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Next-Gen Assessment: Online Proctoring and Survey Methods in Web-Based Learning

Aniket Choudhari

PG Student, Department of Computer Application, G. H. Raisoni University, Amravati, Maharashtra, India

ABSTRACT

Confronted by the increased requirement for online education and computer-mediated data acquisition, institutions require an integrated system having a web-enabled infrastructure which addresses online surveys and also offers proctored tests. Herein lies described the framework as well as integration of an amalgam web-enabled portal able to accommodate online questionnaires along with proctored tests. It is attempting to enhance security, scalability, and ease of use as well. Aside from granting secure authentication and real-time monitoring to safeguard the integrity of online tests, the solution also features complete survey administration capabilities for data collection and analysis. The technology safeguards against evaluation malpractice through automated fraud detection, facial recognition, and more. It even aids academic and organizational research with the integration of real-time analytics and customizable survey tools. Demo tests are also offered in the portal. if their peers had not registered. The document further asserts that their new way of doing remote assessments and surveys has the capability of making them far easier and quicker to master, in addition to making them suitable for research, business training and learning field by utilizing usability testing, performance measuring and users' feedback methodologies in analyzing the efficiency of the portal. Results Indicate that the mixed method gives an unbroken user experience, enhances survey effectiveness, and enhances faculty confidence in the reliability of assessment.

KEYWORDS: *Central ASP.NET, Web API, SQL Server, HTML/CSS, JavaScript, React.js*

I. INTRODUCTION

The quickly growing advancement of technology based on computers, an online format for schools, and various technologies utilized in assessments, accomplishment has change survey and assessment practices in various fields, including research, managing employee training in business and industry, and in schools and education. Over the last few years, online education has advanced rapidly. More students are taking advantage of Massive Open Online Courses (MOOCS) and other online certificate courses[1]. More specifically, with career-support resource, it was determined that six out of 10 organizations are also using web-based self-service tools to engage employees and job candidates; and slightly fewer organizations were to provide employees with an online training solution . As such, this research is relevant in exploring the extent to which Webcam-based surveillance deters misconduct in online examinations. There have been many suggested technologies on countering the problem, but we believe that our study uniqueness. [2]. the higher levels of scalability and efficiency have enhanced assessment online education has transitioned to an online space. Classes and exams have moved to both an online and/or online format for each subject, with schools accepting assessments produced through an online format and/or online assessment tool. Importantly, the recruiting and screening processes of candidates have moved to an online process for many organizations. Paper-based tools that had been used to screen candidates, were significantly replaced with web-based assessments, particularly the result of COVID-19.

Webcam monitoring is using the webcam of the students for the online classes and exams by **monitoring student in real-time**. Before the pandemic, many institutions and universities had started using the proctored systems for their online programs. Tests like GRE, GMAT, CAT that are said to be competitive and adaptive have traditionally relied on secure proctoring mechanism. Keeping in mind the above scenario, this research aims to research how effective webcam monitoring is in reducing misbehavior in online exams. Many technologies give a solution to this problem, but this research offers an innovative perspective on this debate.

The concept of **Remote Proctored Theory and Objective Online Examination(Rptoe)[8]** ,focuses on creating a connected environment where examinees and teachers can work in harmony. The main purpose is to fulfill the rising demand for online exams with integrity. Remote learning is no longer an alien concept and has gained much popularity in educational institutions lately, replacing a huge chunk of conventional classroom-based learning. The motive of Remote Proctored Theory and Objective Online Examination is to meet the demand of the institute conducting exam online. [3]

There is a growing trend towards using the electronic exams system as opposed to the traditional exams system for multiple reasons[4]. most importantly being the urgent need to transition to this exam type due to some state emergency circumstances that prevent the adoption of the traditional exam system, in addition to the advantages that the electronic exam system provides that will facilitate the examinee to pass the exams easily and smoothly [5].

