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ONLINE EXAMINATION SYSTEM USING ARTIFICIAL INTELLIGENCE

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Abstract - Online Examination System is an application built to modernize the examination process that has been a major challenge, especially during the covid pandemic. Remote proctoring is one technology which is trending in the era of social distancing. For a couple of years, e-learning has become famous as a result of its simple client intelligence. All things considered; the significant danger looked at by the examination local area is the procedures that are being utilized. We have utilized equipment, for example, a web camera to catch sound and video along with dynamic window catch. This blend shapes the contributions to a decide-based surmising framework that can conclude whether any misbehaviors have occurred or not. The software will be able to successfully conduct the exam virtually without the physical presence of an instructor. The exams are time-based and secure so that all the candidates get a fair chance to give the examination. In this application, we present a strategy to stay away from the actual presence of a delegate all through the test by making an exhaustive performance of multiple tasks frameworks.

Key Words: Proctoring, Vision, Online examination, Malpractice detection, Audio

1. INTRODUCTION

Artificial Intelligence also known as machine intelligence, is a branch of computer science that focuses on managing and building technology that can learn to instantly make decisions and carry out actions instead of a human being. AI-based Online Examination Proctoring uses AI-driven algorithms for user identification and cheating identification. It will make an extensive report to assist you with affirming on the off chance that an internet based test has been finished with machine-driven invigilation delegating. Simulated intelligence fueled remote administering can guarantee the start to finish security for Online Exams and keeps the interaction from acts of neglect and cheating. Because of the COVID-19 pandemic, the whole world is following a major downfall in terms of economy, day-to-day activities are being restricted due to lockdown! Remote proctoring is the technology that allows us to monitor online exams for candidates giving test from different locations, anywhere on the back of the earth. The ubiquity of online and electronic programming has filled quickly as of late. The manner in which we do our everyday exercises has changed. Throughout recent years, the use of Internet and computers as educational apps has increased quiet quickly. There are different factors of remote proctoring such as video proctoring, image proctoring, audio proctoring, monitoring the screen of the user taking the online exam. With the help of all these functionalities, we can securely conduct Online Exam, that too under a secure, monitored, and cheat-free environment. Face recognition is the key component of the verification process for remote users during the online exam process. The system takes pictures of the user taking the exam and it is compared with a photo stored in the system at the start of the online exam. Anytime of time during the test, on the off chance that there is a bungle or deviation in the face or more than one face recognized before the presentation or no one else's countenances identified before the camera during the web-based test then the framework records as a caution. Artificial intelligence based remote administering likewise denies the client from exchanging the windows while showing up for the booked Online Examination System Using AI takes care of with its extra light delegating component for the sake of Image-based administering. The mechanism imposed by the proctored examination process enforces this restriction to keep the Online Exam environment under control. Image Proctoring provides secure environment for online exam prominently and the demand in the technology is rapidly increasing due to several factors.

2. RELATED WORK

The proposed system aims to establish a structure that meets the requirements of the examination process in universities and higher education institutions. Records are a test, and it requires greater investment and work to accomplish arranging of records. To perform online checks, making a different application isn't required. The essential inspiration is to settle the troubles that might exist in manual testing frameworks like the ban in the readiness of tests. Remote examination and proctoring are significantly gaining importance in the wake of the accommodation of comfort, security, and accessibility. This will not just increase the importance of course or remote-based examinations but it also helps in MOOCs (mass open online courses) and other credit-based certifications for the

concern of establishing credibility. The proposed online examination software the monitoring system uses advanced, secure, and reliable Artificial Intelligence to monitor the students and review the examination. Web-based automated examination system which detects all unusual activities and flags them, to ensure fair proposition of exams. Invigilation of the exam is not restricted to a fixed time and actual test grounds any longer. This has revoked an interest in the assortment of online remote examination arrangements and supporting technological advancements.

In this application, we present a strategy to stay away from the actual presence of a delegate all through the test by making an exhaustive performanceof multiple tasks frameworks. This assessment framework utilizes fewer assets and lessens the requirement for Q & A contents, test room booking, organizing invigilators to test corridor, planning with inspectors, and that's just the beginning. The online examination system uses client/server architecture methodology. The proposed framework is simple and adaptable on account of future upkeep and improvement because every subsystem can be taken care of independently without effect on another framework. The customer by utilizing an internet browser can associate through web or neighborhood have with the server where PHP and MySQL in the server-side are liable for the getting ready tests cycles and save and return information from data set. It is essential to make sure that the data set is very much planned. The documents names picked to mark the tables made inside the information base endeavor to mirror the table's motivation and, thusly, add to a well-plan framework. Utilizing an open-source language gives us greater adaptability, and yet it required more opportunity to be modified.

