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SECURE ONLINE EXAM MANAGEMENT SYSTEM

Madhura Shirodkar[1], Sarvesh Batham[2], Cheenmaya Kopade[3], Falguni Ghate[4]

[1] *Professor, Department of Electronics and Telecommunications, Xavier Institute of Engineering, Mumbai, India*
[2,3,4,] *Student, Department of Electronics and Telecommunications, Xavier Institute of Engineering, Mumbai, India*

Abstract – *In the Online education environment, students and teachers use Internet on a regular basis in order to conduct lectures, share the learning material and take assessments. The world is familiar with what E-Learning is M-Learning has enhanced the e-learning by making the process "learner centered". With rise of smartphones and tablets, several million pages of educational material can be shared online. However, exam part of curriculums not very well adapted to this new technology. Executing exam security in open environment where student has his/her mobile phone/ laptop connected to internet where student can easily exchange information can be most challenging task. This project aims at identifying various vulnerabilities that can violate online exam security and try to resolve all problems and create more secure online exam system. Technology Used: The front end of software will be designed using HTML, CSS, JavaScript, bootstrap. Machine learning algorithms can be used for face detection and during proctoring.*

Key Words: Online exams, Face Recognition, Online Proctoring.

1. INTRODUCTION

Online Exams have got a surprising momentum especially during the pandemic. Almost every college is switching their traditional exam format to Online Examinations. They are able to conduct mcq exams with help of available platforms but the platforms lack strong candidate verification. Moreover those platforms have increased the malpractices of candidates during exams. Hence we introduce this study. The main objective is to develop a online exam system which is secure and through online exams we can save time expending between paper and result. The main idea behind developing this project is to provide fast way of conducting exam through internet in a secure environment. The project will have various features to conduct exams in secure manner like proctoring and face recognition for user authentication. The results will be stored in a excel sheet so it will be useful for teachers to keep records of student grades.It can reduce the hectic job of manually assessing the answers as responses from the candidate can be checked automatically and instantly and the user can give the exam anytime and anywhere.

2. LITERATURE SURVEY

[1] This paper aims to detect student's competencies by designing and implementing an adaptive online exam system which will determine different question sets automatically and interactively for each student. The tools and software's which is used in this project are MYSQL for storing the databases, application server layer, a browser from client side, PHP programming language, Apache to develop the online exam software, HTTP protocol, Macromedia Dreamweaver 8 software, JavaScript. IPSec or Kerberos must be used to ensure data security, between the database and application server. The data which is to be sent over a network must be encrypted with SSL. The tools and software's which is used in this project are MYSQL for storing the databases, application server layer, a browser from client side, PHP programming language, Apache to develop the online exam software, HTTP protocol, Macromedia Dreamweaver 8 software, JavaScript.

[2] The motivation behind this paper is to secure the existing online examinations which are very susceptible to impersonation and cheating. The goal of this project is to conduct the online examinations by introducing different cryptographic protocols that offer a high security level for all exam stages. Since there will be usage of cryptography, there will several keys present in this process. Encryption and Digital Signature will also be beneficial to maintain the security of the questions. The proposed scheme requires that students, teachers and the manager have a key pair of a public key cryptosystem [PKI]. Similarly, grading and obtaining the scores of the exams with the help of cryptographic protocols will take place.

[3] This paper is about building web based application test management software, namely interactive exam management system (IEMS). The Proposed system has different features like good architecture designs, ease of uses, rich features, flexibilities and extensibilities. In this system, they have included the feature of using multimedia in the question framework. The IEMS is a web application working on a client-server model via a HTTPs protocol. The user can access the IEMS via the internet eliminating the network address translation problem and also limiting the firewall problems. They have developed the IEMS using Groovy language under Grails framework. The result of the test can be converted into different file formats like excel sheet. The individual result of candidate can also be viewed.

[4] The given paper proposes an online exam management system which provides continuous

candidate verification during exam by the use of automatic and continuous proctoring. Their proposed system uses face recognition for candidate authentication. In their system they have incorporated both; Static as well as Continuous authentication of the candidates. The model relies on facial recognition for continuous authentication of students using Deep Learning during an online exam regardless of the discipline. Additional feature of this system is that it checks the quality of the image to ensure that a good digitized quality of photo is captured. At the end, it stores all the photos taken into a database. This system provides logging, where exam sessions can be viewed by real time test administrators.

