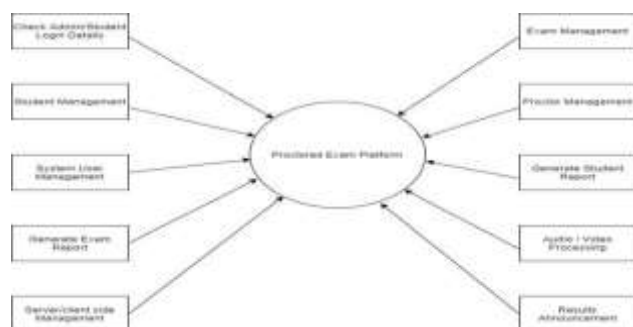

Fig. 1 Architecture

The user data such as students' personal details, their module marks and course details and as well as the admin details shall all be stored in a secure database. Many educational institutions have created virtual learning infrastructure to offer e Learning courses for students globally. However, it's financially unviable for students to travel long distances to take the certification exams. Online proctoring eliminates that necessity as students can take their exams without traveling, regardless of their location. A flexible schedule allows students and teachers to exercise more control over their working environment and schedule - the advent of online proctoring has allowed for scheduling and taking the exams at a mutually convenient time. Online proctoring lends unparalleled ease to the candidates, allowing them to take the exams at a time of their convenience. You can give your exam to students located elsewhere, irrespective of your physical location, which is especially beneficial for international students, though it is equally applicable for local students. It works well if you are studying part-time or working. You will not be required to always be on the school campus. Online proctors can supervise all types of exams, and online proctoring works for you - whether multiple-choice questions, essays or aptitude tests. It can offer assistance in any exam in a digital format. A video proctoring system can be used in live proctoring to ascertain a student's handwritten notes.
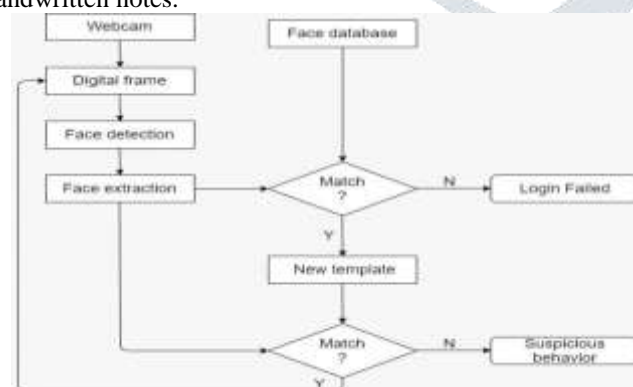

Fig. 2 Flowchart.

Fig 2. shows the working of the video proctoring system. Input is taken from the webcam; the media stream is passed through a pre-trained face detection library which will match the webcam data with the trained model. If there is a face detected the proctoring will continue otherwise the system will interrupt the proctoring to perform further action.

Audio proctoring can also be used by checking the decibel level in the simplest form or by matching human voice with a database in a more complex proctoring system.

Apart from these the user activities inside the computer may also be monitored. Switching tabs can be disallowed and user interactions can be handled.

IV. CONCLUSION AND FUTURE WORK

Considering the fact that things have changed over time which also includes the concept of examination, it's time to bring modern solutions to modern problems. Examination is one field where technology is not being used to its full potential. This project brings in a spark to all the enthusiasts who are working on developing applications related to examination field by attempting to generate a real time console where the process of hosting, monitoring and evaluation of an examination is done. Through this project we would be able to build a user-friendly application that contains backend, front end as well as server-side programming altogether combining many different programming languages and API. More research about malpractice can be done in order to make the system more efficient in detecting flaws in exam. Proctoring can also be improved by adding more hardware sensors to the device which will be able to detect flaws more carefully. Future work reserved is the location access that can be given in order to track the student from where he/she is exactly attending the session from and the availability of resources for malpractice. The host would be successfully able to organize the kind of exam he/she wishes to and the students getting an opportunity to give their exams in the same platform in the absence of an invigilator through proctoring. Again, the evaluation of the scripts of each student is automated in the absence of a physical evaluator and displaying of the results done in the same platform

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