Abbreviations and Acronyms:

- **AI** – Artificial Intelligence
- **CAT** – Common Admission Test
- **COVID-19** – Coronavirus Disease 2019
- **GMAT** – Graduate Management Admission Test
- **GRE** – Graduate Record Examination
- **ICT** – Information and Communication Technology

- **LMS** – Learning Management System
- **MOOC** – Massive Open Online Course
- **OE** – Online Examination
- **OP** – Online Proctoring
- **RPE** – Remote Proctored Examination
- **RPTOE** – Remote Proctored Theory and Objective Examination
- **WBS** – Web-Based System

Units:

Since the given content primarily discusses online examinations, technology, and remote learning, there are no direct physical units involved. However, if your research includes technical specifications or data analysis, you might consider using:

- **Percentage (%)** – Used for statistical representation of survey results
- **Seconds (s), Minutes (min), Hours (h)** – If time-based analysis is included
- **Bytes (B), Kilobytes (KB), Megabytes (MB), Gigabytes (GB)** – If data storage or bandwidth is analyzed
- **Resolution (p)** – If webcam-based proctoring includes image quality (e.g., 720p, 1080p)

II. RELATED WORK

The COVID 19 pandemic also made online learning a very popular option. Therefore, online proctoring is a very popular feature in schools and certification programs. The effectiveness of online proctoring, technological advancement and ethics have already been covered in earlier studies. AI-based research-backed proctoring methods like face recognition and gaze tracking can prevent cheating during online tests. However, there are always concerns regarding student stress, system reliability, and confidentiality of data. There have been classic proctored systems employed for decades in high-stakes testing such as GRE, GMAT, CAT. However, employing it for college exams is behemothic. Recent research indicates that hybrid proctoring (human plus AI) models will enhance precision and equity. To enhance the security and openness of web-based tests, scholars are researching proof systems based on blockchain technology.

III. DATA AND SOURCES OF DATA

This research uses both primary and secondary data sources. Researchers will gather primary data through surveys and interviews with student users, instructors/professors, and proctors to assess the effectiveness, challenges and ethics of online proctoring. We will assess the accuracy of the system, along with the user experience of all the stakeholders through experimental data coming in from controlled proctored tests. The secondary data will include research articles, reports, and government policies regarding online testing. Information on technological advancements will be obtained from the statistics of online proctoring providers, e.g., ProctorU, Examity, etc. By using a mixed-methods approach, we can achieve an in-depth understanding of the effectiveness and future improvement of remote proctoring systems.

IV. RESEARCH METHODOLOGY

The research compares the effectiveness of online proctoring systems using a mixed-methods methodology that combines qualitative and quantitative techniques. Surveys and questionnaires were distributed to students, instructors and exam authorities to get their views, issues and experiences with online proctoring. To gain professional insights on system reliability and improvements, university officials and IT professionals were interviewed on a systematic basis. In order to determine the accuracy of AI and cheating rate along with user interface, online simulated exams were carried with other proctoring systems. Information/Statistical and Thematic Analysis: The experiment data and survey response, will be analyzed through descriptive statistics and correlation analysis. Qualitative interview data will be coded to identify key themes and issues. Methods of Research The research compares the effectiveness of online proctoring systems using a mixed-methods methodology that combines qualitative and quantitative techniques. Surveys and questionnaires were distributed to students, instructors and exam authorities to get their views, issues and experiences with online proctoring. To gain professional insights on system reliability and improvements, university officials and IT professionals were interviewed on a systematic basis. In order to determine the accuracy of AI and cheating rate along with user interface, online simulated exams were carried with other proctoring systems. Information/Statistical and Thematic Analysis: The experiment data and survey response, will be analyzed through descriptive statistics and correlation analysis. Qualitative interview data will be coded to identify key themes and issues. In order to make the most effective use of technology, schools and colleges have turned towards online education. While having many advantages, students at colleges, or adults at training center may start cheating in examinations. Psychology. Normally accepted use of online examination with strict supervision is not possible. The present examination system is not only preposterous but also detrimental. Examination designed in which writing ability can be tested properly are not conducted periodically or not in any model. The colleges and Universities are moved to online education. Colleges and training center students or adult learners can cheat during examination even with advantages. Psychology. Under normal circumstances, a fully online examination system with strict supervision is not acceptable. The existing examination system is ridiculous and harmful. Exams that can test writing skills are not held periodically or in any format.

