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Online Exam Proctoring System

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Abstract: *The popularity and coverage of various e-learning resources and different types of distance education has been increasing day by day. The capability to successfully monitor online tests has become important for the evolution for the next stage of education. At present, manual proctoring has become the most frequently used form of evaluation, where the student/test-taker is required to go to a specific examination centre, or by proctoring tests using a webcam. Though, such techniques are not cost effective and difficult. In this project, we aim to develop a system that accomplishes the goal of automated online proctoring. The proposed system hardware comprises of a single webcam, and a mic., with the goal of tracking the audio and visual surroundings of the location of test. The model comprises of six components that always measure the behaviour of the user : user authentication, text detection, audio detection, and tab switching detection. By combining the continuous estimation components, and using a temporal sliding window, we design higher-level features to determine whether the test taker is cheating at any time during the test. To test our proposed system, we collect multimedia data (audio and visual) from the test taker performing various types of cheating while taking online tests. Extensive experimental results demonstrate the accuracy, robustness, and efficiency of our online proctoring system.*

Keywords: E-Learning, Proctoring, Accuracy, Efficiency, Robustness, Authentication

I. INTRODUCTION

With the advent of COVID-19, distance learning has flourished. Schools and universities have been shut down but they switched to applications like Zoom Calls, Google Meet, Microsoft teams etc. to finish their academic years. However, there has been no firm solution to examinations. Colleges are allowing students to give exams from home where they will be supervised by a proctor throughout the exam. Implementing this scheme on a large scale won‘t be feasible option due to the required staff.

In online education platforms, teachers and students have a regular usage of the Internet in order to take/attend online lectures, answer/ask queries and doubts and evaluation of the students based on their performance. However, various colleges and institutions have a process of examinations in which a student is made to physically sit in front of a camera and a supervisor is present throughout the course of the examination. However by doing so, we may try to imitate the conditions of offline examinations but it is a very tedious process to achieve such a model. By making a student sit physically in front of a camera we may be able to authenticate the student‘s identity but might not be able to track the activities of the student like in case of offline examinations.

To correctly identify a student over a long distance has been regarded as a difficult problem with a hard solution. As a result, different colleges and institutions still need examinations with manual proctoring. Usually, different institutions are lacking in providing students with sufficient facilities, so to hold examinations they have to rent a separate examination centres. But to manage the mechanism of these examination centres become a difficult task for the institutions as there are different tasks to be carried out like collecting the papers of students and sending to respective faculties for correction. Hence due to the aforementioned circumstances, the enhancement of exam management systems is required for remote education platforms. Essentially, the system implemented by the institution to conduct 1 examination has to be accurate and secured enough as it will determine the level of the university. Hence, security is the most important feature for the system to have.

Machine Learning and Artificial Intelligence have become much popular in the recent timed as they are capable to handle jobs that may need high amount of computational power. And they are able to solve different problems which

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are distributed over large spectrum as they are versatile. The world is familiar with what E-Learning is. M-Learning has enhanced e- learning by making the process ”learner centred”.

II. LITERATURE SURVEY

Automated Online Exam Proctoring [1]: In this paper, they have explained in detail about various algorithms to carry out user verification, gaze detection, noise detection, mobile detection, etc. in order to carry out online proctoring effectively. They have uses various sensors for audio and video capture.

Online Examination System [2]: In this paper, they have explained about the online examination system that they have developed. Here, they have basically developed a Web Application in order to carry out Online Examinations. They have given a quite detailed explanation regarding the dataflow of their system. They have explained separate authorisations that we can provide for different people for e.g., student, teacher, etc. They have also explained in detail about their database design and the flow of data that will be carried out in the web application. They have successfully provided a smooth user interface for carrying out online examinations.

Image based Face Detection and Recognition [3This paper explains about a system for video-based surveillance of the user. We can use this method to carry out proctoring during online examinations. Here they have explained about various techniques and algorithms for face recognition and face detection in detail. They have also explained about the dataset that is used during this process.

