BE Project Synopsis

BE Project Title: FairTestPro :- New testing platform where no one can cheat.

Sponsored /Nonsponsored : NO

**Domain of the Project: Web App**

**Literature Survey:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Paper**  **no.** | **Title of Paper** | **Author** | **Outcomes** | **Future**  **scope(work)/ Unaddressed challenges** | **Remark** |
| **01** | An Intelligent System For Online Exam Monitoring | Swathi Prathish,  Athi Narayanan S,  Kamal Bijlani | Monitoring online exam using webcam, microphone, and internet connection | Developing seamless integration with popular LMS platforms would streamline implementation and usage for educational institutions. | Use of hardware like  Webcam , microphone  Etc which are widely available |
| **02** | Detecting cheating in electronic exams using the artificial intelligence approach | Bashar H. Asker Ahmad F. Al-allaf | Detecting cheating in online exam using face detection, behavior monitoring, and object detection | Future improvements could focus on reducing latency and improving the real-time processing capabilities of the system to provide even quicker responses to potential cheating behaviors. | Using face monitoring and behavior monitoring as a form of cheat detection |
| **03** | Cheating Detection in Browser-based Online Exams through Eye Gaze Tracking | Nimesha Dilini,  Asara Senaratne,  Tharindu Yasarathna  Nalin Warnajith,  Leelanga Seneviratne | preventing cheating in online exams using eye-tracking technology. | Future research can focus on enhancing the accuracy of gaze tracking algorithms to minimize false positives and false negatives. | Using eye tracking as a form of cheat detection |
| **04** | Online Exam Proctoring System using ML | Mrs. Peddaboina Yamuna1,  Purra Vivek Reddy2, Katare Sai Praneeth3, Uppunuthula Akhil4, Siga Chandu5 | Object Detection Model  Head Pose Model  Lip Movement model  Eye Tracker model. | Further research could improve the integration of different detection methods (e.g., object detection, head pose estimation, lip movement recognition) to create a more cohesive system. | Checking head tilt angle and eye tracking for cheat detection |

**Objectives of Project Title**

**Enhancing Examination Integrity:**

The project's primary goal is to enhance the integrity and security of online exams using advanced machine learning models. It employs face detection algorithms to verify the examinee's identity before and during the test, preventing impersonation. The platform also detects unauthorized individuals nearby to prevent collaborative cheating. Continuous monitoring of the examinee's eye movements and pupil direction identifies suspicious behaviors, such as looking away from the screen or glancing at unauthorized materials. These features aim to create a secure, fair, and reliable testing environment that upholds academic honesty.

**Promoting Technological Advancement in Education:**

Another crucial objective of this project is to drive technological innovation in education by developing a sophisticated web-based testing platform. This platform uses advanced machine learning techniques to monitor and analyze various cheating behaviors in real-time, including the detection of mobile phones and other electronic devices during exams. By deterring dishonest practices, the platform promotes a culture of integrity among students. This aligns with the broader goal of integrating advanced technology into educational practices, promoting a modern and efficient approach to examinations. The project aims to demonstrate the potential of machine learning to transform traditional examination methods, enhancing their reliability and effectiveness.

**Proposed Work with Methodology:**

The proposed work for the development of a "Cheat-Proof Testing Platform Using Machine Learning" aims to create a comprehensive and secure web-based examination system. The system will incorporate multiple machine learning models to address various cheating scenarios and ensure the integrity of online examinations.

**Identification of the Examinee:**

The platform will utilize advanced face detection algorithms to verify the identity of the examinee. This will involve training a convolutional neural network (CNN). The CNN will be designed to recognize the registered examinee's face with high accuracy. During the examination, the platform will periodically capture images of the examinee through their webcam and compare them with the stored facial data to ensure consistent identification.

**Detection of Unauthorized Persons:**

To detect the presence of additional individuals in the examinee's vicinity, the system will employ object detection models, such as YOLO (You Only Look Once) or SSD (Single Shot Multibox Detector). These models will be trained on a dataset containing images with multiple persons. The platform will continuously analyze the webcam feed to identify any unauthorized persons within the frame, raising alerts if any additional faces are detected.

**Monitoring Eye Movements:**

The platform will implement eye-tracking algorithms to monitor the examinee's gaze direction and pupil movements. Using computer vision techniques, the system will detect if the examinee looks away from the screen, indicating potential cheating attempts. This will involve analyzing the position and movement of the examinee's pupils in real-time, and machine learning models like Support Vector Machines (SVM) will be used to classify suspicious behaviors.

**Detection of Electronic Device Usage:**

The platform will integrate object recognition models to detect the usage of electronic devices, such as mobile phones or tablets. By training these models on a dataset containing images of various devices, the system will be capable of identifying such objects in the webcam feed. The platform will continuously scan for the presence of these devices and issue alerts if any are detected during the examination.

**System Integration and User Interface:**

The web-based platform will be developed using modern web technologies such as HTML, CSS, JavaScript, and backend frameworks like Django or Flask. The user interface will be designed to be intuitive and user-friendly, providing examinees with clear instructions and seamless interaction with the system. The platform will also include an administrative dashboard for examiners to monitor ongoing examinations and review flagged incidents.

**Software and Hardware Platform Requirement:**

Software Requirements for the "Cheat-Proof Testing Platform Using Machine Learning"

1. Front End:-

JavaScript: To add interactivity to the web pages and handle client-side logic.

React.js: A JavaScript library for building user interfaces, allowing for efficient development of dynamic and responsive web applications.

Bootstrap: A CSS framework to design responsive web pages quickly and efficiently with pre-built components.

WebRTC: To enable real-time communication capabilities, such as video streaming from the examinee's webcam.

Axios: For making HTTP requests from the front end to the back end.

2. Back End:-

Python: The primary programming language for developing the back-end logic and machine learning models.

Django or Flask: Web frameworks to build and manage the back-end server, handle routing, and manage database interactions.

OpenCV: An open-source computer vision library to assist with image and video processing tasks such as face detection and eye tracking.

TensorFlow or PyTorch: Machine learning frameworks to develop, train, and deploy the models for face recognition, object detection, and eye movement analysis.

Dlib: A toolkit for machine learning and data analysis, particularly useful for facial landmark detection and tracking.

YOLO (You Only Look Once) or SSD (Single Shot Multibox Detector):Pre-trained models for real-time object detection, used for identifying unauthorized persons and electronic devices.

SQLite or PostgreSQL: Database systems to store user data, examination details, and log entries related to detected cheating attempts.

Docker:For containerizing the application, ensuring consistency across different development and production environments.

Recommendation from at least three faculty members with suggestions if any whom you discussed your project title.

Suggestions:

**1.**

**2.**

**3.**

**4.**

Recommended: – Yes / No

Genuineness of project title (to be filled by faculty members)

(Project title should not be repeated, please refer last four years project titles)

Name and Signatures of Faculty Members:

Faculty 1\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Faculty 2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Faculty 3\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**References**