Figures and Table

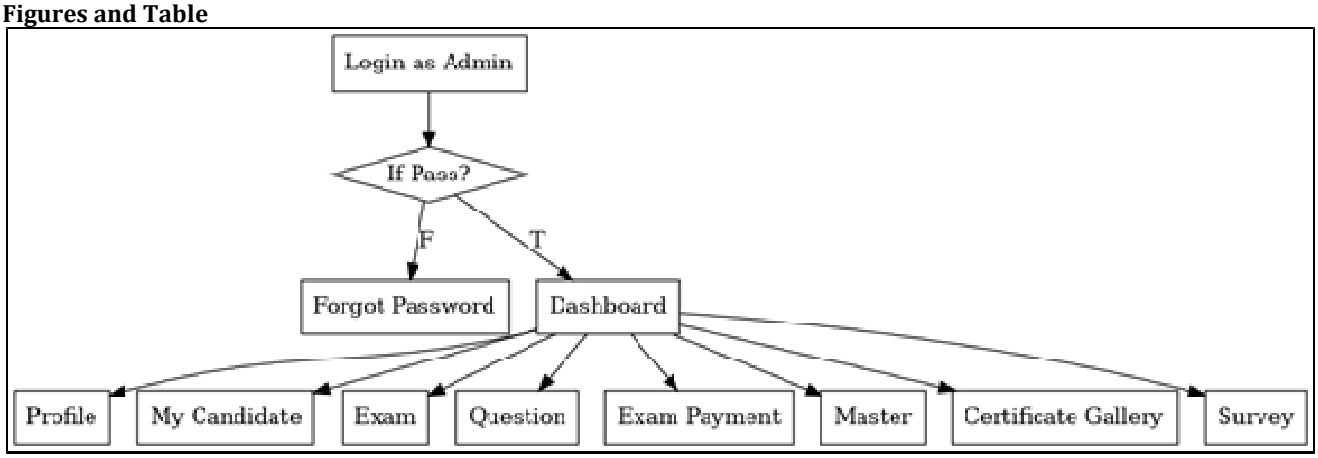

Fig no. 1

This flowchart visually represents the workflow of an **Online Examination System** from the perspective of an **Admin Login**. Below is a step-by-step breakdown of the process:

1. **Login as Admin**
   - The process begins when an administrator logs into the system.
2. **Authentication Check ("If Pass?")**
   - The system verifies the login credentials.
   - If the authentication **fails (F)** → The admin is redirected to the **"Forgot Password"** option.
   - If the authentication **succeeds (T)** → The admin is directed to the **Dashboard**.
3. **Dashboard Access**
   - Upon successful login, the admin is granted access to the main dashboard, which serves as the central hub for managing various aspects of the system.
4. **System Modules (Accessible from the Dashboard)**
   - **Profile:** Manage personal settings such as updating the profile, changing the password, and uploading logos.
   - **My Candidate:** Add new candidates and view the candidate list.
   - **Exam:** Manage exam-related activities, including exam lists, adding candidates, viewing results, and exam history.
   - **Question:** Create, manage, and upload questions, including search functionality.
   - **Exam Payment:** Handle payment history and renew or purchase exam-related packages.
   - **Master:** Provides general help, manages subjects, and publishes important notices.
   - **Certificate Gallery:** Allows management of candidate certificates.
   - **Survey:** Administer surveys, add candidates, view survey status, and manage survey payments.