III. SYSTEM DESIGN

Design of the Examination System:

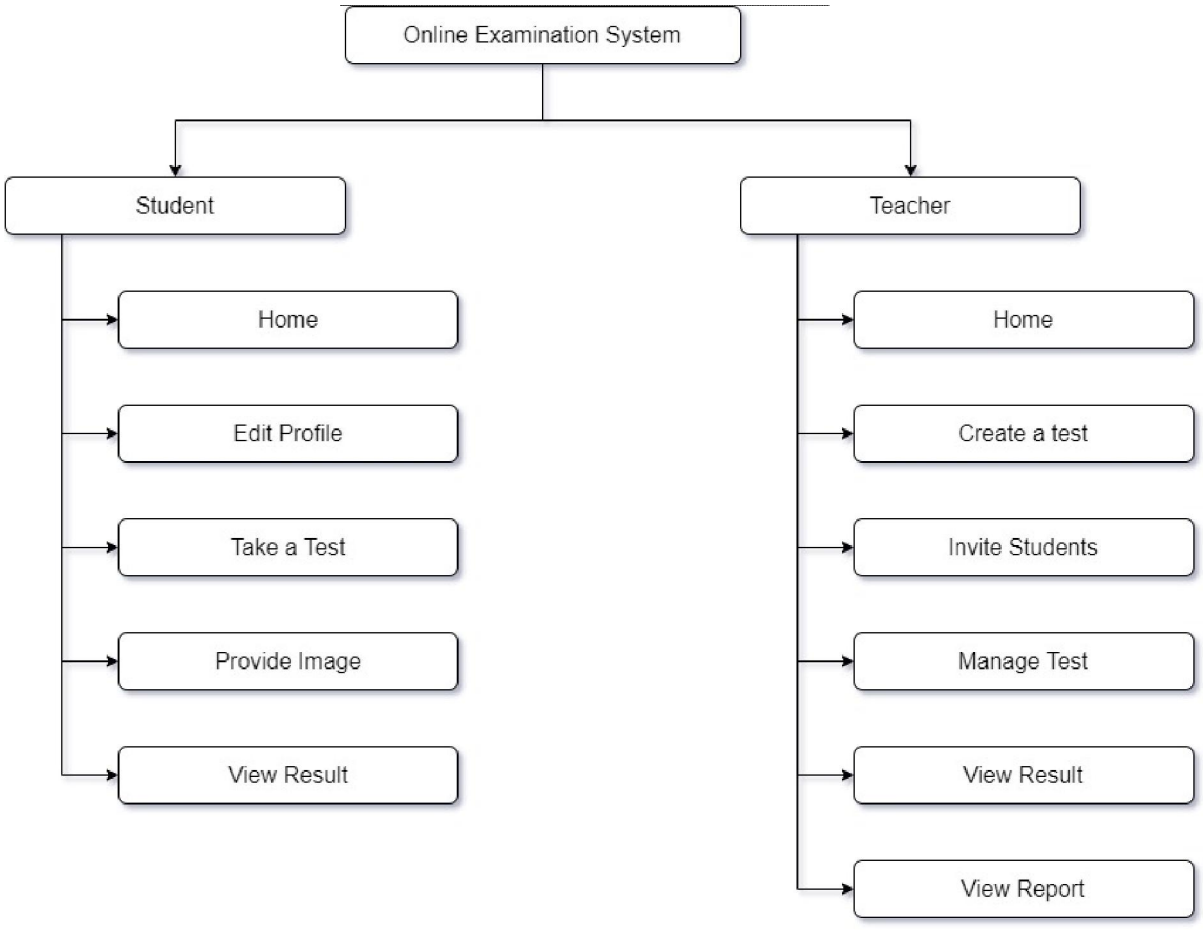

Fig..1 : Online Examination System Design

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The Proctoring Model:

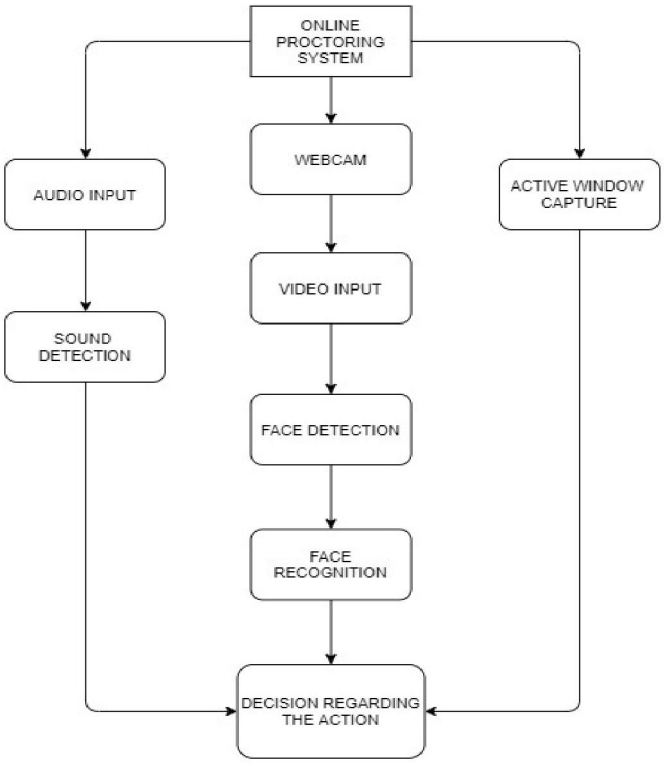


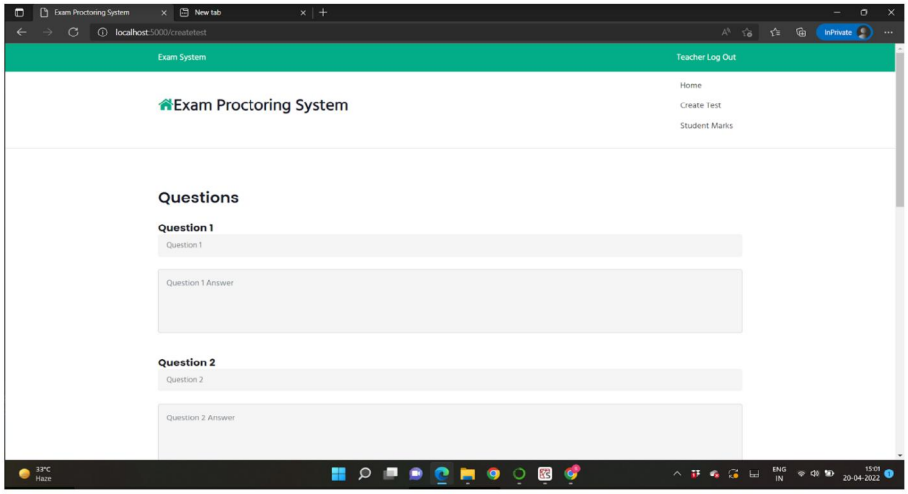
Fig.2 : Proctoring Model Design

Our proposed online examination technique consists of phases, the instruction section and examination section. In the training section, the check taker has to authenticate himself earlier than starting the examination, through the usage of a password and face authentication.

Further, the check taker learns and verbally recognizes the guidelines of the usage of the YOLO system, such as, no 2nd person isn't allowed in the equal room, the check taker need to n.ow no longer go away the room in the course of the examination section, etc.

