CHEAT DETECTION SYSTEM USING EMBEDDED QR SCAN AND SPEECH RECOGNITION

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Abstract
Nowadays, students have found clever ways to cheat, and in most cases, take advantage of the available technologies around them. This project shows the ways of preventing Cheat in Online Examination by using a QR Code as a Question background, so that if the QR gets scanned (i.e. Question) then we will conclude that the student is trying to copy in an exam, Another way if the student try to cheat by using voice search then our system will translate voice into text and by checking that text file with Suspicious keywords/Phrases predefined list so that we can easily identify those students who's trying to cheat in Online Exam. In this project the halftone algorithm is used in QR Code for reproducing an image by using dots of varying length with one or more colors. It enables image display like a continuous tone-like image but on a pixelated or halftone background. Also, we are using QR Code for a model to track each activity by redirecting the student data to the admin by inspecting how many times the QR Code is scanned by the student. Here NLP (Natural Language Processing), Speech Recognition is a better-suited technique, which we are using to analyze human speech to transform it into a machine text file which is generated by the algorithm with the given word list of suspicious phrases so that we can keep an eye on the student then that the examiner can capture suspicious actions.

Keywords:- Halftone algorithm, QR Code, cheating prevention, online examination, NLP, speech recognition, academic integrity, student behavior, suspicious phrases, evaluation, educational system, credibility.

I.INTRODUCTION
The global COVID-19 pandemic has drastically changed the way we live, work, and learn, with universities and educational institutions across the world forced to shift to online modes of education. While online examinations have enabled educational institutions to continue their evaluation process, they have also introduced new challenges, particularly with regard to preventing cheating. The ease of access to information and communication technologies has made it easier for students to cheat during online examinations, which threatens the credibility of the evaluation process.
Online examinations offer several advantages, including paperless testing, instant results, and greater accessibility for students. However, ensuring the integrity of the evaluation process in online examinations is crucial to maintaining the credibility of the education system. The challenge of preventing cheating during online examinations is not limited to entrance exams but also extends to other assessments such as term and semester exams, campus placements, and online mock tests.
In this paper, we propose a method to prohibit cheating during online examinations by introducing measures to ensure academic integrity. We believe that the use of modern technologies such as the halftone algorithm in QR codes, NLP, and speech recognition can be used to monitor student behavior and detect any suspicious activities. The proposed approach not only enhances the credibility of the online examination system but also promotes academic honesty among students.

II.   RELATED WORK
1.   Automated Online Exam Proctoring
This paper presents a multimedia analytic system that performs automatic online exam proctoring. The system hardware includes one webcam, one webcam, and a microphone, for the purpose of monitoring the visual and acoustic environment of the testing location. The system includes six basic components

that continuously estimate the key behavior cues:user verification, text detection, voice detection, active window detection, gaze estimation and phone detection.By combining the continuous estimation components, and applying a temporal sliding window, they have also designed higher level features to classify whether the test taker is cheating at any moment during the exam[1].

2.   A Critical Review and analysis on techniques of speech recognition:The road ahead

The main motivation of this survey is to explore the existing speech recognition strategies so that the researchers can include all the necessary metrics in their works in this domain and the limitations of the existing ones can be overcome. In this review, diverse issues included in speech recognition methodologies are distinguished, and distinctive speech recognition procedures were studied to discover which qualities are tended to in a given system and which are disregarded. Hence, we offer a detailed survey of 50 methods from standard publishers from the years 2000 to 2015. Here, we categorize the research based on three dissimilar perspectives: techniques utilized, applications, and parameter measures. In addition, this study gives an elaborate idea about speech recognition techniques [3].

3.   Automated Proctoring System using Computer Vision Techniques

This presents how to create a complete multi-model system utilizing computer vision to prevent the presence of humans throughout the examination. They propose a system that includes a variety of features that students may exploit throughout the test, such as eye gaze tracking, mouth open or close detection, object identification, and head posture estimation using facial landmarks and face detection. system can also transform the student's voice into text, which might be useful for keeping track of the words said by the student. This might aid the examiner in determining whether or not the student is speaking with someone close. In summary, this research reveals how to prevent cheating in online tests using semi-automated proctoring based on vision and audio capabilities and monitor multiple students at the same time [2].

4.   Embedding QR in Color Images using Halftoning Technique

In this research work,they performed embedding QR codes into color images and hiding information using QR codes in order to make them visually appealing to the user while maintaining acceptable decoding robustness. In contrast to previous approaches, the methods presented here allow embedding QR codes into color, grayscale, or binary images. These embeddings are designed to be compatible with standard decoding applications and can be applied to any color image with full area coverage. The embedding problem is solved by the integration of the halftoning method. Finally, we show experimental results of halftoning of color images, embedding of QR code images in color images, and decoding of QR code images from color images [5].

