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Proctor AI – Secure Proctoring Application for Hackathon-Level Exams

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ABSTRACT: Secure Proctor is a sophisticated proctoring application designed to uphold the integrity of hackathon-level exams by monitoring the system status of video, audio, and screen recording in real-time. The application provides a secure and user-friendly environment for exam participants while ensuring compliance with academic integrity standards. Utilizing cutting-edge technologies such as WebRTC for media capture, TensorFlow for facial recognition, and Flask for backend management, Secure Proctor offers a robust solution for remote proctoring. Through a combination of user authentication, advanced proctoring logic, and secure database storage, Secure Proctor enables exam administrators to effectively monitor and deter cheating behavior. With features for starting/stopping recordings, real-time system status updates, and scalable deployment on cloud platforms, Secure Proctor empowers educational institutions and organizations to conduct hackathon-level exams with confidence and integrity.

KEYWORDS: Online Assessment, AI-driven Proctoring, User Authentication, Test Creation , Test Scheduling, Proctoring Setup, Real-time Monitoring, Camera Capture, Microphone Capture, Screen Capture, Gaze Tracking , Data Security, Encryption , Access Control, Email Notification

I. INTRODUCTION

The system provides camera detection, analysis, microphone monitoring and monitoring to detect and flag suspicious activities such as unauthorized assistance, fraud or violation of testing procedures standard. The best way to prevent is not only to prevent fraud but also to promote a culture of honesty and integrity in competitors. competence. Teachers can easily create custom tests, set benchmarks, and schedule tests the way they want and need. Instant monitoring dashboards provider.Encryption, access control, and secure authentication systems protect data transmission and storage, giving teachers and students confidence in the confidentiality, knowledge, and integrity of data. The system embodies a paradigm change in education. The system paves the way for a shared, integrated, accessible and equitable learning ecosystem by providing teachers with the tools and information they need to evaluate fairly, reliably and securely in a virtual environment. The system provides camera detection, analysis, microphone monitoring and monitoring to detect and flag suspicious activities such as unauthorized assistance, fraud or violation of testing procedures standard. The best way to prevent is not only to prevent fraud but also to promote a culture of honesty and integrity in competitorscompetence. Teachers can easily create custom tests, set benchmarks, and schedule tests the way they want and need. Instant monitoring dashboards provide teachers with information about past exams so they can intervene when problems or performance issues arise. Privacy Policy. Encryption, access control, and secure authentication systems protect data transmission and storage, giving teachers and students confidence in the confidentiality, knowledge, and integrity of data. The system embodies a paradigm change in education. The system paves the way for a shared, integrated, accessible and equitable learning ecosystem by providing teachers with the tools and information they need to evaluate fairly, reliably and securely in a virtual environment.

II. RELATED WORK

EXISTING SYSTEM - In the current system, online assessment often does not have a strong mechanism to ensure the integrity and reliability of the exam conducted in the virtual environment. Traditional proctoring methods, such as manual monitoring or remote guarding, are laborintensive, prone to human error, and often inadequate for detecting fraud. Additionally, the lack of immediate monitoring and analysis may hinder teachers' ability to promptly detect and resolve violations or infractions in the examination system. Concerns over data security further limit many existing

systems, as sensitive data collected during testing may be vulnerable to unauthorized access or destruction, which can result in a privacy and confidentiality risk. Overall, the current system does not provide teachers and students with the necessary tools and assurance to conduct online assessments with trust, transparency and fairness.

PROTOTYPE MODEL - Our solutions are based on the creation of web applications to simplify the food donation process for donors and organizations. We aim to simplify and improve all aspects of the donation process by using the latest technology. At the same time, charities can provide clear information and guidance to people who can donate, explaining their specific needs, from damage to undamaged items.

Free requests and features that allow instant updates of availability. This ensures donors are always aware of the most important needs in their communities and can respond in a timely manner. Optimize logistics and reduce transportation costs. Proximity-based partnerships are not only productive, they also encourage community engagement and support.
We leverage the power of digital technology to connect donors with organizations working to solve hunger. This fosters a culture of compassion, collaboration, and accountability. By incorporating user feedback on donations, we can continuously refine and improve the giving experience.