The system forced by the delegated assessment process upholds this limitation to monitor the Online Exam climate. Picture Proctoring has made it conceivable to conspicuously get the web-based test conditions and the demand in the technology is rapidly increasing due to several factors.

Instructing and mentoring, exhorting and advising and data and organization are the institutional frameworks associated with student support. Student support is characterized as "every one of the exercises and components in schooling that reacts to a known student or a gathering of students, which are intended to aid emotional and precise domains of the learning process. Students get themselves registered for several online programs and it's increasing exponentially. But students dropping out of these courses is also more due to improper support services. As ODeL establishments grow their scholarly projects, their understudy populace becomes more assorted. The expanding variety of understudies features the need to create and carry out help benefits that ensure the understudies' achievement. OSP is an online application that offers a combination of organizations. It gives students reliable permission to information and organizations.

In Online Examination System, researchers are attempting to change thetraditionalmanua examination in the educational institution. The onlineexamination system is effective in time management.In this paper, we proposed a system with an automatic assessment technique. This algorithms is to determine the frequency of words, Keywordmatch ,linguistic analysis, and grade generation. The system is implemented with the helpof MySQL andPhpStrom. Ouradvanced system is abletoevaluate the response of descriptive question. Mark allocation depends on this percentage accuracy of the answer. The whole process consists of four steps. It will make a far reaching report to assist you with affirming in the event that a web-based test has been finished with machine-driven invigilation delegating. AI-powered remote proctoring can ensure the end-to-end security for Online Exams and prevents the process from malpractices and cheating They are Extraction of keywords, weightage of keywords, Feature matching, Score generation. Most of the competitive exams are conducted online. Because they are time-efficient, cost-efficient, and secure. In the rural area, students have to travel from far along to give examinations in their allocated center. To conclude, learners are an important aspect of the ODeL environment. Hence their welfare needs to be the main goal of the system.

3. SYSTEM ACTIVITIES REQUIREMENTS

It is possible to imagine and combine the parts oftheentire system in many different way. Ourproposed system, consistsofthe Administrator Module and the Student Module. The Admin Module consists of further two sub-modulesAdmin and Instructor and the student module consists of Student and Online Proctoring.

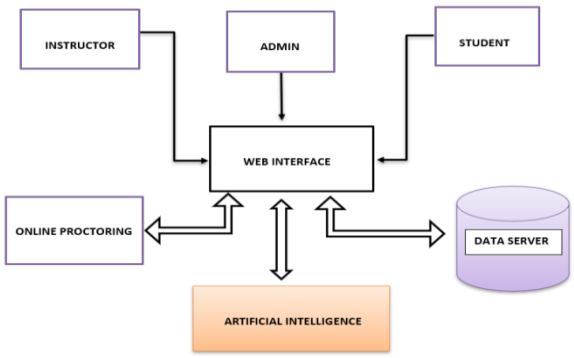

Figure 1: Block diagram of online examination system using AI

4. SYSTEM DESIGN AND IMPLEMENTATION

Subsequent to laying out an association through the Internet or an intranet, the proposed web-based check framework can work with the client/server design as displayed in beneath figure

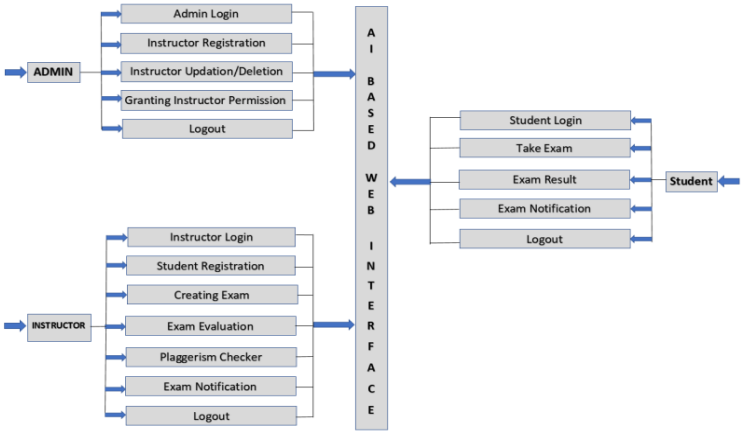

Figure 2: Dataflow diagram

User Interface:

- Admin module
- Teacher Module
- Student Module

Functional Requirement:

- Students can take the exam remotely without being present in the exam hall.
- The instructor will be able to monitor without having a physical presence.
- Any malpractice done by a candidate can be easily identified.
- Questions to the student can be provided randomly to avoid cheating.
- Real-time Proctoring can be achieved to have a fair examination.
- Results and notifications to students can be provided in less time
- Remote Proctoring empowers possibility to show up for an evaluation from a distant area while guaranteeing the honesty of the test.