IV. SYSTEM IMPLEMENTATION

STUDENT HOME



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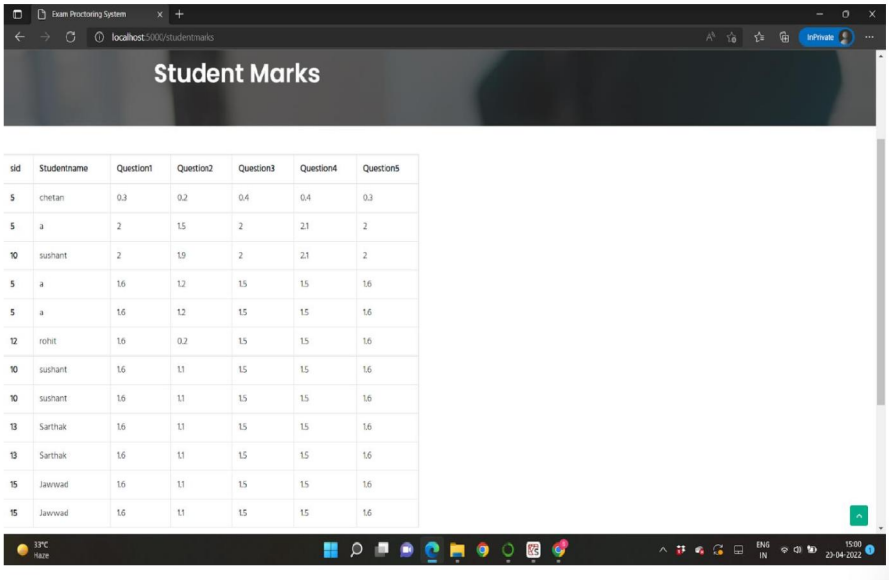
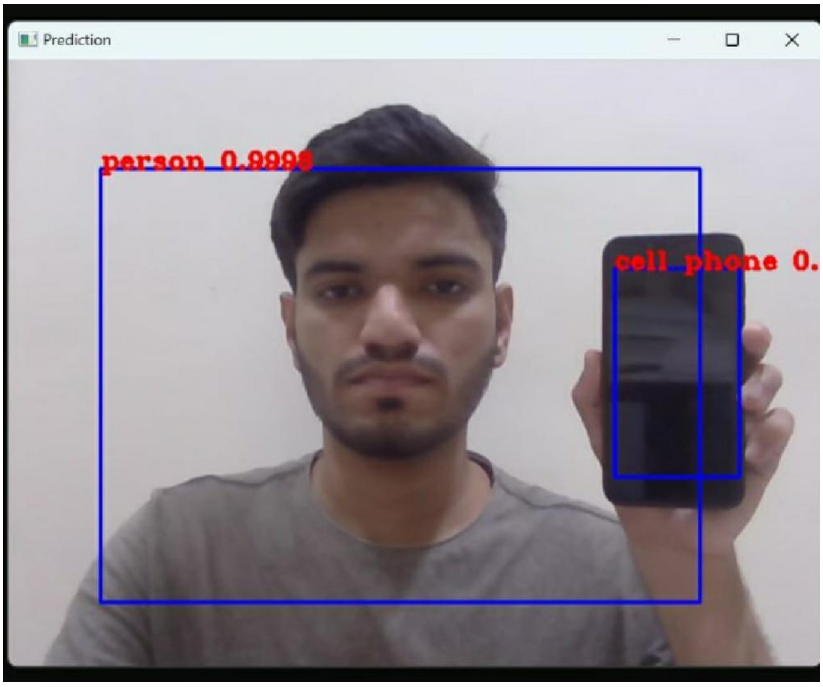


Teacher Option and Verification



V. FUTURE SCOPE

The Scope of this Project is Very Vast . The first improvement that come to the mind is Multi-Factor Authentication: Multi-factor authentication can be employed to enhance security, ensuring that only authorized users have access to the exam.another important improvement for this project would beVirtual Reality (VR): Virtual reality technology can be used to create realistic exam environments that simulate real-world scenarios, enhancing the authenticity of the exam.

VI. CONCLUSION

Using open-source language gave us more flexibility, but at the same time it took more time to plan and organise. The proposed Online Examination Proctoring System can be easily adopted by universities and institutions to make the tests safer and more flexible. The system is divided into two major sub-systems (student and teacher) designed to give the

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system the maximum benefit by carefully displaying the services of each sub-program. The proposed system is simple and flexible because in order to maintain and improve each sub-system it can be operated separately without influence on the other system.

Remote proctoring the usage of AI can rework the education sector and has made the whole lot viable virtually. AI-included computer structures can make certain the authenticity of the take a look at by stopping the candidate from cheating and indulging in unfair methods throughout the assessment. With Remote Proctoring, instructional institutes don‘t want to postpone or delay examinations.

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