PROPOSED MODEL - To integrate software into online assessment with AI-driven proctoring, a well-planned approach is essential to ensure seamless functionality and reliability. The system consists of many interconnected components, each performing a different function and contributing to the overall effectiveness of the platform. At the center of the system is the proctoring module, which has intelligence-focused mechanisms for monitoring candidates during the exam. These standards include camera capture, scanning, eye tracking and monitoring functions to detect and prevent fraud. Leveraging advanced algorithms and machine learning techniques, these components analyze test-takers' behaviors and activities, flagging any suspicious actions for further review by educators or proctors. The administrative interface module provides educators with the tools and functionalities necessary for test creation, scheduling, result management, and communication with students. This module offers an intuitive dashboard where educators can easily configure test parameters, set scheduling preferences, and access performance reports. Additionally, the ability to send email notifications to students about upcoming tests, results, and feedback is integrated into the admin interface. To ensure secure access to the system, user authentication and control procedures allow only users (including teachers and students) to access and enter the study platform. This process verifies user credentials, enforces role-based access control, and protects sensitive information stored in the system. Configuration, evaluation and audit log. It ensures good data ingestion, storage and processing, ensures interoperability between different modules

III. METHODOLOGY

Exemplar based Inpainting technique is used for inpainting of text regions, which takes structure synthesis and texture synthesis together. The inpainting is done in such a manner, that it fills the damaged region or holes in an image, with surrounding colour and texture. The algorithm is based on patch based filling procedure. First find target region using mask image and then find boundary of target region. For all the boundary points it defined patch and find the priority of these patches. It starts filling the target region from the highest priority patch by finding the best match patch. This procedure is repeated until entire target region is inpainted.

The algorithm automatically generates mask image without user interaction that contains only text regions to be inpainted.