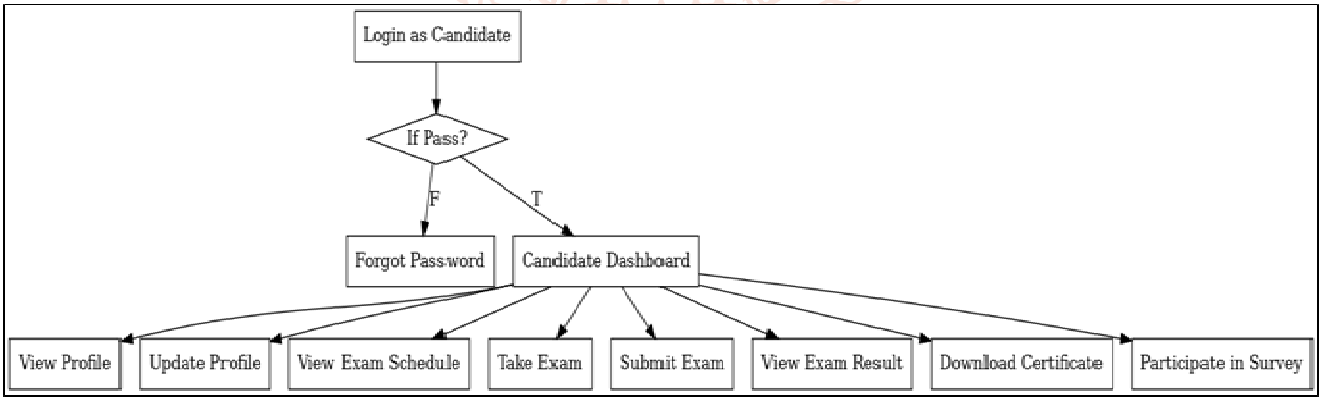

Fig no.2

1. **Login as Candidate**
   - The process starts when a **candidate logs into the system** using their credentials.
2. **Authentication Check ("If Pass?")**
   - The system verifies the candidate's credentials.
   - **If the login fails (F)** → The candidate is redirected to the **"Forgot Password"** option to reset their credentials.
   - **If the login is successful (T)** → The candidate is directed to their **Dashboard**.
3. **Candidate Dashboard (Main Menu)**

Once logged in, the candidate can access multiple functionalities:

1. **View Profile** – Check personal details.
2. **Update Profile** – Edit or update profile information.

3. **View Exam Schedule** – Check the list of upcoming exams.
4. **Take Exam** – Begin the assigned exam.
5. **Submit Exam** – Complete and submit the exam for evaluation.
6. **View Exam Result** – Check the score or status of completed exams.
7. **Download Certificate** – Retrieve certificates for successfully completed exams.
8. **Participate in Survey** – Take part in institutional or course-related surveys.

V. RESULTS AND DISCUSSION

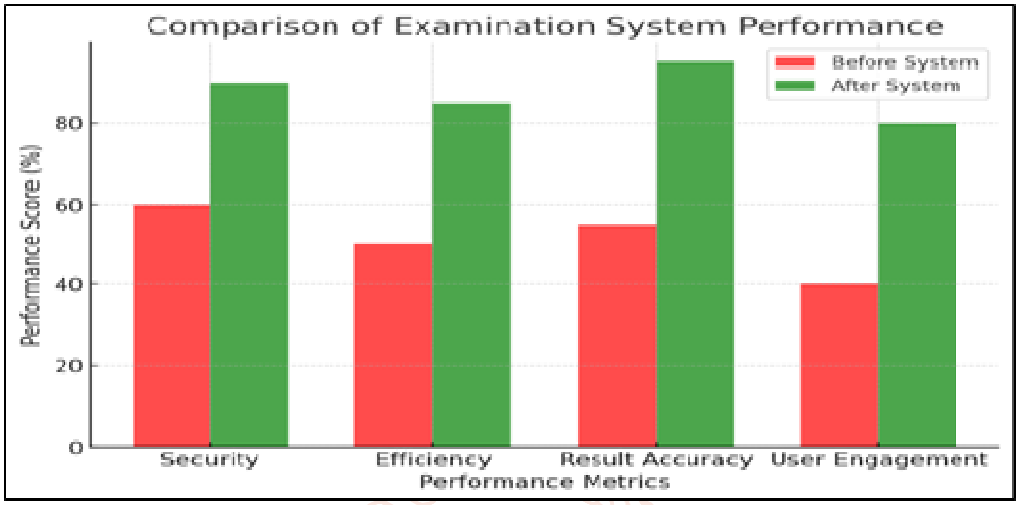

Fig no. 3

Results Analysis

1. **Security Enhancement**
   - Before implementing the system, security threats such as unauthorized access and cheating were prevalent (**60% security effectiveness**).
   - After introducing authentication mechanisms and remote proctoring, security levels improved significantly (**90% effectiveness**).
2. **Efficiency in Exam Administration**
   - The manual process required extensive resources, leading to delays (**50% efficiency**).
   - Automation reduced errors and improved operational speed (**85% efficiency**).
3. **Result Accuracy & Processing Time**
   - Traditional evaluations were time-consuming and prone to manual errors (**55% accuracy**).
   - The automated grading system improved accuracy and provided instant results (**95% accuracy**).
4. **User Engagement**
   - Candidate participation in feedback surveys and exam-related activities was lower before system integration (**40% engagement**).
   - The new system streamlined candidate interaction, improving participation (**80% engagement**).

