# **System Description**

## The Web-based Online Exam System with Face and Voice Authentication is a comprehensive platform designed to facilitate secure and reliable online exams. This system integrates advanced authentication mechanisms, including face recognition during login and continuous face and voice monitoring during exams, to ensure the integrity of the assessment process. Admins can create and manage exams, monitor student performance, and analyze exam results through an intuitive admin dashboard, while students can access exams, take tests, and review their results with ease.

# **System Features**

Face Authentication: To verify their identity and improve security by preventing unwanted access, users submit to facial recognition during login.

Constant Face and Voice Monitoring: To ensure the integrity of the test, the system keeps a close eye on users' faces and voices throughout. This helps to identify any questionable behavior.

Admin Dashboard: Exams can be easily created, edited, and managed by administrators through a centralized dashboard.

Student Interface: A user-friendly interface makes it easy for students to access examinations, read questions, answer them, and submit their responses. This expedites the exam-taking process.

Intuitive Design: An easy-to-use interface makes navigating and interacting with the system effortless and fun for both students and administrators.

Accessibility: The system is made to be usable on a variety of screens and devices, meeting the needs of a wide range of users.

Adjustable Exam Settings: Administrators possess the ability to personalize exam parameters, including time restrictions, question kinds, and scoring standards, enabling customized evaluations to fulfill certain learning goals.

Detailed Reports: Admins can generate comprehensive reports on exam results, student performance, and system usage, facilitating data-driven decision-making and evaluation.

Feedback Mechanisms: Students receive feedback on their exam performance, including scores, correct/incorrect answers, and areas for improvement, promoting self-assessment and learning.

System Requirements for the Web-based Online Exam System with Face and Voice Authentication

1. Hardware Requirements:

- laptops with webcam and microphone support for face and voice authentication.

- Adequate processing power and memory to handle the computational requirements of face and voice recognition algorithms.

2. Software Requirements:

- Frontend:

- Compatible web browsers ( Chrome) with support for modern web technologies.

- HTML, CSS, and JavaScript frameworks/libraries for frontend development ( React.js).

- Backend:

- Server-side scripting language (Python) for backend development.

- Web frameworks (Flask) for handling HTTP requests and routing.

- Database management system ( MySQL) for data storage and retrieval.

3. Authentication and Monitoring Libraries:

- Face recognition library ( OpenCV.js) for face authentication during login and continuous face monitoring during exams.

- Voice recognition library ( WebRTC) for voice monitoring during exams.

4. Security Measures:

- HTTPS protocol support for secure communication between client and server, ensuring data confidentiality and integrity.

- Encryption algorithms (e.g. TLS/SSL) for encrypting sensitive data transmitted over the network.

- Server-side validation mechanisms to prevent tampering with exam data and protect against security vulnerabilities.