STM JOURNALS

International Journal of
Mobile Computing Technology

Volume 1, Issue 1, 2023
January–June
DOI (Journal): 10.37591/IJMCT

https://journals.stmjournals.com/ijmct

Review IJMCT

Adoption of Proprietary Online Exam Proctoring Software Using Multimedia Analytics System

Ayush Srivastava[1], Preeti Singh[2,*], Alka Singh[3]

Abstract

This research focuses on the effects of online proctoring in facilitating the online test procedure for prospects, as well as how these tools affect engagement and learnability, as well as a retrospective investigation of other online examinations now in demand and a comparison of both. As a researcher, we learned that online proctoring is essential not only for a smooth examination process, but also for the cautious management of a student's career. This study was conducted as a result of the trends in the field of online examinations, which necessitates mentorship for students so that they remain aware of the importance of the knowledge they require for their careers and provide an honest exam. This is also the motivation for this study; for each student to perform well in exams, they must acquire knowledge; and for that, strict proctoring is necessary. As a result, it is reasonable to conclude that the capacity to efficiently proctor an online exam is a necessary feature for future scalability in the education and assessment fields. Human proctoring is also an expensive and time-consuming option. We offer a method that does automatic online proctoring without the need for human intervention in this research.

Keywords: Proprietary, open-source, examination, software, COVID-19, pandemic

INTRODUCTION

Since the introduction of COVID-19, remote learning has multiplied. Schools and institutions may have been closed, but students were able to finish their studies using Microsoft Teams software. Exams, on the other hand, have remained unsolved. Some have replaced it with an assignment form that students may simply copy and paste from the internet, while others have just discontinued them [1]. There must be a solution if our way of life is to become the new norm.

LITERATURE REVIEW

Higher education institutions can benefit from online learning and proctoring in order to expand their offerings into the worldwide market [2]. The distance between students and examiners in an online exam environment makes maintaining the integrity of the exam difficult. "The most generally observed problem in online assessment is how to ensure academic integrity", Hollister and Berenson stated in 2009 [1]. Additionally, online proctoring provides significant benefits to both proctors and candidates. Online proctoring, according to Kinnely *et al.*, is a beneficial option for students who are geographically distributed and have time differences [3].

***Author for Correspondence**
Preeti Singh
E-mail: preetis88@gmail.com

[1]Student, Department of Computer Science & Engineering, Babu Banarasi Das Engineering College, Lucknow, Uttar Pradesh, India
[2,3]Assistant Professor, Department of Computer Science & Engineering, Babu Banarasi Das Engineering College, Lucknow, Uttar Pradesh, India

Received Date: June 27, 2023
Accepted Date: June 30, 2023
Published Date: July 20, 2023

Citation: Ayush Srivastava, Preeti Singh, Alka Singh. Adoption of Proprietary Online Exam Proctoring Software Using Multimedia Analytics System. International Journal of Mobile Computing Technology. 2023; 1(1): 25–29p.

WHAT IS PROPRIETARY SOFTWARE?

Proprietary Software

Proprietary software refers to computer software that is developed by a specific company and has its source code kept private, restricting modification access solely to the original firm [4, 5]. The programme is built or tested by an individual or

© STM Journals 2023. All Rights Reserved

organisation that owns it, not by the general public in this situation. This software is overseen by a small number of stakeholders or the companies who created it. If this software is qualified for maintenance, we will be responsible for paying for both commercial support and maintenance. The company provides buyers with a legitimate licence to use the software. This licence also imposes some limitations on users.

WHAT IS OPEN-SOURCE SOFTWARE?

Open-Source Software

Open-source software is computer software that has its source code publicly available on the internet and that programmers can modify to add new features and capabilities. This programme is handled by an open-source developer community [4, 5]. If maintenance is required, community and commercial assistance is available. It is completely free. This software also comes with a license, albeit it's not usually the case. This Online Proctoring Software project is proposed as proprietary software.

Pros of Proprietary Software

- *Profit Generation:* Masterminds can profit by employing it for marketing reasons.
- *A well-defined business model:* There is a definite business model during the development of intimately owned software, as follows: analysis of the target followership; testing and development.
- Release promotion, which may begin prior to development.
- Upgrades.
- *Stability and control:* Because open-source software is always evolving, controlling the development process and upgrades is often done with the help of open-source contributors. If the goal is to have complete control over the software, intimately owned software provides an advanced position of stability.
- *Increased Security:* When constructing personal software, access to its use can be restricted, and law investigation, amendment, and redivision can be performed. The original statute cannot be viewed by the public.
- *Acclimatized Customer Support:* Because free open-source operations often only provide ultra expensive assistance if the stoner upgrades to PRO (read "paid") interpretation, closed-source software provides it from the very beginning. Guests acknowledge good assistance while purchasing intimately owned software [6]. This is demonstrated using a business model. Because the major goal of marketable software merchandisers is to make a profit, positive reviews and long-term relationships with customers are more important to them.