IV. EXPERIMENTAL RESULTS

Training and user programs enable teachers, students and administrators to use the system effectively. Overall, the implementation process is consistent and leads to the success and implementation of AI-driven online assessment. The online assessment system with AI-driven proctoring operates through a series of intricately connected processes, ensuring the integrity and credibility of online examinations. Beginning with user authentication, educators and students securely access the system using their credentials. Educators then create and schedule tests, defining parameters such as duration, subject, and topic. Proctoring mechanisms are activated prior to the test start time, including camera, microphone, and screen capture functionalities, alongside gaze tracking algorithms to detect suspicious behaviors. During the test, real-time monitoring analyzes test-takers' activities, flagging any irregularities or potential cheating behaviors. Post-assessment, detailed reports are generated on performance metrics and proctoring outcomes, facilitating communication between educators and students through email notifications.
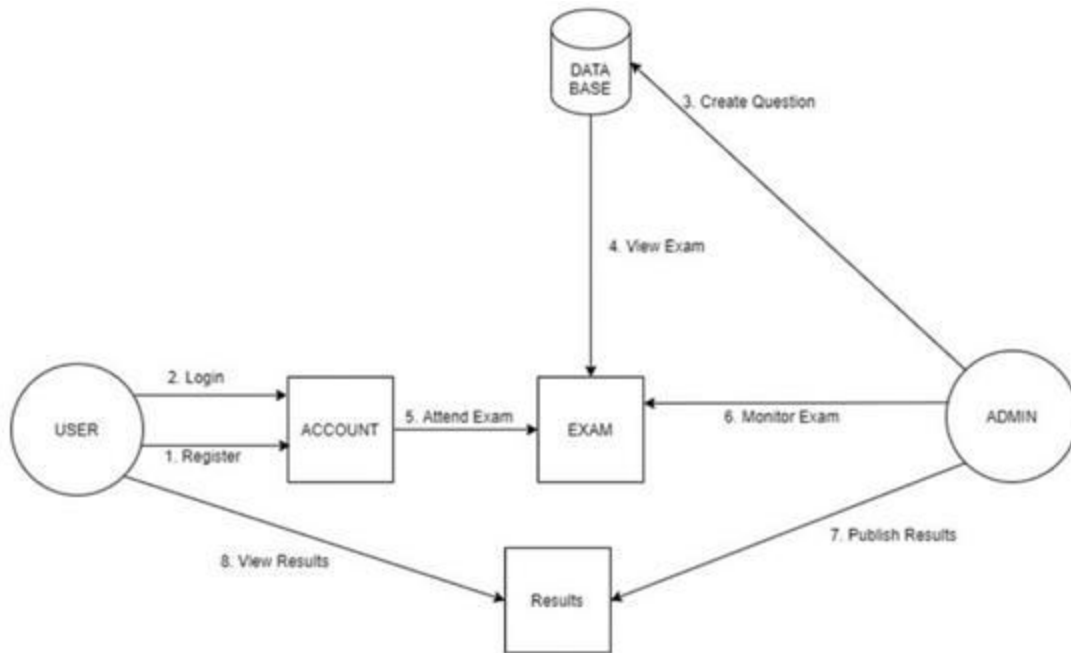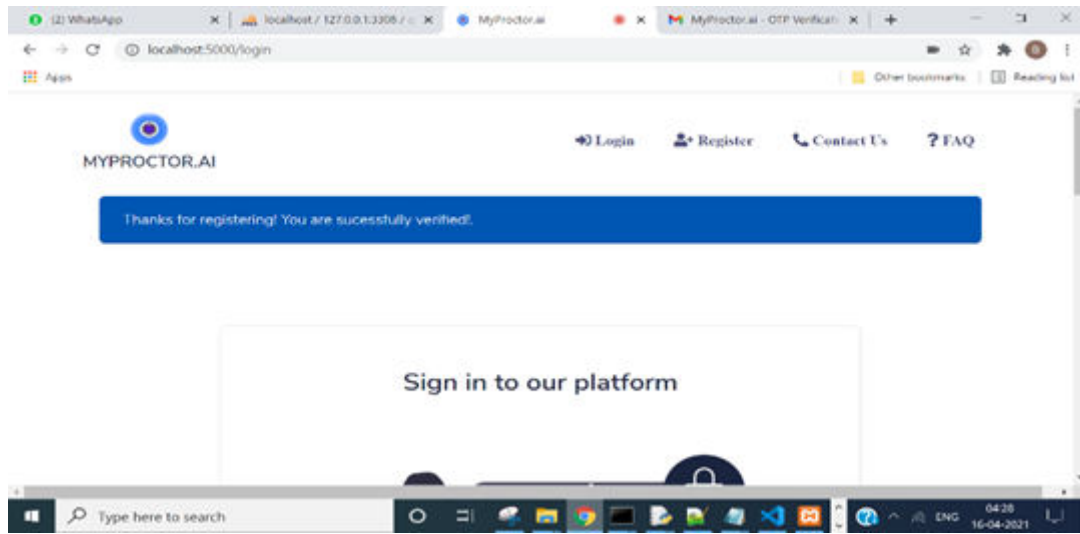
This process verifies user credentials, enforces role-based access control, and protects sensitive information stored in the system. Configuration, evaluation and audit log. It ensures good data ingestion, storage and processing, ensures interoperability between different modules and supports scalability as the system grows. Communicate effectively with timely reminders, feedback and support. These modules leverage email notification regarding test schedules, results, and any relevant updates or announcements. Overall, the integration of these software products enables integrated and powerful online assessment with AI-driven proctoring capabilities. Seamlessly combining advanced technology, intuitive interfaces and stringent security measures, the system provides teachers and students with a comprehensive platform for fair, reliable and secure online assign a virtual learning environment
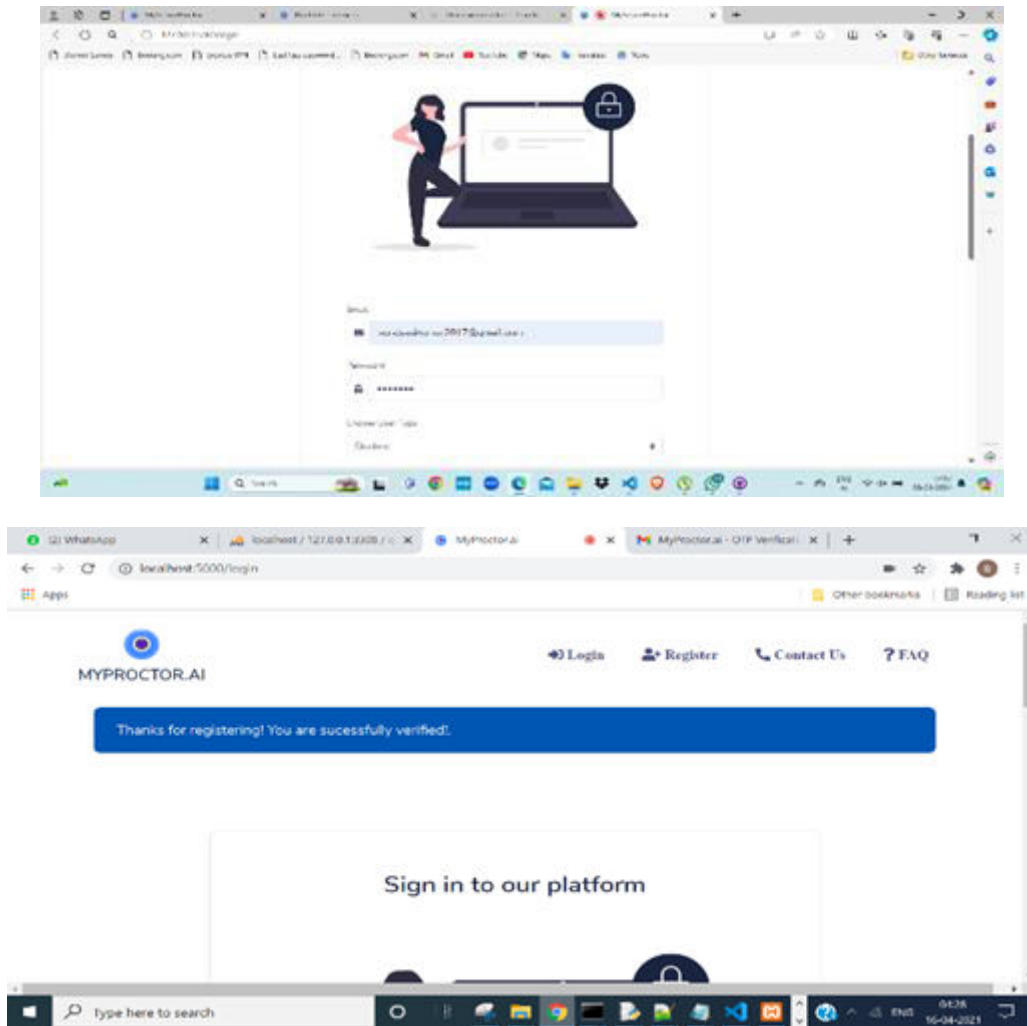
V. CONCLUSION