[5] This paper proposes to use a face-recognition based online exam system using the Eigen face method for student attendance and its candidate verification. The face is the mind index. This is a complex multidimensional structure and requires good computational techniques to recognize. If automatic system for facial recognition, the computers get confused with factors like changes in illumination, variations in poses and changes in the angle of the face. This attendance application with face recognition uses the Eigen face method to carry out facial recognition processes.

[6] As use of MOOC (massive open online courses) has been increased tremendously in the ongoing pandemic there is need of E-proctoring during the conduction of online exams at remote places. Visual, Audio and Speech surveillance can be used using the audio and camera of examinee computer. Also the screen of candidate can be monitored or whether the candidate is switching the tab can be detected .A fuzzy cognitive map model can be used in the study. It uses the advantage of fuzzy logic to help in decision making by studying different factors related to E-learning.

3. METHODOLOGY

This project's aim to create Windows application software that can be used to conduct and manage online exams and have a better security. The software will reduce the chance of student malicious activities and creates a secure exam environment. This software will have different levels of candidate authentication like Username and Password and face recognition. Teacher will have a separate login to this software which he/she can use to create classes and exams. The no. of students in the class, schedule of exam, exam time and admission of students to the course will remain in hands of the respective teacher.

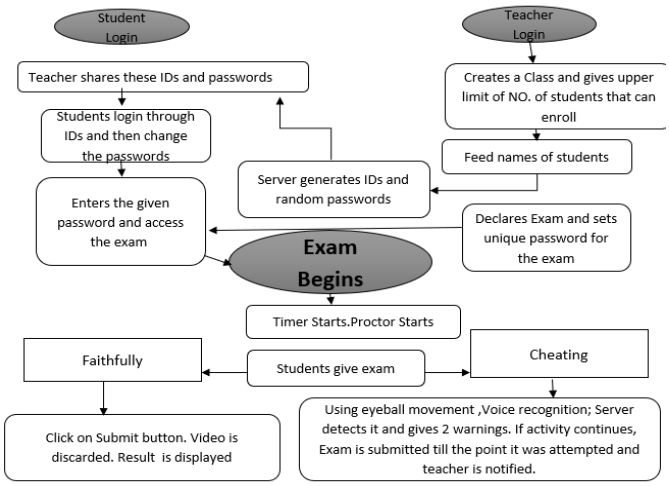

Fig -1: Event Flow of Proposed System

Fig -1 Shows how the software will function right from the start. Student will be given Unique ID after registering on this software and he/she can change the password later. Students should undergo face recognition to register on software successfully. The teacher will admit students to course and schedule the exam along with uploading the questions. Student can access the exam using the exam key provided by administrator. Each student will get randomly shuffled set of questions which he/she has to solve in allotted time.

This software will have "Online Remote Proctoring" which will monitor students throughout the examination with the help of camera (for mobile phone) or webcam (for laptops). Using Machine Learning The proctor will be constructed to detect eyeball movement facial expressions and speech recognition. If it detects any kind of vulnerability, the software will give 3 warnings after which the exam will be automatically submitted by software. The student cannot access another application during exam on the same machine. In case of any network issue or sudden network failure, the exam will be automatically saved and student can get re-access to exam after contacting the administrator.

1. Creating Database : It is a relational database which will contain all the entities and its attributes.
2. Front end: The design, layout of the software and how it will interact with the user by using HTML, CSS and JAVASCRIPT.
3. Back end: After creating the front end back end will be developed which contains the mechanism of the application. This will communicate with the databases as well as with the front end languages.
4. Features: To make online proctoring more secure OpenCV will be used to monitor the eye ball movements and also will record the text through microphone i.e. (speech recognition). These features will be added in back end development and then will be used for proctoring purposes.

4. FACILITIES REQUIRED

Software requirements:

1. Windows OS

2. Mysql

3. Visual studio

Hardware requirements:

1. Processor-Dual Core

2. Memory-1 GB ram

3. Internet Connection

4. Webcam and Microphone

5. CONCLUSION

In this paper we have discussed how a secure online exam management system can be created that can prevent different malpractices. This system will be beneficial as it will provide enhanced candidate authentication and verification and reduce the problem of Student impersonation. The teacher will be able to proctor the student and keep a track of his/her activities throughout the exam. This system is totally online leading low or no usage of paper. The cost of the system is zero. Students can use the software for free. This system can be more reliable and efficient platform for conducting online examinations.

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