5.   A Survey on Image Embedding in QR Code

This paper explains the basic concept of QR images and various existing methods to embed QR codes into images. These embeddings are suitable for standard decoding applications and can be applied to any color image with full area coverage. This insertion takes advantage of the support of QR readers against interruption of image luminance; the important information in QR code bits is transformed into luminance values of the aimed image that is to be aimed. To minimize the visual distortion of the QR image, the algorithm uses half-tone masks for the selection of modified pixels and techniques to locally optimize the luminance levels of the QR image. In order to minimize processing time, the optimisation technique considers the mechanics of a common binarization method, a genetic algorithm, etc. [4].

III.   ARCHITECTURE

Here, we present the system architecture of our project aimed at detecting cheating during exams. To achieve this, we employ two methods: Google Lens and voice recognition. The architecture diagram illustrates the development of a security-based question bank. The examiner provides questions with multiple answers in commonly used image formats such as JPEG and PNG. These questions are developed in the QR Question module and added with a QR code containing a URL to a security website as background. The half-tone technique is then applied to the question images, making the

cheat device points clear for easy scanning. The developed bank, with each question as an image with a QR code embedded with a URL in the QR Question Generation module, can be uploaded to the examination server for distribution to students. The examination server randomizes the question bank, and students can access the secure question bank on their devices.
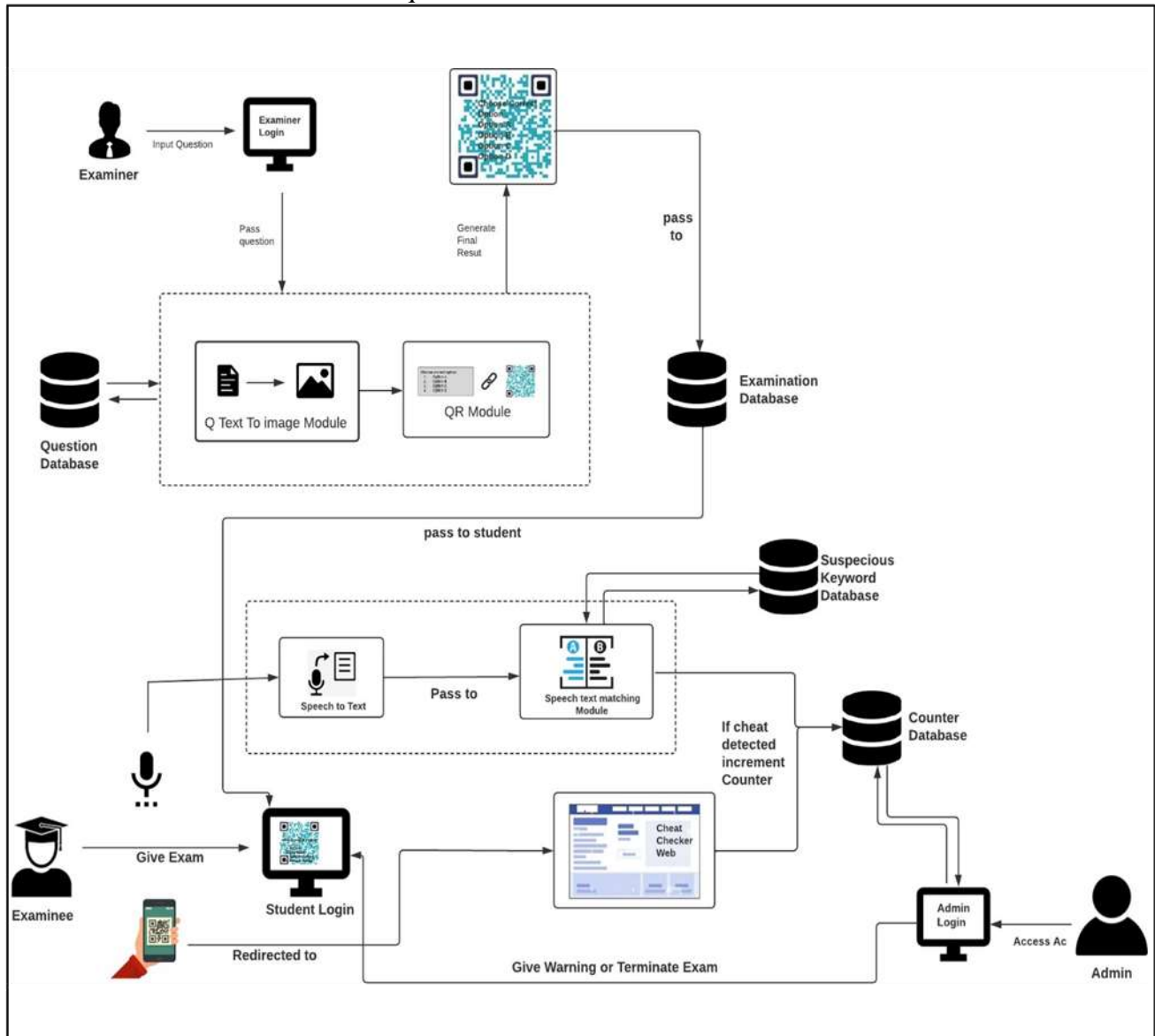