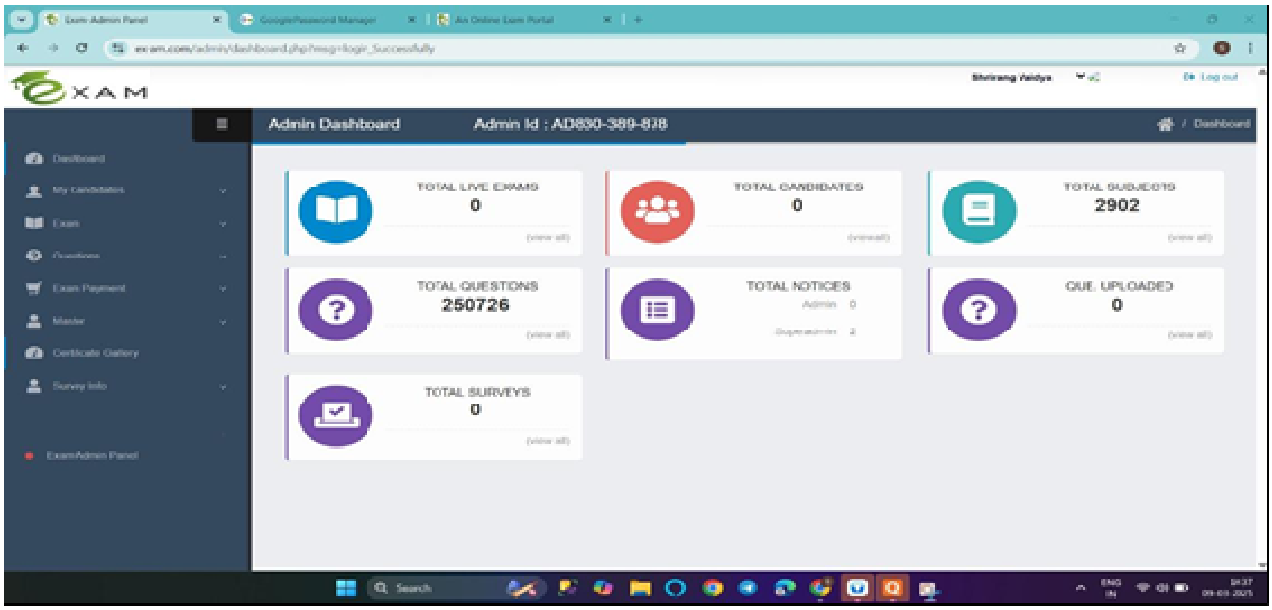

Fig no. 4

The provided image (fig no. 4) displays the **Candidate Dashboard** of an **Online Examination System**. This panel is designed for candidates to manage and access their exams, results, and related information efficiently.

The (fig no. 5) **Admin Dashboard** of an **Online Examination System**. It provides an overview of key statistics related to exams, candidates, subjects, questions, notices, and surveys. The interface is designed for easy navigation, allowing administrators to manage various aspects of the examination process efficiently.

VI. CONCLUSION

Integrating Remote Proctoring with an Online Examination System fully changes the traditional process of conduct examinations. The system makes the whole process efficient yet smooth for the administrators and candidates. With admin and candidate dashboards, smooth control of exams, candidates, payments, and performance analysis becomes easier. With the analysis of the admin and candidate dashboard, it is seen that this system helps in the smooth administration of exams, assessment of candidates, and tracking of performance. With the increase in usage of online education, this system is a powerful and flexible system for effective and secure conducting of exams in various educational and professional uses. Future development may be focused on the enhancement of the examination system with the help of AI-based proctoring, real-time analysis, and automated grading. In this research, we see that online examination systems are significant in education today and will be important in the years to come.

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