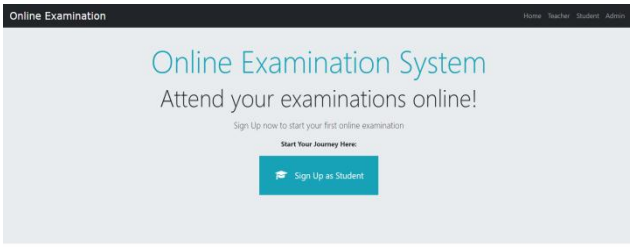

Figure 3

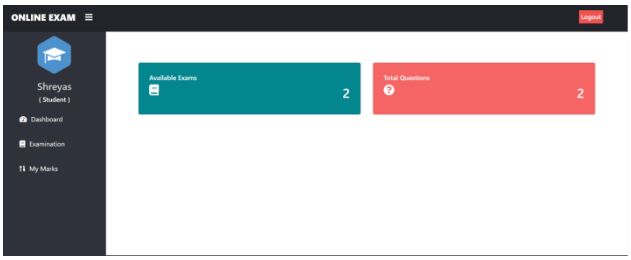

Figure 4

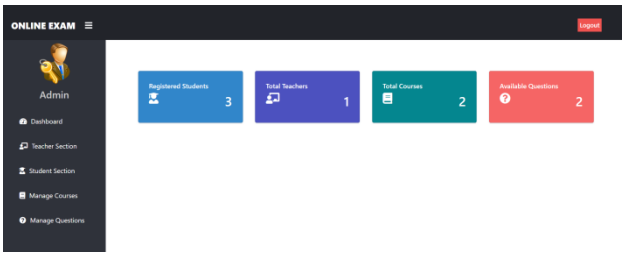

Figure 5

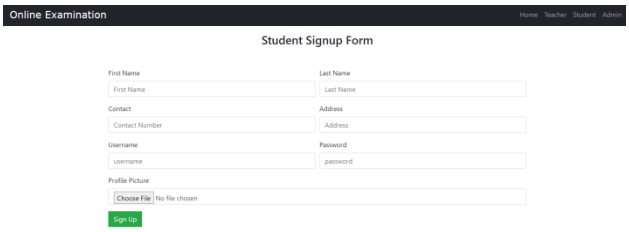

Figure 6

5. EVALUATION RESEARCH METHODOLOGY

The assessment research objective is to feature our assessment framework as a product for taking tests and dissecting the outcomes that we got from understudies. This product has the determination test strategy which is different decision test. In the wake of taking their tests utilizing our assessment framework, the understudies have been gotten some information about their analysis with this assessment framework. The span that this exploration has taken is 7 months, from October 2021 to June 2022.

Our developed system is able to assess the answer of descriptive question. The whole process will be done via Artificial Intelligence. Allocation of marks depending on the percentage of the accuracy exist in the answer. In this process, examiner will set a question also upload a model/standard answer of that question. After login an examinee will answer that question. Then the system will assess the answer of examinee by matching the keywords. It will also check the linguistic analysis. After the evaluation it will calculate the score according to the correctness of the answer. The whole process consists of 4 steps. These are:

- Keywords extraction
- Weighting keywords
- Feature matching
- Score generation

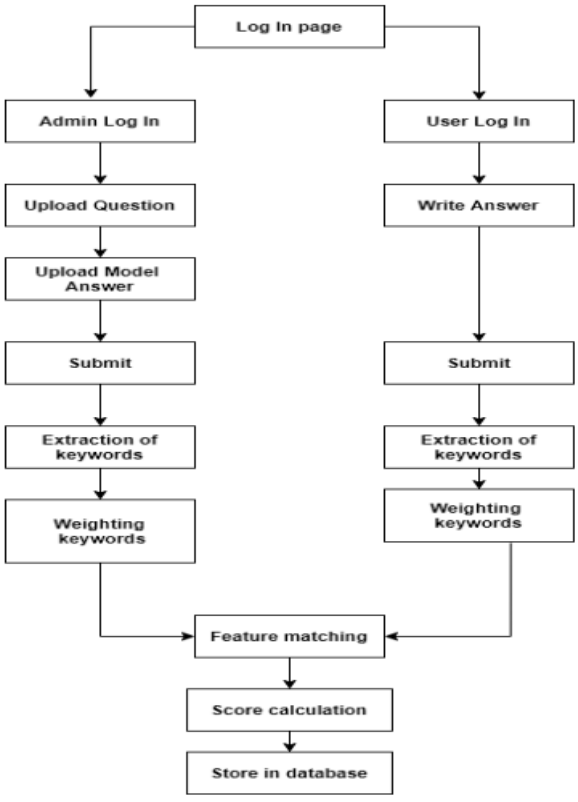

Figure 7: Block diagram of Artificial Intelligence based Automated Written Examination

Evaluation Automation Module

By this module system will extract the keywords from both the model answer and the answer submitted by user. It is an important process for the whole system. If the repetition of keywords is very often it will be given less value in the assessment process. If it doesn't happen then it will allocate higher value for the assessment process. In this module keyword extraction is done by two steps:

1) **Preprocessing:** Reply from client might contain numerous superfluous words and images, for example, accentuation images, stop images, feelings images and so on. These are considered as commotion for the information which will be handled.

2) **Keyword frequency generation:** The system will do the keyword frequency generation after the preprocessing phase. It will classify all the keywords in this method and find the frequency ratio. He used the algorithm 1 for this operation. In this method, the array frequency set is initially null. Then it goes through the script of the entire answer and compares each word with the list. If it is not on the list, the word in the list is added as an index. The frequency of that word will increase if identified.

Algorithm 1: Algorithm for Calculating Word Frequency

```
1 Answer = Total answer after preprocessing;
2 Array frequency = null;
3 for Every words in answer do
4       if Word is not in the Array then
5             Add the word as index in the Array;
6             frequency[word] = 1;
7       else
8       frequency[word] = frequency[word] + 1;
9       end
10 end
```

3) **Keyword**: We used the algorithm 2 for the keyword comparison to test the answer script after calculating the keyword frequencies from both the model response and the user's answer. The following algorithm primarily follows three criteria in this process. If more keywords are detected than model answer, then the marks are reduced. It also does the same thing in the answer script if it finds very less keywords than model answer. With an adequate number of keywords that are similar to the model answer, students will get a good score.

Algorithm 2: Algorithm for Pattern Matching Using Naïve Algorithm

1. SET K=1 and MAX=S-R+1.

2. Repeat Step 3 to 5 while K<=MAX:

3. Repeat for L=1 to R: If TEXT[K+L-1] ≠ PAT[L], then: Go to Step 5.

4. SET INDEX=K, and EXIT.

5. K=K+1.

6. SET INDEX=0.

7. Exit.

4) **Grammar and Spelling:** Finding the correctness of grammar and spelling is one of the main issues for assessing the answer script. We have used the algorithm 3 for the method of linguistic research. It initially puts the linguistic analysis score at zero in this process. Then, in the answer document, it measures the number of spelling errors, grammatical errors, the total number of words, and sentences. The number of spelling errors is then divided by the total number of terms and multiplied by 100. Similarly it divides the number of grammatical mistakes by the total number of sentences and multiply by 100 and add both the values

Algorithm 3: Linguistic Analysis Algorithm

1 String answer = Total answer of the student;

2 Initial LAScore = 0;

3 Initial SMistake = Number of spelling mistakes;

4 Initial GMistake = Number of grammatical mistakes; 5 Initial TWord = Number of Words in answer;

6 Initial TSentence = Number of Sentence in answer;

7 LAScore = (SMistake) /(TW ord)∗ 100 + (GMistake/(TSentence)∗ 100

6. CONCLUSIONS

Using an open-source language gives us more noteworthy versatility, but then it anticipated that extra open door should be changed. The proposed Online Examination System can be actually embraced by schools and foundations to make the test more secure and more versatile. The system is divided into two essential subsystems that are expected to give the structure most outrageous benefit by means of circumspectly showing each subsystem administration. This structure centers around the popular evaluation system research at this point, arranging a lot of ordinary evaluations for the school stage and giving an incredible shape to figuring out many tests, and have an unprecedented reference a motivation for various colleges and universities.

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