Fig.1. Architecture System

A.   Examiner Login

The first examiner will add all questions in text format using his login credentials. He can also delete and update questions. For examiners, there will be a separate dashboard or panel for uploading questions. Examiners will assign marks to each question. On the basis of the assigned marks system will decide final Marks for Question Bank.

B.   QR Question Generation

In this part the Text question will first convert into specified Image format. Then this image will be provided to the QR Module. This QR module will integrate QR and Question, also embed Web i.e. Cheat checker web link. And finally it will generate a QR Question.

C.   Voice Cheat Checking

If the examinee tries to speak questions or tell questions to his or her near-sitting friend, and if the friend is trying to search that particular question using Google voice search or any voice searching

tool, then the present invention based on speech recognition technology (SRT) and audio recognition technology (ASR) will convert these answer searching words of user audio into text and may be stored for further analysis purposes. The invented module will scan these voice-to-text converted texts and match them with some predefined suspicious keywords or phrases, like "I want these answers", "Muje ye answer bata", "Mala he answers sang", etc. The system will have a set of predefined words that will be matched with a voice to text-converted data of the examinee, and if it matches then an alert will be sent

D.   Cheat Checker Web

If someone tries to scan a question by using a smartphone's Google Lens, she or he will be redirected to the Cheat Checker web. Cheat Checker will check how many times a particular student has tried to cheat using Google Lens. If a student tries for the first time, then the student will get an alert that says, "You are doing suspicious activity". If a student tries to scan more than three times, the system will send an alert to the administrator, who can then take action against that student.

E.   Admin

Admin can check Google Lens counter and Voice search counter, Also he can send alerts to particular students if he is found doing suspicious activities. Also he has rights to terminate the exam.

IV.   ALGORITHM

A.   Algorithm for QR Question Generation

Step 1:-Start

Step 2 :- Examiner Input question into system Step 3 :- Integrate Question Image and QR Code. Step 4 :- Apply error correction Technique

Step 5 :- Generate Final Question QR

Step 6 :- Pass Final Output to Examination System Step7 :- End

B.   Algorithm for Cheat Detection

Step 1:- Start

Step 2:- Student Start the Exam

Step 3:- If Question QR Gets scanned

3.1   Redirect to Cheat Checker Web

3.2   If User Visited to CheatChecker Web to step 5 else step 6

Step 4:- If User use voice search

4.1   Convert Speech to Text

4.2   If Text file contains suspicious keyword go to step 5 else step 6

Step 5:- Increment Counter in Database Step 6:- Continue the exam

Step 7:- End

RESULT AND DISCUSSION

We have developed a prototype model of our cheat detection system, incorporating both embedded QR scanning and speech recognition technology.Our system is designed to detect cheating attempts during examinations, and it can scan the QR codes embedded in the question paper to ensure their authenticity. In addition, our system also includes speech recognition

technology that can identify the voices of individual students. This allows for accurate detection of students attempting to use voice-based cheating methods during examinations. We aim to provide a reliable and efficient cheat detection system that can help maintain the integrity of the examination process. By using our system, examiners can prevent cheating attempts and ensure a fair and unbiased evaluation of the students' abilities.

FUTURE ENHANCEMENTS
1.   Reduction of web redirect time:
Web Redirection time of QR can be reduced , if using a more effective algorithm, Redirection plays an important role in detecting the cheat for lens.
2.   Readability of Question QR can be improved:
In current system we are using algorithm which can embed image and QR , but it's not fully readable, if use better technique Question Qr can be in readable format
3.   More Cheat Prohibition techniques can be add :
In the current system we are working on Lens cheat and voice chat only but there are other ways also for cheating in exams, these techniques can be implemented in future enhancement. Prohibition Method for Cheat techniques Other than Lens and voice chat can be added in future enhancement

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