Enhanced User Experience

Software development companies work hard every day to provide high-quality digital solutions that provide an addictive experience. Beautiful design, intuitive navigation, responsiveness, valuable features, customer assistance, and special offers are all examples of this.

Cons of Proprietary Software

- A subscription will have an upfront or ongoing cost [7].
- In this instance, software adaptation to satisfy the needs of the user is not universal. It is feasible to distribute a machine code version that cannot be altered.
- Its limitation can be up to a single computer or network, so redistribution of the software may not be allowed unless the license authorizes it.

WHY PROPRIETARY SOFTWARE IN PLACE OF OPEN-SOURCE SOFTWARE FOR EXAMINATION?

- Proprietary software in examinations, like any other domain, has the advantage of better vertical integration; you do not have to acquire your exam papers somewhere, then answer them somewhere else, then get your results on a separate platform [5].
- This is a significant issue that was overcome by custom-made proprietary software.

© STM Journals 2023. All Rights Reserved

- Although there are some disadvantages as well; for example, if we utilise a platform with more and more functions, the cost of licencing might quickly build up. Users must rely on developers for constant updates and maintenance, and while some features may not be used by many people, they are nevertheless compensated for adding unneeded costs [8]. However, proprietary software provides superior control and integration for examination systems as a whole, that can be adopted by institutions as well as students themselves. These solutions can be very helpful in validation and testing of skills and knowledge [9].

IMPLEMENTATION

Functions

- *Question Management:* This module's functions included querying, adding, removing, and editing questions.
- *Paper Generating:* This module's job was to generate exam papers based on the specifications. It was the most important function. From the given questions collection, the machine extracted the questions.
- *Test Online:* Student junkies can use the test online feature to choose a paper at random or choose a paper that has been recommended by an instructor, and they can log in to the system at any moment to check their knowledge levels.
- *Result Announcement:* Following the completion of the test, the results of all attempted tests will be available.

Modules

- *Student Section:* Students can access the student section by entering their username and password whenever they need to take an exam.
- *Teacher Part:* Teachers can access this section at any time to create and examine question sets.
- *Admin Panel Part:* In this section, an authorised admin can log in with their credentials to view and manipulate all modifications and records.

Technology and Language Used

- *Python:* It is an interpreted language. It is a high-level general-purpose based programming language [10]. Guido van Rossum created it in 1985–1990. Similar to pearl, its source code is released under the GNU General Public Licence (GPL).
- *VS Code:* Full form of VS Code is Visual Studio code. It is a text editor created by Microsoft that is freely available and built on open-source code. This editor incorporates a range of features including support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and integrated Git functionality.
- *Django:* It is a free and open source back-end server-side web framework which is written in python language [11]. Building web pages using python becomes easier by Django.

Validation and Authorization

- Each student has their own login and password, as well as their own profile photograph.
- Teachers have their own set of credentials that allow them to administer and command question sets, papers, and grades.

FLOW CHART

The following Figure 1 shows the overall structure of the software, its functions and modules involved. The main modules include the admin, teacher and student sections. They will be able to proceed only after login and then the main functions will be available for further processing.

Some Already Existed Similar Software

- Examonline.

© STM Journals 2023. All Rights Reserved

- Speedexam.
- Mercer.
- Examus.
- ProctorU.
- Examity.