The project offers a transformative approach to online assessments, harnessing AI-powered proctoring technology alongside streamlined administrative tools. By integrating features like camera and screen capture, gaze tracking, and audio monitoring, the system ensures the integrity of examinations, maintaining fairness and academic honesty. Automation of administrative tasks, such as test scheduling and performance tracking, enhances efficiency, reducing manual workload for educators and fostering a focus on personalized student support. Additionally, email notifications facilitate timely communication, keeping students informed about test schedules and feedback. Emphasizing data security and privacy, the project implements robust authentication and encryption measures, safeguarding sensitive information. In essence, this project represents a holistic solution, blending cutting-edge technology with pedagogical principles to deliver equitable, efficient, and secure online assessments, ultimately enhancing the educational experience for all stakeholders.

In conclusion, the development and evaluation of security implementation for hackathon-level testing is an important element in solving problems related to online testing in a dynamic and usable environment that is most affected. Through careful planning, rigorous testing and continuous improvement, we have managed to create powerful and reliable solutions that meet the needs of many teachers, exam administrators and students. The app has comprehensive features including user management, configuration controls, protection capabilities, and reporting tools that allow participants to run hackathon tests with trust and integrity. Additionally, the integration of advanced security measures ensures that sensitive survey data is protected and user privacy is maintained, providing trust and confidence in the platform.

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