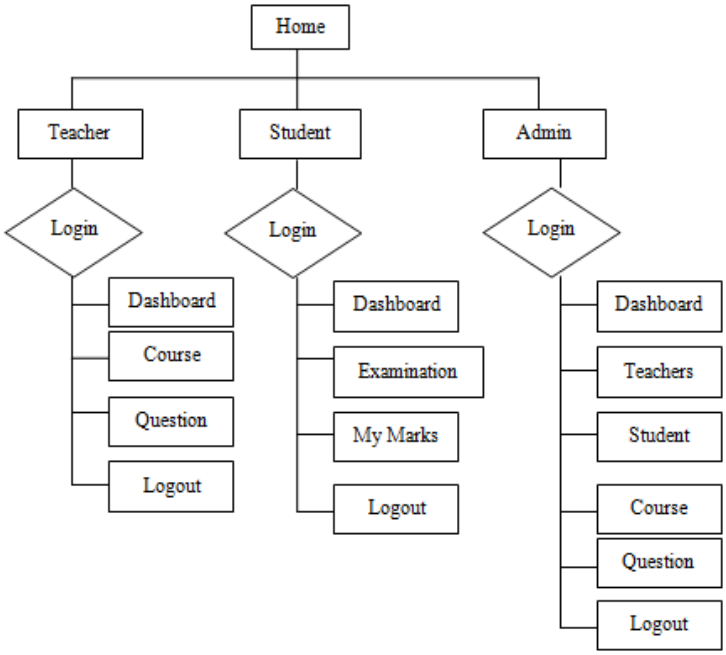

Figure 1. Structure of the software.

Why is this Software Preferred Over Above-mentioned Existing Software?

- It has a specific panel called the "Admin panel", from which an administrator can control the entire system. An administrator has control over the system flow. A summary of all the data is available to the user. Teachers' accounts will be approved or denied by the administrator.
- Regarding the instructor panel, every user's account needs to undergo approval by the administration before it can be activated. Once granted clearance, users can then access the system and utilize their own question sets to manage courses.
- The dashboard is presented in a very straightforward and clear manner. It has a variety of colour combinations for a better user experience.

CONCLUSION AND FUTURE SCOPE

It proposes a multimedia analytics system for online exam proctoring, with the goal of maintaining academic integrity in the field of e-learning. The device is both economical and convenient from the perspective of the text taker, as it just requires two cameras and a microphone. We extracted low-level features from the collected audio and video using six basic components: user verification, text detection, speech election, active window detection, gaze estimation, and phone identification. These features are processed in a temporal frame to provide high-level features, and then exploited forcefully during detection. Finally, the system's capabilities are shown utilizing a database of 24 test takers who simulate real-world behavior in an online exam, with approximately 87% segment based results [12].

Future Scope

- One Institute can take exams of more than one subject at a time.
- Mock tests can be made available on this site for students' practice.
- Feedback can be taken from the students for the better enhancement of the software.

© STM Journals 2023. All Rights Reserved

REFERENCES

1. Hollister KK, Berenson ML. Proctored versus unproctored online exams: Studying the impact of exam environment on student performance. Decision Sciences Journal of Innovative Education. 2009 Jan;7(1):271–94.
2. Casey BJ, Getz S, Galvan A. The adolescent brain. Dev Rev. 2008 Mar 1; 28(1): 62–77.
3. Piette MA, Kinney SK, Haves P. Analysis of an information monitoring and diagnostic system to improve building operations. Energy Build. 2001 Oct 1; 33(8): 783–91.
4. Geeks for Geeks. (2020). Difference between Open-source Software and Proprietary Software. [Online]. Available from: https://www.geeksforgeeks.org/difference-between-open-source-software-and-proprietary-software/
5. Schryen G, Kadura R. Open source vs. closed source software: towards measuring security. In Proceedings of the 2009 ACM symposium on Applied Computing. 2009 Mar 8; 2016–2023.
6. BBC. Cons of Proprietary Software. [Online]. https://www.bbc.co.uk/bitesize/guides/zhx26yc/revision/11
7. iTech India. (2019). Pros and Cons of Open Source vs Proprietary Software. [Online]. Available from: https://itechindia.co/blog/the-pros-and-cons-of-open-source-vs-proprietary-software/
8. Alessio HM, Malay N, Maurer K, Bailer AJ, Rubin B. Examining the effect of proctoring on online test scores. Online Learning. 2017 Mar; 21(1): 146–61.
9. Naha P. (2023). 15 Best Online Proctoring Software and Services to Look Up in 2023. [Online]. Software Suggest Blog. Available from: https://www.softwaresuggest.com/blog/best-online-proctoring-software/#
10. Hylton K, Levy Y, Dringus LP. Utilizing webcam-based proctoring to deter misconduct in online exams. Comput Educ. 2016 Jan 1; 92–93: 53–63.
11. Yadav K, Thareja R. Comparing the performance of naive bayes and decision tree classification using R. Int J Intell Syst Appl. 2019 Dec 1; 11(12): 11–19.
12. George N. Mastering Django: Core. UK: Packt Publishing Ltd; 2016 Dec 23.

© STM Journals 2023. All Rights Reserved